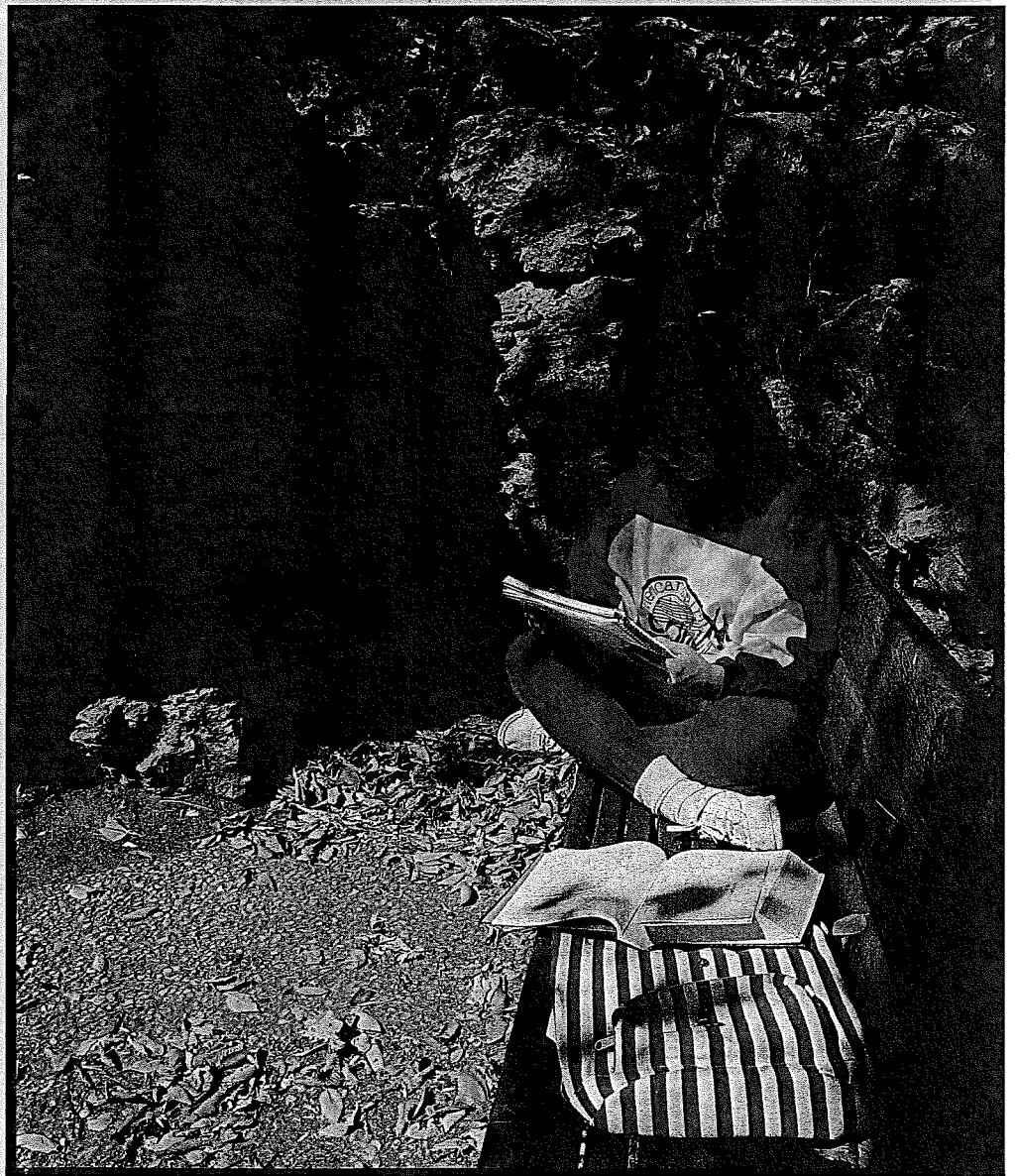


# The Ohio State University Bulletin

Course Offerings 1989-90

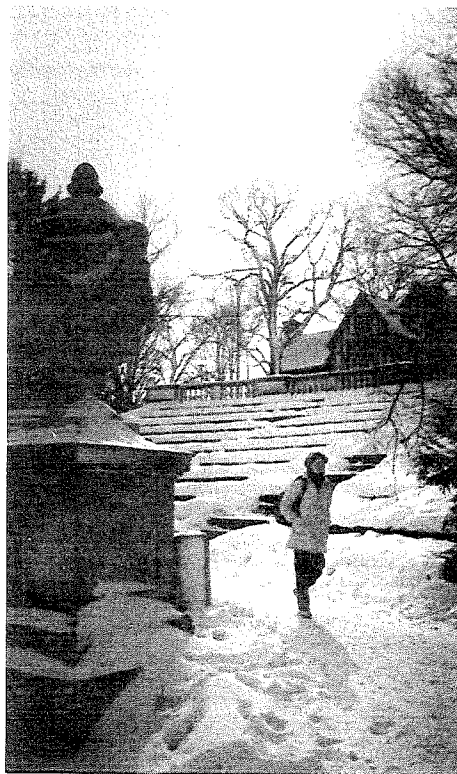


# The Ohio State University

Ohio State is the major comprehensive University in the state of Ohio. Through its central campus in Columbus, four regional campuses, Agricultural Technical Institute, educational telecommunications programs, cooperative extension service, and health care programs, the University serves the entire state. As a major land grant university Ohio State is also a national resource. Its fundamental purpose—in teaching, research, and public service—is to enhance the quality of human life through developing the individual capacity for enlightened understanding, thinking, and acting. Through the dissemination of knowledge, the University not only serves the individual but acts as a force to shape society for the common good. As such, it is also a significant international resource.

Ohio State offers degree programs in a variety of disciplines, including baccalaureate and graduate programs in the liberal arts and sciences, in agriculture, in the various professional areas, and in the health sciences. As the major graduate institution of the state, The Ohio State University plays an important role in the generation of new knowledge through research and other creative work, and in the preparation of mature scholars. The University provides the only programs in Ohio in graduate study in agriculture, in certain of the allied medical professions, in optometry, and in veterinary medicine. The quality and diversity of its instructional programs and resources afford able students the opportunity to elect programs of unusual strength in the traditional university disciplines, as well as interdisciplinary programs which reflect new ways of organizing knowledge and new approaches to contemporary problems.

Equality of opportunity is a basic philosophy of Ohio State. Mindful of the need for all persons to adapt to the changing roles and needs of society, the University also provides evening programs and continuing education opportunities to serve a wide spectrum of



lifelong learning needs. In the exploration of new ideas and in the preparation of citizens for their roles in a changing society, the University represents a human commitment—an expression of the aspiration of people to better themselves and the world in which they live.

## Campuses

Columbus  
Lima  
Mansfield  
Marion  
Newark

Agricultural Technical Institute, Wooster



# Course Offerings      Book 3

## Contents

Student Responsibility	3
Examinations and Marks	3
Course Credit	7
Admission	11
Improper Registration	11
Absences	11
Warning and Dismissal	11
Conditional/Unconditional Admission	13
Curricular Information	14
Course Offerings	18
Organization of Instructional Units	441
University Calendar	444
Call or write	445
Index	446

## The Ohio State University Bulletin

Volume 93, No. 9, April 4, 1989

*The Ohio State University Bulletin* (USPS 405-220) is published 24 times during the year: once in May, four times in August, once in October, once in January, and 17 times in April by The Ohio State University Office of Academic Affairs, 190 North Oval Mall, Columbus, Ohio 43210-1358. Second class postage paid at Columbus, Ohio. POSTMASTER: Send address changes to *The Ohio State University Bulletin*, 1110 Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230.

The bulletin series contains:

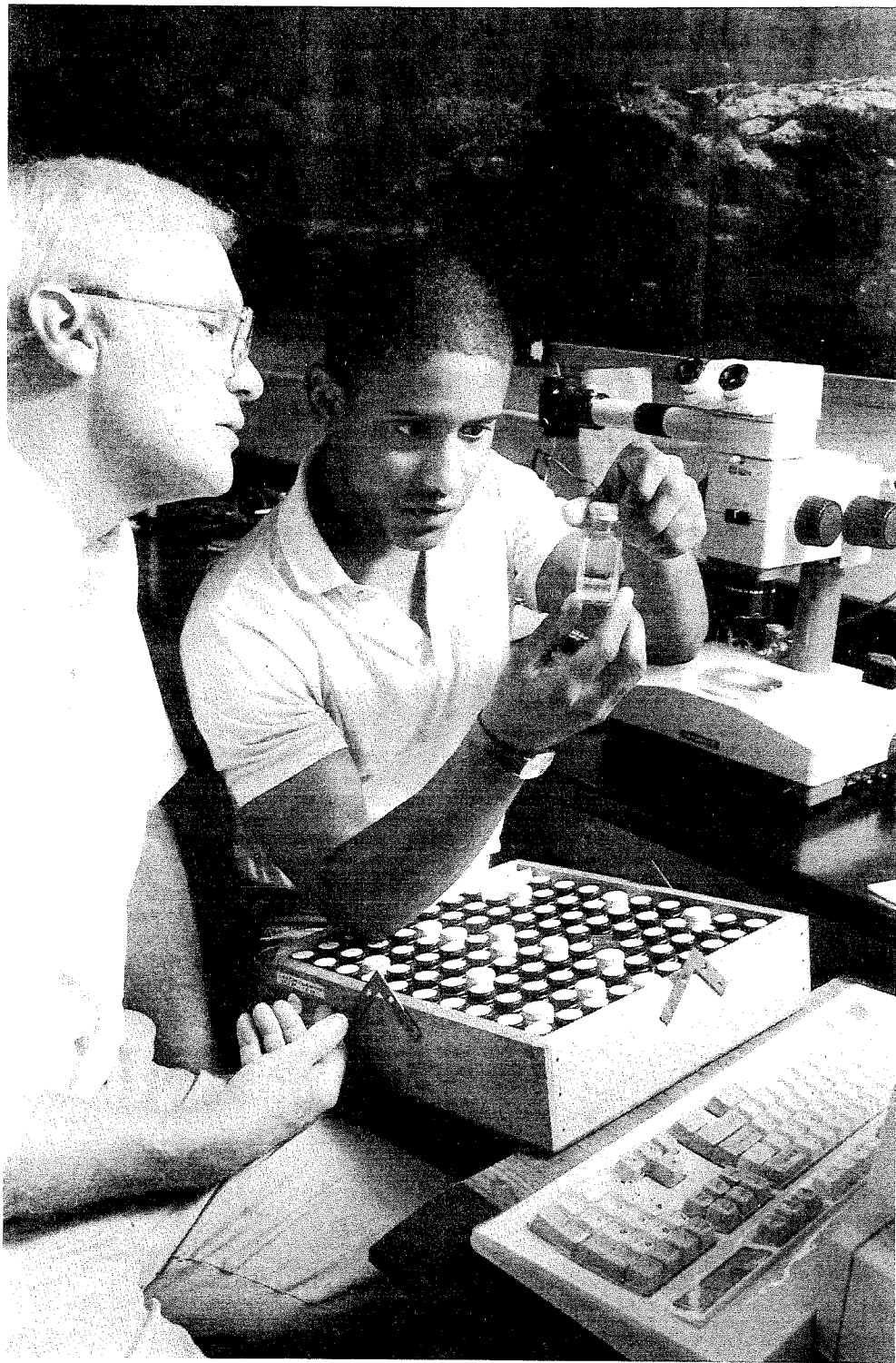
1. General Information and Applications
2. Graduate School
3. Course Offerings
4. College of Agriculture
5. Colleges of the Arts and Sciences
6. College of Business
7. College of Dentistry
8. College of Education
9. College of Engineering
10. College of Home Economics
11. College of Law
12. College of Medicine
13. College of Nursing
14. College of Optometry
15. College of Pharmacy
16. College of Social Work
17. College of Veterinary Medicine
18. Agricultural Technical Institute
19. Continuing Education Opportunities
20. Preparing for Ohio State

Admission application forms are available from the Admissions Office, The Ohio State University, Third Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1200; 614-292-3980.

While every effort is made to provide accurate and up-to-date information, the University reserves the right to change without notice statements in *The Ohio State University Bulletin* series concerning rules, policies, fees, curricula, courses, or other matters. Courses may be closed because of limited resources or facilities, or canceled because of unavailability of faculty or insufficient enrollment.

The language incorporated throughout this bulletin is intended to be inclusive and free of gender specific connotation. In those instances where gender specifically remains, unless specifically noted, it is to be considered as including both the masculine and the feminine genders.

Editor Donald R. Bell  
Cover Photographer Kevin Fitzsimons  
Typesetting and Printing Ohio State Printing Facility (Donald Roberts and James Zimmer, Supervisors)



## Student Responsibility

Students are responsible for knowing their own standing scholastically in reference to the published regulations and standards of the University and of their college or school.

## Examinations and Marks

### Course Examinations (Rule 3335-7-19)

At the close of each course as defined in rule 3335-7-01 of the Administrative Code, an examination will be given on the student's capabilities relative to the stated course objectives, the method of examining to be determined by the instructor or supervisor of the course. Examinations in laboratory and seminar courses shall be optional with the instructor concerned. Examinations for graduating students shall be given at a time near the end of each course, preferably during the last week of classes.

### Schedules for Final Examinations (Rule 3335-7-20)

Examinations for classes taught on the regional campuses and for classes whose enrollment is exclusively of students registered in the Colleges of Dentistry, Law, Medicine, Optometry, Pharmacy, and Veterinary Medicine will be scheduled by the offices of the regional campuses and of the colleges respectively. All examination schedules prepared outside the Office of the University Registrar shall, before publication, be cleared with the Office of the University Registrar which shall have the power to resolve all conflicts.

Examinations for graduating students shall be arranged by individual instructors so that final grades for the affected students may be submitted to the Office of the University Registrar by the deadlines established by that office.

All other final examinations shall be centrally scheduled by the Office of the University Registrar. The official examination schedules shall be strictly adhered to by all instructors. Any deviation must first be approved by the appropriate university official (department chairperson, regional campus dean and director, or college dean) in consultation with the Office of the University Registrar, which shall have the power to resolve all conflicts.

In performing its scheduling function the Office of the University Registrar shall limit individual examinations to two-hour duration and the total examination period to no more than five days.

## Marks (Rule 3335-7-21)

The official marks of the University are A, A-, B+, B, B-, C+, C, C-, D+, D, E, EM, I, K, P, PA, NP, R, S, U, and W. The marks shall have the following meanings:

**A, A-** The instructor judged the student to have satisfied the stated objectives of the course in an excellent manner. The student's performance was judged to be *in this range* of high quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on the instructor's experience and expertise.

**B+, B, B-** The instructor judged the student to have satisfied the stated objectives of the course in an above-average manner. The student's performance was judged to be *in this range* of above-average quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on the instructor's experience and expertise.

**C+, C, C-** The instructor judged the student to have satisfied the stated objectives of the course in an average manner. The student's performance was judged to be *in this range* of average quality based upon a comparison with other students in the course, and/or students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on the instructor's experience and expertise.

**D+, D** The instructor judged the student to have satisfied the stated objectives of the course *in a low but acceptable* manner. The student's performance was judged to be *in this range* of below average but acceptable quality based upon a comparison with other students in the course, and/or with students who have taken the course previously, and/or the instructor's personal expectations relative to the stated objectives of the course, based on the instructor's experience and expertise.

**E** The instructor judged the student not to have satisfied the stated objectives of the course. Credit for a course in which the mark E has been received can be obtained only by repeating and passing the course in class. (See rules 3335-7-23 to 3335-7-28 of the Administrative Code.)

## EM Examination

This mark indicates credit given to students registered in the University on the basis of examinations taken prior to or after admission to the University. The level of achievement which must be demonstrated by the student on these examinations in order to receive EM credit shall be determined by the department or school in which the course is offered for credit, in accord with the criteria for the award of letter grades. This credit, up to a maximum of 45 credit hours, shall be assigned only upon the authorization of the chairperson of the department or the director of the school and with the approval of the authorized representative of the dean or director of the student's enrollment unit. Additional examination credit hours may be assigned specific curricular programs with the prior approval of the Council on Academic Affairs.

Examination credit shall not be given to a student for a course in which the student has received a mark at this University or for which the student has transfer credit from some other college or university. Conversely, no course for which EM credit has been received can be taken later for a grade or credit. No credit points are allowed for courses in which a mark of EM is given.

## I Incomplete

An I indicates that the student has completed a major portion of the work in the course in a satisfactory manner, but for reasons judged by the instructor to be legitimate, a portion of the course requirements remains to be completed.

The mark I shall be reported to the Office of the University Registrar together with the mark which the University Registrar is authorized to enter on the student's official record unless a different mark is reported to the Office of the University Registrar in the manner and within the time described below.

The student must complete the work so that the instructor of the course may report the final mark at the earliest possible time, but not later than noon of the sixth Saturday of the quarter, semester, or session following that in which the I was received. For legitimate reason, the instructor may establish a deadline for the completion of the work which is within the maximum time permitted. Upon petition of the student within this period, the authorized representative of the dean or director of the enrollment unit in which the student was last enrolled after consultation with the instructor of the course, or, if the instructor is unavailable, the chairperson of the department involved, may for good reason allow a student additional time in which to complete the work. Generally, this shall not be longer than the end of the quarter, semester, or session following that in which the I

was received. Any decision extending the period shall set forth the time in which the student shall complete the work and a copy of the decision shall be forwarded to the Office of the University Registrar.

As soon as the incomplete work has been made up, the instructor, or in the case of the instructor's absence from the University, the department chairperson or the director of the school, shall file the proper mark in the Office of the University Registrar. Until such time as a final mark is recorded the credit for the mark I shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio under Rule 3335-7-26 of the Administrative Code.

In no case shall a student who has received the mark I be permitted to repeat the course in which such mark was received until such time as the I has been removed and then only in such cases as fall within Rule 3335-7-28 of the Administrative Code.

## K Credit

This mark shall be used for work credited from other institutions by the director of admissions only. K credit shall be counted as hours only and shall not be considered in determining a student's point-hour ratio under Rule 3335-7-26 of the Administrative Code (page 7).

## P Progress

This mark is used to indicate that the student has shown satisfactory progress in a series or sequence of courses where the mark is not recorded until the final quarter, semester, or session of the series or sequence is completed. Until such time as a final mark is recorded the mark of P shall be given and the credit shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio under Rule 3335-7-26 of the Administrative Code (page 7). When a final mark is submitted by the instructor, all previous P marks shall assume and be recorded with the value of the final mark.

P mark is not to be used for any course approved for the S, U grading option.

## PA-pass, NP-non-pass

The grade pass PA means the student has satisfied the stated objectives of the course, and the grade non-pass NP is the equivalent of the grade E.

These marks may be used at the option of undergraduate or continuing education students only, subject to the following conditions:

This grading pattern may be chosen for a maximum of thirty credit hours, provided the student has an accumulated point-hour ratio of 2.00 or higher.

Among these thirty credit hours, an undergraduate student may elect this option for courses in fulfillment of the curricular requirements of Rule 3335-7-06 of the Administrative Code.

An undergraduate student may elect this option for courses that are not required or designated as required electives in the curriculum leading to the degree for which the student is a candidate.

Hours graded pass PA count toward the minimal number of hours required for a degree. Pass or non-pass marks (PA, NP) are not computed in the point-hour average of the student.

Before five p.m., of the third Friday of a quarter or the second Friday of a term, a student must have declared intention to take a course on this basis by filing the appropriate form with the dean or director of the student's enrollment unit. A student may not change to or from this option after five p.m. of the third Friday of a quarter or the second Friday of a term.

#### R Registered to Audit

This mark indicates that the student has registered to audit the course and has met the conditions established for audit enrollment in the course. No credit hours shall be awarded for this mark (See rules 3335-7-29 and 3335-7-33 of the Administrative Code).

Before five p.m. of the third Friday of a quarter, semester, or session, or the second Friday of a term, a student must have declared intention to take a course for audit or to change from a credit to an audit basis by filing the appropriate form with the dean or director of the student's enrollment unit. A student may not change to or from the audit option after five p.m. of the third Friday of a quarter, semester, or session, or the second Friday of a term.

#### S-Satisfactory, U-Unsatisfactory

The mark S may be used to record either satisfactory progress in or completion of work, provided that the course has been approved for this mark by the dean of the college offering the course, and in the case of courses carrying graduate credit, by the dean of the Graduate School. It shall be used as an alternative to U or I in all individual studies courses whatever their number. S credit shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio under Rule 3335-7-26 of the Administrative Code.

The mark U shall be used for unsatisfactory work in courses in which a student would be entitled to the mark of S if the student's work had been satisfactory. No credit shall be given for work marked U. This mark shall not be considered in determining a student's point-hour ratio under Rule 3335-7-26 of the Administrative Code.

#### W Withdrew

This mark is used for students withdrawing from one or more courses or from the University. See Rule 3335-7-32 of the Administrative Code for procedures and provisions governing withdrawals.

### Report of Marks (Rule 3335-7-22)

Upon completion of the course requirements, marks for every student shall be reported to the Office of the University Registrar in accord with deadlines listed in the quarterly *Master Schedule of Classes*.

*This office maintains the student's official permanent record and is responsible for issuing a quarterly grade report to each student.*

### Alteration of Marks (Rule 3335-7-23)

(A) A mark filed in the Office of the University Registrar is a part of the official records of the University. It is subject to change only when a procedural error has been discovered in evaluation or recording of a grade. Action to change a grade must be initiated before the end of the second succeeding quarter. In no case will a grade be revised in accordance with criteria other than those applied to all students in the class. If the instructor agrees that an error in the mark was made, the mark will be changed upon written authorization of: the instructor of the course; the instructor's department chairperson; the director of the instructor's school, if applicable; the dean of the instructor's college; and the authorized representative of the dean or director of the student's enrollment unit.

If a student believes that a procedural error in grading was made, the student should meet with the instructor. If the instructor does not agree that a procedural error was made, the student may meet with the department chairperson to discuss the grade grievance. The chairperson shall respond to the student no later than 30 days after the student has requested a review by the chairperson. Upon receipt of the chairperson's response, if the issue is not resolved to the satisfaction of the student, the student may within two weeks request in writing by duplicate submission to the dean or director of the instruction unit and the department chairperson, the procedures in paragraph (B) of this rule. Unresolved cases of grade grievance due to grading procedures are subject to paragraph (B) of this rule; unresolved cases of grade grievance due to other causes are not subject to paragraph (B) of this rule.



(B) Unresolved cases of grade grievances due to grading procedures shall be reviewed by a faculty departmental committee appointed by the department chairperson.

- In cases of instructors still affiliated with the University, the review committee shall consult both the student and the instructor and shall determine the validity of the grade grievance due to grading procedures. The review committee shall make its findings known in writing to both the student and the instructor within 30 days of the student's request to the chairperson. If the committee finds that a procedural error has occurred and if the instructor declines to accept the findings of the review committee, the committee shall consider the reasons for not authorizing a grade change given by the instructor and may, upon consideration of these reasons, authorize in writing a grade change to be instituted by the department chairperson.

- In cases of instructors no longer affiliated with the University, the findings of the committee shall be reported to both the student and the instructor. If the instructor chooses not to respond, the judgment of the committee shall prevail. If the instructor responds and declines to accept the findings of the committee that a procedural error has occurred, the committee shall consider the reasons for not authorizing a change given by the instructor. In either case, the committee may, upon due consideration, authorize in writing a grade change (if such can

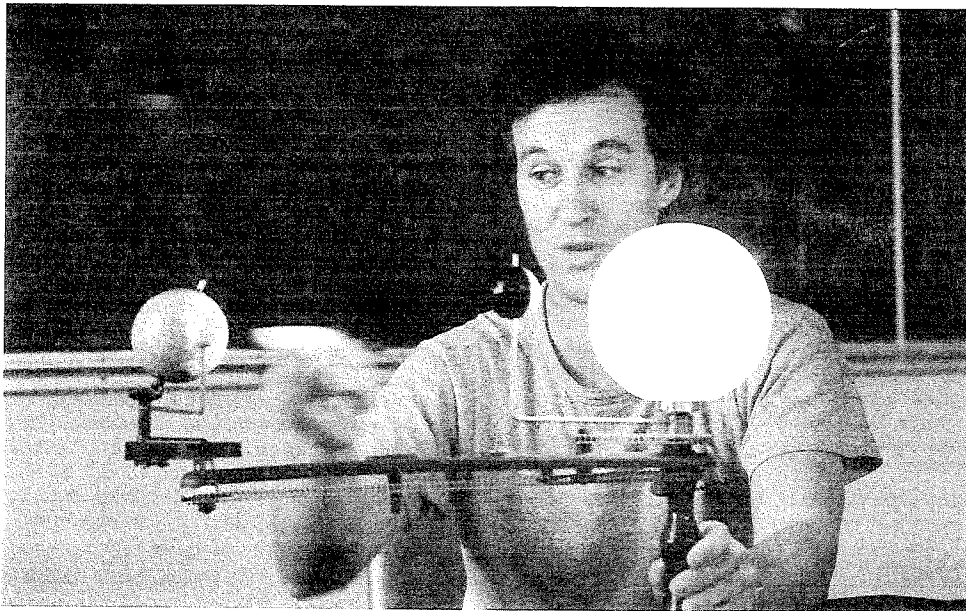
be determined) to be instituted by the department chairperson.

If a department committee can find no academic basis upon which to recommend an appropriate grade for the course, the student shall be given the option of having the course stricken from the student's record and, if so desired, to retake that course without prejudice or penalty.

(C) If charges of grave academic misconduct against an instructor are made and substantiated under Rule 3335-5-04 of the Administrative Code, the department chairperson shall be authorized to appoint a department grade grievance committee to consider grading errors that are alleged to be related to the misconduct. The committee shall consider all evidence and present, in writing, a report to the chairperson indicating any recommended grade changes. The department chairperson shall be authorized to institute grade changes in accordance with the recommendations of the committee.

If a department committee can find no academic basis upon which to recommend an appropriate grade for the course, the student shall be given the option of having the course stricken from the student's record and, if so desired, to retake that course without prejudice or penalty.

The Graduate School and graduate professional colleges may formulate appropriate modifications of this rule, subject to the approval of the Council on Academic Affairs, and publish this rule in their bulletins.



## Course Credit

### Credit Hours (Rule 3335-7-24)

(A) All courses shall be assigned a number of credit hours in accordance with the procedure outlined in rules 3335-7-02 to 3335-7-04 of the Administrative Code. This may be any number from zero on up; however, in determining the credit hours assigned, the department, school, college, and Council on Academic Affairs should use as a guide the following suggested standards:

- 1) One credit hour shall be assigned for each three hours per week of the average student's time, including class hours, required to earn the average grade of C in this course.
- 2) One credit hour shall be assigned for each two consecutive hours of practical or experimental work per week in any department or school.
- 3) One credit hour shall be assigned for each three hours of laboratory work per week, when no additional outside work is required. When outside work is required, then the standard in paragraph (A) (1) of this rule shall be applied.

(B) In determining the hours per week required by the course or work, the Council on Academic Affairs may, in appropriate cases, consider the average weekly hours spent during a quarter, semester, or session on the course or work. It should be remembered that the above are guides only and may be deviated from for good cause.

(C) When comparing or combining semester credit hours with quarter credit hours, one semester credit hour shall be the equivalent of one and one-half quarter credit hour.

### Credit Points and Point-hour Ratio (Synopsis of Rules 3335-7-25 and 3335-7-26)

A student's academic standing for a quarter, semester, or session is expressed by the point-hour ratio. This ratio is found by dividing the total number of points earned by the total number of credit hours scheduled or undertaken. Courses in which the marks EM, I, K, NP, P, PA, R, S, U, or W are given are not included in the computations. Courses in which the marks A, A-, B+, B, B-, C+, C, C-, D+, D, or E are given are computed according to the scale: A=4.00, A-=3.70, B+=3.30, B=3.00, B-=2.70, C+=2.30, C=2.00, C-=1.70, D+=1.30, D=1.00, and E=0.00. The following example shows how a point-hour ratio is determined.

	Hours	Grade	Points
Course No. 1	5	A	20.0
Course No. 2	3	C+	6.9
Course No. 3	(3)	I	
Course No. 4	3	0.0	
Course No. 5	(3)		
	<hr/> 11		<hr/> 26.9

Point-hour ratio: 2.44

When the final grade on Course No. 3 is recorded, the points and hours will be included in the computation of the student's point-hour ratio. When a student has a record for two or more quarters, semesters, or sessions, the student will have a cumulative point-hour ratio determined by dividing the total points earned by the total hours undertaken.

The point-hour ratio begins anew when a student enrolls in Dentistry, Law, Medicine, Optometry, Pharmacy, Veterinary Medicine, or the Agricultural Technical Institute.

When determining the point-hour ratio of a student:

- For a quarter, semester, or session if applicable, the applicable number of credit hours shall be the student's scheduled credit hours in that quarter, semester, or session.
- For the student's work in the University, the applicable number of credit hours shall be the total number of credit hours undertaken in the University except as modified by Rule 3335-7-271.
- For the student's work in the Graduate School, the applicable number of credit hours shall be the total number of graduate credit hours undertaken while enrolled in the Graduate School. For the student's work in a professional college or school or professional division of a college, the applicable number of credit hours shall be the total number of credit hours undertaken while enrolled in the professional college or school or professional division of a college.
- For the student's work in the major field of interest, the applicable number of credit hours shall be the total number of credit hours undertaken in courses approved for the major program.

No College of Medicine point-hour average shall be computed for a student enrolled in the College of Medicine in a curriculum leading to the degree, Doctor of Medicine, when that student has received only the marks of H, S, or E in the College of Medicine.

### **Recalculation of Cumulative Point-hour Ratio (Fresh Start Rule) (Rule 3335-7-261)**

An undergraduate student who re-enrolls in the University after an absence of five or more years may petition the dean or director of his enrollment unit to recalculate the cumulative point-hour ratio of his previous residency. If the petition is approved, all courses taken will remain on the permanent record. Those with marks of A, A–, B+, B, B–, C+, C, C–, EM, K, PA, or S, will be counted for credit only. No other marks will be counted for credit.

If the petition is approved, a student resumes his academic program with no cumulative point-hour ratio, and thereafter is subject to the conditions of warning, probation, and dismissal that govern all students (see Rules 3335-9-24 to 3335-9-28 of the Administrative Code).

Under the provisions of this rule a student, before graduation, must be re-enrolled for a minimum of 45 quarter credit hours and three academic quarters.

All courses ever taken at the University will be used in the calculation of the cumulative point-hour ratio required for the purposes of graduation with honors.

The Graduate School and graduate professional colleges may formulate appropriate modifications of this rule, subject to the approval of the Council on Academic Affairs, and shall publish the rule in their bulletins.

### **Failure in a Required Course (Rule 3335-7-27)**

An undergraduate or professional student who has not been dismissed from the University must repeat in a regularly scheduled class, at the first opportunity, a required course in which a mark of E has been received, unless an equivalent course is recommended and approved by the authorized representative of the dean or director of the enrollment unit.

A graduate student who has not been dismissed from the University must repeat in a regularly scheduled class a required course in which a mark of E has been received only if this is required by the student's adviser.

### **Freshman Forgiveness Rule (Rule 3335-7-271)**

(A) If a course in which an undergraduate student receives a grade of D+, D, or E, taken during the freshman year (the period during which the first forty-four credit hours are accumulated on the student's official permanent record) is repeated before the end of that student's sophomore year (when the student will have accumulated a total of eighty-nine credit hours), the original course credit and grade will be automatically excluded from the calculation of the student's cumulative point-hour ratio and deficiency points, but will remain on the student's official permanent record. This action will be subject to the following conditions:

1) If the grade in the original course was a D+ or D, a student may repeat the course for credit only upon the recommendation of the authorized representative of the dean, or director of the student's enrollment unit. Such recommendation must be obtained before noon of the third Saturday of the quarter in which the repeated course is taken.

2) The same course may be repeated only once under this rule.

3) This rule may be applied for a maximum of fifteen credit hours.

(B) The graduate school and graduate professional colleges may formulate appropriate modifications of paragraph (A) of this rule, subject to the approval of the council on academic affairs, and publish the rule in their bulletins.

### **Repetition of Courses (Rule 3335-7-28)**

Except as specified by Rule 3335-7-27 of the Administrative Code, undergraduate students who have received a mark of E or NP in a course at this university may repeat the course for credit at their option.

Undergraduate or professional students, as defined in Rule 3335-9-01 of the Administrative Code, who have received a mark of D+ or D in a course at this university may repeat the course for credit only upon the recommendation of the authorized representative of the dean or director of their enrollment unit.

Undergraduate or professional students, as defined in Rule 3335-9-01 of the Administrative Code, who have received a mark of A, A–, B+, B, B–, C+, C, C–, or PA in a course at this university or elsewhere may repeat the course only as auditors, in accordance with Rule 3335-7-29 of the Administrative Code.

A graduate student, as defined in Rule 3335-9-01 of the Administrative Code, may repeat for credit any course when approval is given by the student's adviser.

A student who has audited a course may subsequently repeat the course for credit only upon receiving permission of the authorized representative of the dean or director of the student's enrollment unit.

The credit hours for a repeated course shall in no case be counted more than once in meeting graduation requirements. When a student repeats a course, both grades appear on the student's record and both are used in computing the point-hour ratio, except as modified by Rule 3335-7-271 of the Administrative Code.

### **Admission to Courses as an Auditor (Rule 3335-7-29)**

An undergraduate or professional student may audit a course upon the approval of the professor in charge of the course and the dean of the college, or designee, in which the student is registered. (For repetition of courses, see Rule 3335-7-28 of the Administrative Code). A graduate student may audit a course upon the approval of the professor in charge of the course and the student's adviser.

### **Rescheduled Courses (Rule 3335-7-30)**

Each department or school is authorized to administer placement examinations to students enrolling for the first time in a course offered by that department or school. Following such placement examinations, a department or school may instruct the secretary of the college or school in which the student is registered to change such student's enrollment either to a more elementary or to a more advanced course.

If, within the first four weeks of a quarter, semester, or session, a student's previous preparation is demonstrably inadequate for a course in which the student originally enrolled, the department or school concerned is empowered to instruct the college or school in which that student is registered to remove the course from the student's schedule and to replace it with a more suitable one.

### **Credit for Rescheduled Courses (Rule 3335-7-31)**

Credit for all rescheduled courses resulting from action under Rule 3335-7-30 of the Administrative Code shall count toward the fulfillment of graduation requirements unless: the student has previously earned university or college credit in a course having substantially the same subject matter content; or the substituted course is one which the department or school, with the approval of the Council on Academic Affairs,

has established for students with inadequate preparation for college-level courses of that department or school.

### **Withdrawal from Courses or from the University (Rule 3335-7-32)**

Withdrawal from the University during a quarter, semester, or session, constitutes withdrawal from all courses in which a student is enrolled during that quarter, semester, or session. Upon official notification of the student's withdrawal from the University, the University registrar is authorized to enter the dated notation withdrew on the student's official permanent record.

To withdraw from any or all courses, a student must file the appropriate form with the authorized representative of the dean or director of the student's enrollment unit.

Until 5:00 p.m. of the third Friday of a quarter, semester, or session or the second Friday of a summer term, a student may withdraw from any or all courses which began in the same quarter, semester, session, or term and no record for the course(s) will be entered on the student's official permanent record.

After 5:00 p.m. of the third Friday of a quarter, semester, or session and until 5:00 p.m. of the seventh Friday of a quarter, semester, or session, if a student withdraws from any or all courses which began in the same quarter, semester, or session, the University registrar is authorized to enter the mark W on the student's official permanent record for the courses withdrawn.

After 5:00 p.m. of the seventh Friday of the quarter, semester, or session or the second Friday of a summer term, a student who, because of circumstances beyond his/her control, finds it necessary to withdraw from any or all courses, must file the appropriate petition with the authorized representative of the dean or director of the enrollment unit. Reasons not acceptable include (but are not limited to) the student's performance in the course(s), lack of preparation for the course(s), or dissatisfaction with the subject matter offered in the course(s). If the petition is approved, a copy will be filed with the University registrar who is then authorized to enter the mark W on the student's official permanent record and the instructor(s) of the course(s) will be so notified. If the petition is not approved, the student continues to be enrolled in the course(s) and a final mark must be submitted by the instructor(s). Withdrawal from any and all courses shall not be permitted after the last day of regularly scheduled classes except when the student experiences a genuine emergency after the regularly scheduled classes end and prior to sitting for the final examination in a given course or courses.

Withdrawal from any or all courses shall not be permitted after the final examination in that course has been given.

A student who stops attending a course (or courses) and does not officially withdraw from it (them) shall have the appropriate mark as submitted by the instructor entered on the student's official permanent record for the course(s). Such a mark shall be based on the grading criteria used to evaluate all students in the course.

Graduate professional colleges shall formulate rules to govern withdrawal of their students from courses in their respective curricula, subject to the approval of the Council on Academic Affairs, and publish these rules in their respective bulletins.

For provision regarding return of fees, when applicable, see Rule 3335-9-18 of the Administrative Code. *This information may also be found in the Master Schedule of Classes Bulletin.*

### Conditions for Disenrollment from a Course (Rule 3335-7-33)

(A) After consultation with the instructor, the chairperson of the instructor's department (or other appropriate administrative official) may disenroll a student from a course if:

1) After the third instructional day of the quarter, semester, session, or term, the first Friday of the quarter, or the student's second scheduled class session of the course, whichever occurs first, the student fails to attend the scheduled course without giving prior notification to the instructor. Under this paragraph, no student may be disenrolled from a course before that course has met. When the department elects to use this procedure, the chairperson (or other appropriate administrative official) shall notify the student's enrollment unit. The enrollment unit will notify the student and take appropriate action to remove the student from the course.

Since not all departments exercise the option to disenroll students in all courses, this rule does not relieve the student of the responsibility for dropping such a course the student is not attending.

2) The student enrolls to audit a course without the instructor's approval, or fails to meet the prerequisites of the course, or fails to demonstrate adequate preparation as provided in Rule 3335-7-30 of the Administrative Code. Disenrollment procedures shall be the same as in paragraph (A) (1) of this rule.

(B) After consultation with the instructor, students in the course, and the student in question, the chairperson (or other appropriate administrative official) may disenroll a student from a course if the student presents a clear and present threat of bodily harm or injury to the instructor or fellow students, or after warning continues to engage in disruptive conduct, either of which results in impairment of teaching or learning processes:

1) If, after attempting to resolve the difficulty by informal means, the department chairperson (or other appropriate administrative official) deems disenrollment necessary, the affected student shall be notified in writing. The notice shall be delivered by hand or sent through ordinary mail to the student at the last address supplied pursuant to Rule 3335-9-09 of the Administrative Code. Copies of the disenrollment action shall be sent to the dean of the instructional college, the dean of the student's college, the Office of the University Registrar, and the Office of Student Affairs.

2) The student may appeal to the vice president for academic affairs and provost or designee for waiver of disenrollment under paragraph (B) (2) of this rule, provided the appeal is filed within 10 days of the disenrollment action. The vice president for academic affairs and provost shall make final determination on the appeal within seven days.

3) Disenrollment is effective upon the action of the department chairperson (or other appropriate administrative official), unless reversed by the vice president for academic affairs and provost, or designee.

(C) For disenrollment, exclusive of audit under paragraphs (A) and (B) of this rule, the University registrar shall enter on the student's official permanent record:

1) No mark, if the disenrollment occurs before five p.m. of the third Friday of a quarter, semester, or session course, or the second Friday of a summer term course; or

2) The mark, W, if the disenrollment occurs after five p.m. of the third Friday of a quarter, semester, or session course, or the second Friday of a summer term course.

(D) If a student who has enrolled to audit a course fails to complete the requirements for audit specified by the instructor and also fails to withdraw from the course, the instructor shall so inform the Office of the University Registrar when marks are reported for the quarter, semester, or session. That office will then disenroll the student from the course, removing the course from the student's permanent record, and will notify the student and the student's college of the action taken.



## Admission

### Classification of Students for Admission (Rule 3335-9-01)

Students shall be classified as:

- Undergraduate students: regular or special. This shall include students registered in the colleges of Agriculture, Arts, Biological Sciences, Business, Home Economics, Humanities, Mathematical and Physical Sciences, Social and Behavioral Sciences, the University College, the division of pre-professional education of the College of Education, the pre-engineering division of the College of Engineering, and the division of Continuing Education.
- Graduate students: regular, special, graduate nondegree, conditional, or transient. The provisional classification is used in conjunction with the regular, special, and conditional classifications.
- Professional students: regular or special. This shall include students either regularly or specially registered in the colleges or divisions of a college which admit after completion of a pre-professional curriculum.
- Transient students. This shall include regular enrollees of other institutions who with the recommendation of their college authorities enter this university for a brief residence (usually one quarter, semester, session, or term) without transfer of credits.
- Auditors. This shall include persons who desire to attend classes without receiving credit for any courses taken.

## Improper Registration

### Improper Admission or Registration (Rule 3335-9-20)

Admission or registration may be cancelled by the Director of Admissions or the University Registrar in cases of improper registration or when false or incomplete information is provided on the application for admission, registration forms, or other official documents. No credits earned subsequent to such cancellation and prior to proper admission or registration shall be entered upon the permanent record of the student. Students whose admission or registration is cancelled are not entitled to any refund of fees.

## Absences

### Absences (Rule 3335-9-21)

Each department or school may make its own rules relative to occasional absences by students from scheduled activities. If, however, a student is absent from a course to such an extent as to imperil his credit, or is notably irregular in attendance, it shall be the duty of the instructor concerned to report the facts promptly to the dean of the college in which the student is enrolled. The dean may take such action as he deems appropriate.

## Warning and Dismissal

### Minimum Scholastic Requirements (Synopsis of Rule 3335-9-23)

The academic standards controlling warning, probation, and dismissal of professional and graduate students shall be established by rule of the faculties of the college in which the professional student is registered, or of the Graduate School if the student is a graduate student; provided, however, that an undergraduate professional student shall not be dismissed from the University unless the student has 15 or more deficiency points which are computed on the basis of the entire undergraduate program.

A transfer student from another university who is admitted to advanced standing in this University shall have the point-hour ratio and deficiency points computed only upon work done at this University.

In order to remain in good academic standing in the University, an undergraduate student must maintain a cumulative point-hour ratio of at least 2.00. Deficiency points are applied only to the record of students whose point-hour ratio is below 2.00 and are defined as the number of credit points students would have to earn to bring their point-hour ratio up to that level. Deficiency points may be calculated by subtracting the number of credit points earned from twice the total number of credit hours attempted for which calculable grades (A, A-, B+, B, B-, C+, C, C-, D+, D, or E) were given.

### **Academic Warning (Rule 3335-9-24)**

Any student who has never attended another college or university and who seeks to enroll as a new freshman in this university shall be placed on special warning when his application for admission is received and processed if his academic credentials indicate the probability of low achievement. He shall be so informed before final registration and the payment of fees are completed, except as provided in Rule 3335-9-27 of the Administrative Code. The fact that special warning has been given shall be made known to the office of the college or school to which he seeks admission.

If, at the end of any quarter, a student subject to the provisions of Rule 3335-9-23 of the Administrative Code has accumulated fewer than 15 deficiency points, he shall receive a warning from the dean of his college or director of his school, except as provided in Rule 3335-9-27 of the Administrative Code.

### **Academic Probation (Rule 3335-9-25)**

Any student who has accumulated 15 or more deficiency points shall be placed on probation. The probation shall continue provided the student's college considers the student's progress to be satisfactory and shall be removed when the deficiency points are fewer than 15. The student shall be notified of probationary status by the dean of the college or the director of the school in which the student is registered, except as provided in Rule 3335-9-27 of the Administrative Code. Such notification shall include a clear statement of what shall be considered to be satisfactory progress.

Probation by special action. If at any time the preparation, progress, or success of a student in an academic program is determined to be unsatisfactory, the college or school in which the student is registered shall be empowered to place the student on academic probation. An undergraduate student admitted with conditions and who has not satisfied the conditions after earning 30 quarter credit hours through regular course enrollment at this university shall be placed on academic probation.

Requirements and definition. In order to remain in good standing in the University a student must maintain a point-hour ratio (see Rule 3335-7-26 of the Administrative Code), of at least 2.00. Deficiency points are applied only to the records of students whose point-hour ratio is below 2.00 and are defined as the number of credit points a student would have to earn to bring the student's point-hour ratio up to that level. Deficiency points may be calculated by subtracting the total number of credit points earned from twice the total number of credit hours attempted for which calculable grades (A, A-, B+, B, B-, C+, C, C-, D+, D, or E) were given.

### **Academic Dismissal (Rule 3335-9-26)**

If the student's college or school considers a student's progress as unsatisfactory in meeting the conditions placed on his probation, the college or school shall be empowered to dismiss him from the University. An exception to this authority for undergraduate professional students shall be in accordance with paragraph (A) of Rule 3335-9-23 of the Administrative Code. Notice of the dismissal shall be sent to the student by the dean of the college or the director of the school in which the student was registered for the quarter, except as provided in Rule 3335-9-27 of the Administrative Code. No student shall be subject to academic dismissal unless he is currently on probation.

### **Notice of Dismissal (Rule 3335-9-27)**

Notice of dismissal from the University shall be sent by the dean of the college in which the dismissed student is registered.

### **Reinstatement after Academic Dismissal (Rule 3335-9-28)**

Any student who may be reinstated by a college or school following academic dismissal shall be subject to such special requirements as may be determined appropriate by the dean of the college or director of the school. If the performance record of any reinstated student does not meet the conditions of probation specified at the time of reinstatement, then the college or school in which he is registered shall determine whether the student is to be dismissed or continued on probation.

## Conditional/Unconditional Admission

For unconditional admission as an undergraduate student, applicants who graduate from high school on or after April 1, 1984, and transfer students with less than 45 transferable hours are required to have at least 15 high school college preparatory units distributed as follows: English-four units; Mathematics-three units; Social Sciences-two units; Natural Sciences-two units; Foreign Language-two units; visual or Performing Arts-one unit; and one additional unit from any of the above-mentioned subject areas. At the time students are notified of admission, they are also notified of any deficiencies. Academic advisors are available to help plan course work to remove conditions and answer any questions.

Admission conditions are satisfied by earning college credits in the subject areas of deficiency. Such credits may be earned by satisfactory completion of courses at Ohio State, by satisfactory completion of equivalent course work at other colleges, or by examination for credit. Admission conditions must be satisfied within the first 30 credit hours earned at Ohio State. Credit hours used to remove admission conditions are not counted toward the minimum number of credit hours required for graduation.

Ohio State courses which may be used to fulfill admission conditions in the foreign languages, the natural sciences, the social sciences, and the visual and performing arts are indicated in the following lists. For specific course descriptions, please see the course offerings listing in this book.

### Foreign Languages

Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 (including the decimal subdivisions such as 101.51, etc.) and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.

Completion of 102 or equivalent or placement into 103 is required to fulfill foreign language conditions. Not all of the following languages are offered each quarter.

Arabic	Modern Greek
Bulgarian	Persian
Chinese	Polish
Czech	Portuguese
French	Romanian
German	Russian
Greek	Serbo-Croatian
Hebrew	Spanish
Hungarian	Swahili
Italian	Swedish
Japanese	Turkish
Korean	Ukrainian
Latin	Yiddish

## Natural Sciences

In addition to the courses listed below, any course approved for meeting the natural sciences component of the Basic Education Requirements may be used to fulfill admission conditions.

Agronomy 200, 240  
 Anthropology 200  
 Astronomy 150, 155, 161, 162, 191, 192  
 Biochemistry 105, 211, 251  
 Biology 107, 108, 110, 113, 114, H115, H116  
 Botany 112, 201, 202, 210, 313  
 Chemistry 101, 102, 121, 122, H201, H202  
 Entomology 200, 361  
 Geography 220  
 Geology and Mineralogy 100, 106, 121, 122, 203, 204, 206, 210  
 Microbiology 301, 509  
 Molecular Genetics 140, 201  
 Pharmacy 200, 270  
 Physics 100.01, 100.02, 101, 102, 111, 112, 131, 132  
 Zoology 201, 220, 232, 235, 313

## Social Sciences

In addition to the courses listed below, any course approved for meeting the social sciences component of the Basic Education Requirements may be used to fulfill admission conditions.

Agricultural Economics 100, 110, H199  
 Anthropology 201, 202  
 Black Studies 130.01, 161, 222, 247, 248, 261, 281, 282, 284  
 Business Administration: Management and Human Resources 211  
 Communication 115  
 Economics 100, 200, 206  
 Family Resource Management 260, 261  
 Geography 200, 240  
 History 111, 112, 131, 132, 151, 152, 201, 203, 205, 207, 211, 212, 215, 220, 222, 225, 231, 233, 235, 237, 239, 250, 251, 252, 253, 254, 257, 258, 263, 265, 266, 268, 270, 272, 281, 285, 286, 290, 295  
 Journalism 101  
 Landscape Architecture 201  
 Natural Resources 101, 103, 201  
 Political Science 101, 105, 165, 201, 202, 210, 215  
 Psychology 100, 101, 210, 230, 300  
 Recreation Education 200  
 Rural Sociology 105, 110  
 Social Work 220  
 Sociology 101, 202, 208, 209, 210  
 Textiles and Clothing 272  
 Women Studies 202

## Visual and Performing Arts

Architecture 200, 201, 202  
 Art 170, 172, 180, 182, 190, 231, 240, 242, 290  
 Art Education 160, 250  
 Black Studies 180, 244, 270, 271, 272, 278

Chinese 283  
 Communication 105, 110  
 Dance 200  
 Engineering Graphics 110, 121, 122, 141, 142  
 History of Art 111, 121, 210, 211, 212, 216  
 Industrial Design 160  
 Landscape Architecture 200, 202, 203, 204, 271  
 Music 101.01, 101.02, 102.01, 102.02, 141, 150,  
 180, 181, 182, 183, 184, 185, 186, 188.01,  
 188.02, 188.03, 188.04, 191, 195, 196.01,  
 196.02, 196.03, 196.04, 197, 198, 199.01,  
 199.02, 199.03, 199.04, 199.05, 199.06,  
 199.07, 199.08, 199.10, 199.11, 244  
 Photography and Cinema 201, 220  
 Physical Education 153, 163.01, 163.02, 163.03,  
 163.04, 163.05, 181.01, 181.02  
 Speech and Hearing Science 135  
 Textiles and Clothing 270  
 Theatre 100, 200, 205, 210, 220, 221, 222, 271,  
 280

## Curricular information

### College or School Requirements

Each college or school has certain requirements which must be met by every student seeking to earn a degree in that college or school. The specific course requirements for the curricula administered by a given college or school can be found in the bulletin for that college or school. In addition to these, the University has established certain requirements outlined below.

### University Required Courses

#### Curricular Requirements (Free Electives) (Rule 3335-7-06)

Every undergraduate curriculum must provide for a minimum of 15 hours of free electives.

#### Basic Education Requirements (BER) (Rule 3335-7-07)

Every undergraduate student must complete 45 hours selected to ensure acquaintance with the three basic areas of academic study: the humanities, the social sciences, and the natural sciences. A minimum of 15 hours is required in each of the three areas.

Courses which may be used to meet the BER are so designated throughout this bulletin. Not all BER courses are acceptable in all curricula. Students should consult their specific college or school publications or their advisers before scheduling courses to be applied to this requirement.

The objectives of this part of the curriculum, as set forth by the University faculty, are as follows.

**Humanities** The objectives are to introduce students to their possibilities for continuing growth as a thoughtful and reasoning persons, sensitive to the aspirations and attainments of others; to acquaint them to at least some degree with the treasures of human thought and expression at their command; and to develop a continuing desire to have their full share of the legacy of all creative efforts.

**Natural Sciences** The objectives are to acquaint students with the kinds of problems which lend themselves to possible solutions through the use of science; to introduce them to different scientific techniques through significant illustrative experiences; to give them a sense of perspective in the development of science; and to develop in them an understanding of the basic community of all scientific disciplines.

**Social Sciences** The objectives are to ensure that the student has a basic understanding of the fundamental ideas upon which our society has been built, the social institutions through which these ideas have been given effective meaning, and the never-ending process of development through free choices limited only by concern for the rights and well-being of others. Emphasis is put upon the values of a free society and the responsibility of the individual for participating actively in the issues and decisions of the day.

### University Class Ranking System

Student rank in all the undergraduate colleges is based on total credit hours completed and recorded.

Class Standing	Credit Hours Earned	Rank
Freshman	0 through 44	1
Sophomore	45 through 89	2
Junior	90 through 134	3
Senior	135 and up	4

Rank begins anew when the student enrolls in Dentistry, Law, Medicine, Optometry, Pharmacy, Veterinary Medicine, or the Agricultural Technical Institute.

Students enrolled in the Graduate School receive the rank of either M-Master's (0-50 earned hours) or P-PhD (51 or more earned hours or master's degree).

Should there be any doubt concerning the correctness of one's rank, the student should consult with the appropriate enrollment unit.

### Retroactive Graduate Credit

Students registered in an undergraduate college, in Continuing Education, or in a professional college cannot receive graduate credit for courses taken when the student is not enrolled in the Graduate School.

## Graduate Credit for Undergraduates

An undergraduate may petition to take certain courses for graduate credit provided that:

- the student is a senior;
- the credit for the course is not used to meet baccalaureate degree requirements;
- the student's cumulative point-hour ratio is 3.00 or above;
- the student completes a Senior Petition form and secures permission by the end of the first day of classes from: the secretary of the student's college or school, the instructor in charge of the course, and the Graduate School; and
- the course is offered for graduate credit.

These courses may not be counted toward a graduate degree until the student has been admitted to the Graduate School, and until the Graduate Studies Committee accepts them and notifies the Graduate School. The hours are counted in the student's graduate earned and cumulative credit hours, and the grades are counted in the student's graduate cumulative point-hour ratio. Not more than 15 graduate credit hours may be completed under the Senior Petition.

## Degrees and Certificates (Rule 3335-9-29)

Degrees and certificates shall be awarded undergraduate and professional students by the Board of Trustees upon recommendation of the college or school faculties and the University Senate, transmitted to the Board by the President.

Degrees and certificates shall be awarded graduate students by the Board of Trustees upon recommendation of the Council on Research and Graduate Studies and the University Senate, transmitted to the Board by the President. (See Rule 3335-5-35 of the Administrative Code.)

## Requirements for the Associate of Arts Degree

To obtain the Associate of Arts degree, undergraduate students who have attended, or are attending, the Lima, Mansfield, Marion, or Newark campuses must:

- Successfully complete at least 90 quarter credit hours of university credit.

These 90 hours of credit may include a maximum of 12 quarter hours of technical special credit. Remedial courses (English 050, 051, 060, 100.01, 100.02, and 100.03; Math 040, 050, 052, 053, 075, 076, 100, 102, and 104 and courses listed in the *Course Offerings Bulletin* as

not counting toward the baccalaureate degree) may not be applied.

Credit hours earned to satisfy admission conditions are not counted toward the minimum 90 hours required.

Repeated courses shall be counted only once.

Level III or R placement on the Ohio State Math Placement Exam or the completion of Math 075 or 076 or 102 or above (excluding Math 180) is required.

- Successfully complete a core of 50 hours of requirements (with no overlap between areas) distributed as follows: English 110 or 111 (5), humanities (10-15), foreign language (0-10), social science (10-15), natural science (10-15), and analytical skills/mathematics (0-10).

Courses used to satisfy the humanities, social science, and natural science components must be chosen from the list of courses approved as University Basic Education Requirements. Similarly, courses used to satisfy the analytical/mathematics skills component must be chosen from the list of courses approved for Category II of the Liberal Arts Requirements of the Colleges of the Arts and Sciences, plus Mathematics 105 and 106. If a student should decide to pursue a baccalaureate degree after obtaining the Associate of Arts degree, the student would be required to fulfill the Basic Education Requirements of the degree-granting enrollment unit. In accordance with Faculty Rule 3335-7-21, the Pass/Non-Pass Option may not be used for any of the core courses.

- Maintain a cumulative point-hour ratio of at least 2.00 on all work attempted at Ohio State at the time of, or after the completion of, all other requirements.
- Complete 30 of the last 45 quarter credit hours through regular course enrollment at Ohio State.
- Complete 15 of the required 90 quarter credit hours on a regional campus.
- Complete a minimum of three quarter credit hours in regular course enrollment at Ohio State Summer Quarter 1980 or thereafter.
- Not have received a baccalaureate or a professional degree from an accredited institution.
- Have filed an application for the degree in accordance with rules and procedures prescribed by the Colleges of the Arts and Sciences. Application must be made within four years after the requirements have been completed, assuming no other degrees have been awarded in the interim.



## Requirements for an Undergraduate Baccalaureate Degree (Rule 3335-9-30)

To obtain an undergraduate baccalaureate degree from this University, an undergraduate student must:

(A) Have earned a minimum of 45 quarter hours credit through regular course enrollment at this University.

(B) Have been enrolled in the college, the Colleges of the Arts and Sciences, or the school recommending that degree during the last quarter necessary to complete degree requirements. The executive committee of the college, the Colleges of the Arts and Sciences, or the school recommending the degree may, on petition by the student, waive this requirement.

(C) Have satisfactorily completed the number of credit hours required for the curriculum being pursued. The minimum number of credit hours required in each curriculum shall include the credit hours required under Rules 3335-7-06 and 3335-7-07 of the Administrative Code. Credit hours required to satisfy admission conditions shall not be used to satisfy the requirements of Rules 3335-7-06 and 3335-7-07 of the Administrative Code. Credit hours are considered as "satisfactorily completed" only if the student has received, at this university the mark A, A-, B+, B, B-, C+, C, C-, D+, D, EM, K, PA, or S in those hours (see Rule 3335-7-21 of the Administrative Code).

(D) Have earned credit points (see Rule 3335-7-25 of the Administrative Code) totaling at least twice the number of credit hours attempted at this university for which calculable grades (A, A-, B+, B, B-, C+, C, C-, D+, D, or E) were given.

(E) Have satisfactorily met all additional college and curricular requirements for the degree involved.

(F) Have filed an application for the degree in accordance with rules prescribed by the college or school.

(G) Except for paragraph (B) of this rule, waiver of any part of this rule in the case of individual students may be made only by the Council on Academic Affairs following prior approval by the appropriate executive committee. The vice president for academic affairs and provost shall transmit all affirmative actions of the Council on Academic Affairs under this paragraph to the secretary of the student's college and to the University registrar for notation on the student's permanent record.

## Requirements for a Graduate Degree (Rule 3335-9-31)

To obtain a graduate degree from this university, a graduate student must have met the minimum requirements established by the Council on Research and Graduate Studies and approved by the Board of Trustees, and have filed an application for the degree in accordance with rules prescribed by the Council on Research and Graduate Studies.

## Requirements for a Professional Degree (Rule 3335-9-32)

To obtain a professional degree from this university, a student must meet the minimum requirements established by the college or school recommending the degree. In establishing such minimum requirements, the college or school shall include or exceed the minimum requirements stipulated by the appropriate accrediting body. Such graduation requirements shall be subject to approval by the Council on Academic Affairs and shall be filed with the secretary of the Board of Trustees.

Waiver of minimum requirements may be made by the faculty of the college or school recommending the degree or by a committee approved by that faculty. Requests for such waiver may be initiated by student petition or by the dean or director. The Council on Academic Affairs shall be notified at least quarterly of each such action.

## Requirements for Certificate of Study (Rule 3335-9-321)

A certificate of study may be awarded concurrent with or following the student's receipt of a baccalaureate degree. Award of such certificates shall attest to demonstrated competence in a coherent academic curriculum, program or area of study.

To obtain a certificate a student must:

- Have been or be enrolled in the University during the last quarter of work necessary to complete the certificate requirement. In addition, the student must meet any residency requirement established by the college, the Colleges of the Arts and Sciences, or the school recommending the certificate.
- Have earned through regular course enrollment a minimum of 45 quarter hours credit in an approved certificate program. No certificate program shall require enrollment in and credit for more than 90 quarter hours. At least one-third of all quarter hours credit earned in a certificate program shall be at the 500-level or above. No more than five credit hours in the certificate program may be counted toward the student's undergraduate major or minor. Credit hours used to fulfill the requirements for one certificate may not be counted toward any other certificate.

- Have earned the mark of A, A–, B+, B, B–, C+, C, or C– for all courses counted toward the completion of the certificate requirements.
- Have attained an undergraduate cumulative grade point average of 2.00 (or a graduate cumulative grade point average of 3.00, as appropriate) in courses used to satisfy the certificate program requirements.
- Have satisfactorily met all additional college or school requirements for the certificate involved.
- Have filed an application for the certificate in accordance with rules prescribed by the college, Colleges of the Arts and Sciences, or school.

Waiver of any part of this rule in the case of individual students may be made only by the Council on Academic Affairs upon recommendation of the executive committee of the college, colleges, or school. The vice president for academic affairs and provost shall transmit all affirmative actions of the Council under this section to the secretary of the student's enrollment unit and to the University registrar for notation on the student's permanent record.

The Colleges of Dentistry, Law, Medicine, Optometry, and Veterinary Medicine, and the Graduate School may establish requirements and conditions, rather than those above, for certificates of study. Such requirements must be approved by the Council on Academic Affairs.

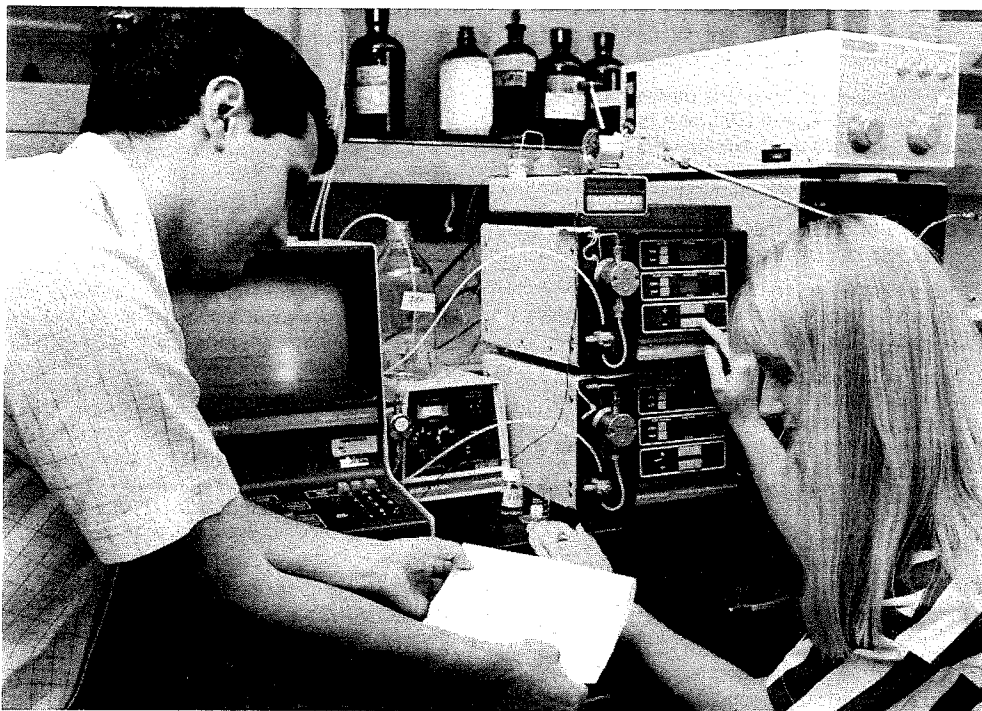
Authority for approval of all certificate programs shall rest with the Council on Academic Affairs. Proposals for graduate certificates must also receive the approval of the Council on Research and Graduate Studies. The president of the University and the University Senate shall be regularly informed of Council actions in this regard.

### Standards for Honors at Graduation (Rule 3335-9-33)

Degrees *cum laude* and *summa cum laude* may be granted for exceptional achievement in the curriculum of each enrollment unit as judged by that unit in terms of its own standards providing that the number of students accorded these honors does not exceed 10 percent, and that the number of students accorded *summa cum laude* does not exceed three per cent, of the graduating classes of the enrollment unit and that eligibility for these honors be based on a minimum of 90 credit hours of work at this university.

Standards for graduation "with distinction in [special subject(s)]" and "with honors in [ ]" shall be as adopted by the Council on Academic Affairs.

Beyond these minimal requirements the enrollment units may establish additional stipulations for graduation *cum laude* and *summa cum laude*.



## Course Offerings

Course information (title, credit hours, level, description, etc.) starts on page 21. The most current information regarding new courses, changes to existing courses, credit hours, sections, days, times, buildings, room, and instructors may be found in the quarterly *Master Schedule of Classes Bulletin*.

### A Sample Course Listing

#### A 444†\* Principles of Animal Nutrition U 5

#### B A study of fundamental principles of nutrition in mammals and birds.

Su (1st term), Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. H444 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Chem 102 or 122 and Math 148 or equiv. Not open to students with credit for Animal Sc 444 or Pltry Sc 444. Open only to majors in animal nutrition. Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable. Cross listed in Animal Science and Poultry Science. BER course.

#### D 444.01 Principles of Animal Nutrition I 444.02 Principles of Animal Nutrition II

## Explanation of a Course Listing

### A 444†\* Principles of Animal Nutrition U 5

Course number: 444

A dagger (†) denotes that the course will not be offered this year. An asterisk (\*) indicates that the course is offered every other year.

Course title: Principles of Animal Nutrition

Instructional Level: U

U = Undergraduate

UG = Advanced undergraduate and graduate

G = Graduate

P = Professional

Credit hours: 5

#### B A study of fundamental principles of nutrition in mammals and birds.

Course description: A study of fundamental principles of nutrition in mammals and birds.

C Su (1st term), Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. H444 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Chem 102 or 122 and Math 148 or equiv. Not open to students with credit for Animal Sc 444 or Ptry Sc 444. Open only to majors in animal nutrition. Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable. Cross-listed in Animal Science and Poultry Science. BER course.

Quarters of offering: Su (1st term), Au, Wi, Sp

Su = Summer

Au = Autumn

Wi = Winter

Sp = Spring

Classroom and laboratory hours: 4 cl, 1 2-hr lab.

Course credit is earned through satisfactory completion of course work which may involve classroom, laboratory, bio-learning center, computer-assisted instruction, or field trip attendance.

Honors statement: H444 (honors) may be available to students enrolled in an honors program or by permission of dept.

Prerequisite(s): Chem 102 or 122 and Math 148 or equiv.

The course number(s) or other information indicates the preparation or classification required to enroll in the course. If no department name is listed, the number(s) refers to the specific course within the same department. If a class standing (freshmen, sophomore, junior, senior) or rank (1st, 2nd, 3rd, 4th yr standing) is listed, only students with that or higher level are eligible for enrollment. Enrollment in a course requires the successful completion of all prerequisites or their equivalents. The department, school, or college office should be consulted in cases of question of eligibility to take a course.

#### Additional information affecting

enrollment: Not open to students with credit for Animl Sc or Ptry Sci 444. Open only to majors in animal nutrition.

Repeatability clause: Repeatable to a maximum of 10 cr hrs; subdivisions not repeatable.

Indicates the maximum number of hours a course may be repeated for credit.

General information clause: Cross-listed in Animal Science and Poultry Science (meaning this same course is also listed in these two academic areas).

Gives general information about the course.

BER Courses: Courses which may be used to meet the University's Basic Education Requirement (BER) are so designated throughout this bulletin. Not all BER courses are acceptable in all curricula. Students should consult their specific college or school publications or their advisers before scheduling courses to be applied to this requirement.

FL, NS, SS, and VPA Admis Cond Courses: Courses which may be used to fulfill admission conditions are so designated throughout this bulletin. For additional information, see pages 12-13.

#### D 444.01 Principles of Animal Nutrition I 444.02 Principles of Animal Nutrition II

Decimal subdivisions:

444.01 Principles of Animal Nutrition I

444.02 Principles of Animal Nutrition II

The decimal numbers are subdivisions of the generic number (444). These subdivisions may also carry the information described in A, B, and C. When registering for a course with decimals, the desired subdivision must be used rather than the generic number.

## University Classification and Course Numbering System (See Rule 3335-7-05)

Established 1967-68 (revised 1974-75), the system of numbering courses offered by the University is as follows:

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**000-099** Non-credit courses (except certain seminars and colloquia) for orientation, remedial, or other noncollege-level experiences. These are courses with credit added to graduation requirements.

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**100-199** Basic courses providing undergraduate credit, but not to be counted on a major or field of specialization in any department. Courses at this level are beginning courses, required or elective courses that may be prerequisite to other courses.

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**200-299** Basic courses providing undergraduate credit and may be counted on a major or field of specialization.

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**300-499** Intermediate courses providing undergraduate or basic professional credit that may be counted on a major or field of specialization.

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**500-599\*** Intermediate courses providing undergraduate or professional credit that may be counted on a major or field of specialization, and may provide graduate credit only in other departments.

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**600-699\*** Courses providing undergraduate or professional credit that may be counted on a major or field of specialization, and may provide graduate credit (in all departments).

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**700-799\*** Advanced courses providing undergraduate, graduate, or professional credit.

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**800-999\*** Courses providing graduate credit and are open to undergraduates only with the consent of the dean of the Graduate School.

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\* Courses for which graduate credit is anticipated must be taught by a member of the faculty approved by the graduate committee of the department offering the course. 800- and 900-level courses must be taught by members of the graduate faculty.





# Accounting and Management Information Systems

407 Hagerty Hall, 1775 College Road, 292-9368

## 201 Outline of Accounting U 5

Introduction to accounting in modern business; topics include financial statement development, interpretation, and analysis in various decision-making contexts.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 211 or equiv. Intended for students whose major is in fields other than business.

## 211 Introduction to Accounting U 5

The uses of accounting reports for business entities; focus on the uses of accounting for external reporting, emphasizing accounting as a provider of financial information.

Su, Au, Wi, Sp Qtrs. 5 cl. H211 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq or concur: Econ 200 or equiv. Not open to students with credit for 201 or equiv. This course is available for EM credit.

## 212 Introduction to Accounting U 5

The uses of accounting reports in management decisions and in control of business operations; focus is on the internal use of accounting information.

Su, Au, Wi, Sp Qtrs. 5 cl. H212 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 211 or equiv; and Econ 200 or equiv. Not open to students with credit for 201 or equiv. This course is available for EM credit.

## 493 Individual Studies U 1-10

Individual study projects in selected areas in accounting and management information systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

## 494 Group Studies U 1-10

Group study projects in selected areas in accounting and management information systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs.

## H519 Honors Managerial Accounting U 5

Cost measurement and estimation in the context of product costing systems; performance evaluation systems, managerial decision problems, and the special problems of nonprofit entities.

Sp Qtr. 5 cl. Prereq: H212 or permission of instructor.

## H520 Honors Financial Accounting U 5

Principles and procedures of accounting for the assets, liabilities, and shareholder equity of an incorporated business.

Au Qtr. 5 cl. Prereq: H519. Not open to students with credit for 521, 522, 523, or H523.

## 521 Financial Accounting I U G 3

Introduction to financial accounting theory and techniques for professionals; emphasis on determination of income in accordance with generally accepted accounting principles.

Su, Au, Sp Qtrs. 3 cl. Prereq: 212.

## 522 Financial Accounting II U G 3

Application of accounting techniques and theory to recording and reporting of financial data; emphasis on collection, summarization, and reporting of data in accordance with generally accepted accounting principles.

Su, Au, Wi Qtrs. 3 cl. Prereq: 521.

## 523 Financial Accounting III U G 3

Principles and procedures of accounting for the assets, liabilities, and shareholder equity of an incorporated business.

Wi, Sp Qtrs. 3 cl. Prereq: 522.

## 525 Cost Accounting U G 5

Basic concepts and techniques of industrial accounting; historical and standard costs; budgeting; management use of cost accounting information.

Su, Au, Wi, Sp Qtrs. 5 cl. H525 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 521; or 212 and Math 134 or 152.

## 531 Introduction to Accounting Information Systems U G 5

The design and control of computer based accounting information processing systems.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H531 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 212 and Cptr/Inf 211. Not open to students with credit for 532.

## 532 Foundations of Business Information Systems U G 5

Technical foundation in computer based business information processing.

Au, Sp Qtrs. 2 2-hr cl. H532 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 212 and Cptr/Inf 212. Not open to students with credit for 531.

## 535 Advanced Cost Accounting U G 4

Advanced study of selected applications of cost accounting concepts to management problems involving performance measure with emphasis on budgetary control and standard costing.

Sp Qtr. 4 cl. Prereq: 525 or equiv.

## 624 Advanced Accounting U G 4

A continuation of 523 with special emphasis on business combinations, foreign currency transactions and statement translation, and governmental and not-for-profit accounting.

Su, Au, Wi, Sp Qtrs. 4 cl. H624 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 523 or equiv.

## 625 Management Consulting U G 4

Examination of the consulting engagement, firm, and profession; emphasis on the formal, professional consulting arena.

Wi Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

## 626 Tax Accounting I U G 4

Fundamentals of federal, state, and local taxation, with major emphasis upon the federal income tax provisions having common application to all types of taxpayers.

Su, Au, Wi, Sp Qtrs. 4 cl. H626 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 521 or equiv.

## 627 Auditing Principles and Procedures U G 4

Basic concepts and standards of auditing; audit procedures and working papers; internal and external audit reports.

Su, Au, Wi, Sp Qtrs. 4 cl. H627 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: 523 or equiv.

## 628† Accounting Practice U G 4

A study of the accounting concepts and standards underlying corporate and non-corporate financial statements, including consideration of typical accounting problems.

Sp Qtr. 4 cl. Prereq: Sr standing.

## 636† Tax Accounting II U G 3

Advanced study of complex problem areas in taxation confronting the professional tax adviser, emphasizing the structure of tax provisions and opportunities for planning and control.

3 cl. Prereq: 522 and 626 or equiv.

## 646 Tax Research Seminar U G 3

Case studies requiring an in-depth examination of the tax aspects of situations frequently encountered by businesses and individuals.

Sp Qtr. 3 cl. Prereq: 626 and permission of instructor.

**651 Analysis and Design of Management Information Systems U G 4**

Investigation and application, through real-world projects, of concepts and tools used in the analysis and design of management information systems.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Cptr/Inf 516. Cptr/Inf 516 is a required course for a BSBA degree majoring in Information Systems.

**653 Business Data Communications U G 4**

Study of technological, economic, and organizational issues concerning computer based networks for business data communications.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: Jr or sr standing as Info Sys major in BUS.

**655 Management of Office Information Systems U G 4**

Surveys concepts and technologies for modeling, developing, and managing office information systems to enhance office efficiency and productivity.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 531, 532, or Cptr/Inf 570.

**693 Individual Studies U G 2-5**

Individual study projects in selected areas of accounting and management information systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Group study projects in selected areas of accounting and management information systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**711 Financial Accounting U G 4**

A survey of the principles and methods by which financial information about an organization is prepared and disseminated primarily for external users; analysis and interpretation of financial data.

Au, Sp Qtrs. 2 or 3 cl. Prereq: Grad standing or permission of Office of Graduate Business Programs. Not open to students in revised MBA Program.

**811 Management Accounting G 3**

An examination of the use of accounting information in managing an organization; cost determination and analysis; economic decision-making business planning and control over operations and property.

2 1¼-hr cl. Prereq: 711 or equiv. Not open to grad students in accounting.

**823 Managerial Accounting for Decision Making G 4**

Cost systems with emphasis on the appropriate application of system outputs to management decisions.

Wi Qtr. 2 2-hr cl. Prereq: 811 or MBA 801 or permission of instructor.

**824 Corporate Financial Reporting G 4**

An examination of major aspects of corporate financial reporting by management under generally accepted accounting principles including coverage of disclosures required for traded securities, tax aspects of mergers and acquisitions, auditing of business financial reports, and impacts of financial reporting on managerial behavior, financial analysis, and auditing.

Au Qtr. 2 2-hr cl. Prereq: 811 or MBA 801 or permission of instructor.

**827 Management Control Systems G 4**

Aspects of organizations impacting the design, implementation, and revision of management control systems for private and public enterprises including discussion of responsibility centers, transfer pricing, planning, budgetary reporting, incentive compensation, operational auditing, and the impact of taxation on decision making.

Sp Qtr. 2 2-hr cl. Prereq: 811 or MBA 801 or permission of instructor.

**831 Accounting Systems G 3**

The principles underlying the design and installation of accounting systems.

Wi Qtr. 3 cl. Prereq: 811 or written permission of instructor.

**844† Financial Accounting Theory G 3**

Intensive study of theories of income measurement and asset valuation.

Au Qtr. 2 1½-hr cl. Prereq: 524 or written permission of instructor.

**845 Controllership G 3**

The accounting executive's role in the management of an enterprise; accounting data for planning, coordination, control, and protection.

Sp Qtr. 3 cl. Prereq: 811 or written permission of instructor.

**852 Governmental and Non-Profit Accounting G 3**

The application of accounting principles to governments and other not-for-profit entities; problems relating to funds, appropriations, and budgetary controls.

Sp Qtr. 3 cl. Prereq: 711 or equiv or permission of instructor.

**861 Seminar in Accounting G 3**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.

**894 Group Studies G 1-5**

Group study projects in selected areas of accounting and management information systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**998 Research in Accounting: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Accounting: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Aeronautical and Astronautical Engineering

328 Civil and Aeronautical Engineering Building, 2036 Neil Avenue Mall, 292-2691

**200 Elements of Aeronautics and Astronautics U 4**

An introduction to the aerodynamics, propulsion, structural design, stability, and control of flight vehicles; emphasis on the mechanics of fluids.

Au, Wi Qtrs. 3 cl, 1 2-hr lab. Prereq or concur: Math 152, Physics 131, and a minimum cumulative pt-hr ratio of 2.00. This course is available for EM credit.

**201 Elements of Aeronautics and Astronautics U 4**

A continuation of 200 with emphasis on aircraft propulsion and flight performance.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 200 and a minimum cumulative pt-hr ratio of 2.00. This course is available for EM credit.

**202 Elements of Aeronautics and Astronautics U 4**

Introduction to astronautics.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 201 and a minimum cumulative pt-hr ratio of 2.00. This course is available for EM credit.

**416 Design of Flight Vehicles U 3**

Continued design work on vehicle developed in 515.

Sp Qtr. 3 2-hr labs. Prereq: 515.

**505 Thermodynamics U G 4**

Introduction to the properties and behavior of aerodynamic fluids from microscopic and macroscopic points of view.

Au Qtr. 4 cl. Prereq: 201, Math 415, and En Graph 200 or equiv.

**510 Aeronautical Laboratory U 4**

Laboratory demonstrations and experiments in aerodynamics, aeroelasticity, propulsion, and structures of flight vehicles.

Au, Sp Qtrs. 2 cl, 2 3-hr labs. Prereq: 540; concur 550.

**515 Preliminary Design of Flight Vehicles U 4**

Wi, Sp Qtrs. 2 cl, 2 3-hr labs. Prereq: 520, 550, and 560.

**520 Flight Vehicle Dynamics U G 4**

Introduction to the concept of dynamic stability and to the dynamics of rigid aircraft and satellite vehicles.

Au, Sp Qtrs. 4 cl. Prereq: 202, 580, and Eng Mech 415.

**530 One-Dimensional Gasdynamics U G 4**

One dimensional compressible flow including chemical reactions.

Wi Qtr. 4 cl. Prereq: 505.

**539 Flight Vehicle Structures I U G 4**

Load distributions, temperature distributions, and allowable stresses for flight vehicle structures; derivations of basic equations for analysis of flight vehicle structural components.

Au Qtr. 4 cl. Prereq: 202, Eng Mech 420, and Math 415.

**540 Flight Vehicle Structures II U G 4**

Stress analysis of flight vehicle structures.

Wi Qtr. 4 cl. Prereq: 539 and concur: 580 and En Graph 200 or equiv.

**541 Structural Design of Flight Vehicle Components U G 4**

Design of joints; tension, bending, shear, and compression members; diagonal tension field beams, box beams, and pressure structures.

Wi, Sp Qtrs. 2 cl, 2 3-hr labs. Prereq: 540.

**550 Principles of Flight Vehicle Propulsion U G 4**

Functional characteristics and performance of rocket, ramjet, turbojet, turbo propeller, pulse jet, and hybrid engines.

Sp Qtr. 4 cl. Prereq: 530.

**560 Classical Aerodynamics U G 4**

Fundamentals of steady incompressible, non-viscous aerodynamic flows with applications to airfoils and finite wings.

Sp Qtr. 4 cl. Prereq: 530.

**561 Compressible Aerodynamics U G 4**

The fundamentals of the aerodynamics of compressible fluids.

Au Qtr. 4 cl. Prereq: 530, 560, and 580.

**570 Viscous Flow and Heat Transfer U G 4**

Fundamentals of viscous flow, laminar and turbulent boundary layers, aerodynamic heating, effects of body forces and elements of radiative transfer.

Au Qtr. 4 cl. Prereq: 530.

**580 Mathematical Methods in Aeronautical and Astronautical Engineering U G 4**

Application of selected topics in mathematics to analysis in the field of aeronautical and astronautical engineering.

Wi Qtr. 4 cl. Prereq: En Graph 200 or equiv, and Math 415 and 416.

**612 Aircraft Flight Test Engineering U G 4**

A determination of the performance, stability, controllability, and handling qualities of general aviation aircraft through flight tests.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 520 and 560, or equivalents with permission of instructor.

**615 Introduction to Computational Aerodynamics U G 4**

Introduction to computational methods used in aerodynamic flow problems; applications to airfoil analysis and design.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 560 and En Graph 200, or equivalents.

**620 Aircraft and Spacecraft Automatic Control Systems I U G 4**

Control theory as applied to analysis and design of flight control systems; components of automatic flight control systems.

Wi Qtr. 4 cl. Prereq: 520, 540, and Elec Eng 500.

**625 Aircraft and Spacecraft Automatic Control Systems II U G 4**

Control theory as applied to analysis and design of control systems for complex flight structures; interaction between structural flexibility and control systems.

Sp Qtr. 4 cl. Prereq: 620.

**665 Dynamic Meteorology I U G 5**

Fundamental treatment of basic topics in the dynamics and thermodynamics of atmospheric motion.

Wi Qtr. 5 cl. Prereq: 505 and Math 415 or Atmos Sc 631. Not open to students with credit for 765 or Atmos Sc 637.

**693 Individual Studies in Advanced Aeronautical and Astronautical Engineering U G 2-10**

Special studies in aeronautical and astronautical engineering in one or more areas, including aircraft structures, aerodynamics, propulsion, flutter and vibration, and stability and control.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept.

Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies in Aeronautical and Astronautical Engineering U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: written permission of dept.

Repeatable to a maximum of 15 cr hrs.

**720 Stability and Control of Flight Vehicles U G 4**

Modern methods of system response analysis, root-locus analysis, and Liapunov stability analysis.

Sp Qtr. 4 cl. Prereq: 520.

**725 Analytical Dynamics of Astronautics U G 4**

Satellite orbit analysis and multi-staging of rockets.

Sp Qtr. 4 cl. Prereq: 520 or Eng Mech 415 or equiv with written permission of instructor.

**745 Aeroelasticity I U G 4**

Dynamic loads analysis of elastic flight vehicles subjected to unsteady airloads.

Wi Qtr. 4 cl. Prereq: 540 and 560.

**751 Advanced Propulsion U G 4**

Characteristics and performance of air breathing flight vehicle power plants and their components (inlets, turbo-machinery, combustors, and expansion nozzles).

Au Qtr. 4 cl. Prereq: 550.

**760 Advanced Compressible Flow U G 4**

Two-dimensional supersonic flow theories.

Wi Qtr. 4 cl. Prereq: 561 or equiv.

**761 Advanced Aerodynamics U G 4**

Predictions of pressure distributions, forces, and moments of lifting configurations.

Sp Qtr. 4 cl. Prereq: 760.

**771 Aerodynamics of Viscous Compressible Flows U G 4**

Analysis of laminar and turbulent boundary layers in high speed flows.

Wi Qtr. 4 cl. Prereq: 570.

**775 Hypersonic Flows I U G 4**

Introduction to the analysis of inviscid hypersonic flow fields.  
Wi Qtr. 4 cl. Prereq: 561.

**800 Theory of Deformation and Flow G 4**

General treatment of the basic principles underlying the mechanics of deformable media from both macroscopic and microscopic points of view.  
Wi Qtr. 4 cl. Prereq: 540, 560, and 570 or equiv. Required of all first yr grad students.

**802\* Analytical Methods in Engineering I G 4**

Advanced methods for solution of partial differential equations with applications to fluid dynamics and heat transfer; topics include Green's function, method of characteristics, and asymptotic solutions.  
Sp Qtr. 4 cl. Prereq: 560 and 580; or equivs.

**803 Analytical Methods in Engineering II G 3**

Continuation of 802 with emphasis on the solution of singular perturbation problems as they arise in fluid mechanics.  
Au Qtr. 3 cl. Prereq: 802.

**805 Aerodynamics of Chemically Reacting Fluids G 3**

The aerodynamics of one-dimensional compressible flow with chemical reactions and wave propagation.  
Au Qtr. 3 cl. Prereq: 505 or equiv.

**810 Flight Vehicle Performance Analysis G 3**

Analysis of flight vehicle performance in planetary atmospheres. Gregorek and Lee.  
Au Qtr. 3 cl. Prereq: 550 and 761.

**820 Advanced Flight Vehicle Stability and Control G 3**

Advanced studies in stability of systems, non-linear systems, Liapunov method, dynamics in extra-terrestrial atmospheres, new control methods. Oz.  
Au Qtr. 3 cl. Prereq: 720.

**842 Advanced Structures for Flight Vehicles G 3**

Advanced analysis and design of aircraft structures and/or structural components including thermal, inelastic, and buckling effects. Sarigul.  
Au, Wi, Sp Qtrs. 3 cl. Prereq: 540 or equiv. Repeatable to a maximum of 9 cr hrs.

**850 Non-Equilibrium Flow Dynamics G 3**

Relaxation, dissociation, waves (sound, shock) nozzle flow and design collisional energy transfer in gases. Edse.  
Au Qtr. 3 cl. Prereq: 530 or equiv.

**851 Advanced Propulsion Problems G 3**

Combustion instability, free radicals as energy source, space propulsion problems, noise of exhaust jets, energy conversion, solid propellants, heat transfer in rocket engines, and cascade theory. Edse.  
Au, Wi, Sp Qtrs. 3 cl. Prereq: 751. Repeatable to a maximum of 9 cr hrs.

**860 Advanced High Speed Aerodynamics G 3**

Supersonic and hypersonic aerodynamics, unsteady aerodynamics, transonic flows, transient wave phenomena, non-equilibrium gasdynamics. Bragg and Lee.  
Au, Wi, Sp Qtrs. 3 cl. Prereq: 761. Repeatable to a maximum of 9 cr hrs.

**861 Advanced Boundary Layer and Heat Transfer Theory G 4**

Advanced topics in the areas of boundary layer and heat transfer phenomena. Foster and Lee.  
Wi, Sp Qtrs. 4 cl. Prereq: 771 and 800; or permission of instructor. Repeatable to a maximum of 8 cr hrs.

**865 Advanced Viscous Flow Theory G 4**

Three-dimensional viscous flow at low and high Reynolds number; stability theory; statistical theories of turbulence. Foster and Lee.  
Au Qtr. 4 cl. Prereq: 771 and 800.

**868 Molecular Theory of Gas Flows G 3**

Molecular theory of flow from the viewpoint of the Boltzmann equation. Edse and Lee.  
Sp Qtr. 3 cl. Prereq: 505 and 800 or equiv.

**873\* Computational Fluid Dynamics G 4**

Advanced numerical methods for solving Navier-Stokes equations as well as equations for inviscid and boundary layer flows. Bodonyi, Herbert, and Scott.  
Sp Qtr. 4 cl. Prereq: 615 or Mech Eng 707. Not open to students with credit for Mech Eng 811. Cross-listed with Mechanical Engineering 811.

**880 Seminar G 1**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 15 cr hrs. Required of all grad students in aero eng.

**889 Advanced Topics in Aeronautical and Astronautical Engineering G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs.

**894 Group Studies in Aeronautical and Astronautical Engineering G 1-15**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**999 Research in Aeronautical and Astronautical Engineering G Arr**

Research for thesis or dissertation purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Agricultural Communications

208 Agricultural Administration Building, 2120 Fyffe Road,  
292-6671

**190 Introduction to Agricultural Communications U 1**

Acquaints beginning agricultural communications students with the field; emphasis upon career opportunities, skills needed, and working professionals. Paulson.

Au Qtr. 1 cl. Limited to freshmen, sophomores, and transfer students.

**400 Writing for the Agricultural Media U 2**

Experience in writing, editing, design, photography, and other processes involved in the production of the *Agri-Naturalist*. Agunga.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Journal 202. Repeatable to a maximum of 6 cr hrs.

**489 Agricultural Communications Internship U 2-5**

Coordinated and supervised experience in agricultural communications including reporting, writing, editing, photography, graphics, broadcasting, advertising, and public relations. Paulson.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Journal 202 and permission of instructor. Limited to majors in agricultural communications. Repeatable to a maximum of 10 cr hrs. A final written report and an evaluation from the supervisor must be submitted to the instructor. This course is graded S/U.

**590 Senior Seminar in Agricultural Communications U 5**

An in-depth analysis of the agricultural media, including its history, current trends, challenges, problems, effects, and contributions. Agunga.

Wi Qtr. 5 1-hr cl. Prereq: Sr standing or completion of a minimum of 15 cr hrs toward the major.

**593 Individual Studies U 1-5**

Students plan, conduct, and report on a special problem in agricultural communications not included in regular course work. Agunga and Paulson.

Au, Wi, Sp Qtrs. Arr. Prereq: 2.50 cum pt-hr ratio and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**H683 Honors Project U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr H590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H694. This course is graded S/U.

## Agricultural Economics

103 Agricultural Administration Building, 2120 Fyffe Road,  
292-7911

**100 Food, Fiber, and Natural Resource Economics U 5**

Economic principles applied to production, marketing, and consumption of food, fiber products, and related goods and services; implications for agricultural community, and natural resource management. Adams, Forster, Gerlow, Himes, and Southgate.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for H199 or Econ 200. This course is available for EM credit. BER course. SS Admis Cond course.

**110 Socio-Economic Systems in Rural America U 5**

A study of our rural socio-economic systems, the individual's interaction within these systems, and the impact of societal decisions on resource use and control. Lobao and Stout.

Wi, Sp Qtrs. 5 cl. Not open to students with credit for Rurl Soc 110. Cross-listed in Rural Sociology. SS Admis Cond course.

**H199 Agricultural Economics in a Changing World U 5**

A study of basic economic principles as applied to agricultural production, consumption, and marketing problems in a changing world. Adams and Southgate.

Wi, Sp Qtrs. 5 cl. Prereq: Enrollment in an honors program or eligibility for enrollment with permission of instructor. Not open to students with credit for 100 or Econ 200. BER course. SS Admis Cond course.

**250 Computers in Agricultural Decisions U 5**

Survey of computing systems fundamentals and the principal computer languages used as aids in decision-making in agriculture. Fishel, Jones, and Miranda.

Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab/discussions. Prereq: 2nd yr standing. This course is available for EM credit.

**310 Management of Agricultural Firms U 5**

Organization and operation of farm and agribusiness firms; economic and management principles in decision making; financial statements, budgeting, firm organization and operation, and financial and labor management.

5 cl. Prereq: 100 or equiv.

**310.01 Farm Management**

Batte, Erven, and Forster.

Au, Wi, Sp Qtrs. Not open to students with credit for 310.02 or 410.

**310.02 Agribusiness Firm Management**

Himes and Rhodus.

Au, Sp Qtrs. Not open to students with credit for 310.01 or 540.

**320 Marketing in Agricultural Industries U 5**

Organization and performance of agricultural markets in product pricing, equating demand and supply, and in performing marketing functions with food, feed, and fiber products. Gerlow, Larson, and Stout.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100.

**412 Farm Records and Analysis U 5**

Nature and need for farm business records and analysis and interpretation of essential records from farm manager viewpoint; their use in income tax reporting. Erven.

Au, Sp Qtrs. 2 2-hr cl, 1 2-hr lab. Prereq: 250, 310.01 or 310.02, and Acct&MIS 201 or 211 or equiv. Not open to students with credit for 312.

**416 Agricultural Finance U 4**

Financial management of farms and small agribusiness firms; sources of capital, credit institutions, leasing, capital budgeting, leverage, legal aspects, insurance, and financial markets. Lines and Meyer.

Wi, Sp Qtrs. Prereq: Stat 125 or 133 or Econ 442 and Agr Econ 412 or Acctg 212 and Agr Econ 310.01 or 310.02 or equiv.

**418 Farm Appraisal U 3**

Farm real estate appraisal with emphasis on methods, procedures, and reporting; factors influencing land value and fluctuation in land prices. Wessel.

Sp Qtr. 3 cl, 3 3-hr field trips during qtr. Prereq: 310.01 or 310.02 or equiv.

**420 Agricultural Commodity Prices U 3**

Characteristics of agricultural prices; price movements and patterns; basic data series; elasticity matrices; introduction to price analysis; technical charting and microcomputer application. Irwin.

Wi Qtr. Prereq: Math 131 and Stat 125.

**426 Marketing Dairy Products U 3**

A study of the principles of assembling, transporting, selling, pricing, distribution, marketing costs, and margin for dairy products. Jacobson.

Au Qtr. 3 cl. Prereq: 100. Offered in cooperation with Dairy Science.

**450 Computer Applications in Agribusiness Management U 4**

A study of existing computer software available to managers and applications of this tool to analyze current agribusiness problems. Batte and Fishel.

Wi, Sp Qtrs. 2 2-hr cl, 2 lab hrs arr. Prereq: 310.01 or 310.02 and 250 or Cptr/Inf 211 and Stat 125 or 133 or Econ 442.

**489 Internship in Agricultural Economics U 3-5**

Supervised experience with an approved firm or organization; written comprehensive report required.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of major adviser. Repeatable to a maximum of 10 cr hrs. Open only to dept majors.

**521 Salesmanship in Agriculture U 4**

Principles and techniques of successful selling and commodity merchandising in agricultural industries; emphasis on process of selling to agribusiness buyers and agricultural buyer behavior. Himes.

Au Qtr. 3 cl, 1 2-hr lab/discussion. Prereq: 320 and completion of at least 2 of the required communications courses or permission of instructor.

**522 Economics of the Livestock-Meat Industry U G 3**

Principles and practices involved in marketing livestock and meat; institutions and agencies concerned in pricing and product flows; industry organization and performance, public regulation; future trends. Stout.

Wi Qtr. 3 cl. Prereq: 320. Offered in cooperation with Animal Science.

**523 Grain Marketing U G 3**

Principles and practices involved in grain and feed marketing and the theory of grain pricing; economics of grain marketing. Larson.

Au Qtr. 3 cl.

**528 Marketing Fruits and Vegetables U G 3**

Principles involved in the marketing of fresh and processed fruits and vegetables and the institutions and agencies concerned in pricing and product flows from producer to consumer. Jones.

Sp Qtr. 3 cl, 1 2-day field trip.

**530 Agricultural Policy U G 5**

Characteristics and problems of agriculture; description and analysis of programs and policies designed to assist agriculture and alternative proposals for the future. Zulauf.

Wi, Sp Qtrs. 5 cl. H530 (honors) may be available to students enrolled in an honors program or by written permission of dept. Not open to jrs.

**531 Environmental and Natural Resources Economics U G 5**

Economic analysis of private and public decisions regarding interactions with the natural environment. Southgate.

Au, Sp Qtrs. 5 cl. Offered in cooperation with Natural Resources.

**532 Development of Rural Economic Systems U G 3**

Comparison and analysis of systems, problems, and methods of transforming rural structures in less developed and developed countries; implications of international issues for rural development. Meyer.

Wi Qtr. 3 cl.

**534 Food and Fiber Economics U G 3**

Economic factors affecting domestic and international specialization in food and fiber production and consumption and consequent interregional trade patterns. Gerlow and Hushak.

Sp Qtr. 3 cl.

**541 Agricultural Cooperatives U G 5**

Basic principles of cooperatives including types of organizations, legal aspects, membership relations, financing, organizational and intercooperative problems, and distribution of savings. Jacobson.

Au, Sp Qtrs. 5 cl.

**591 Workshop U G 3**

Study of selected current topics in agricultural economics for teachers of vocational agriculture and extension agents.

Su Qtr. 4 2-hr cl. At least 5 cr hrs of previous course work in agr econ or the equiv. Repeatable to a maximum of 12 cr hrs; decimal subdivisions not repeatable.

**591.02 Agricultural Marketing****591.03 Financial Management in Agriculture****595 Seminar in Agricultural Economics U 1**

Analysis of social and economic problems encountered by college graduates in a dynamic world. Himes and Hitzhusen.

Sp Qtr. 1 2-hr cl. Prereq: Sr standing

**610 Farm Organization U G 5**

Detailed application of production economics, management principles, and decision making techniques to the organization, operation, and administration of farms; farm plans developed. Batte and Lines.

Au Qtr. 5 cl and field trips during qtr. Prereq: 416 and 450.

**620 Agri-Industry Organization and Public Policy U G 4**

Structure, conduct, performance, and public policy in agricultural industries; extensive use of analytical evidence focused on agricultural co-ops, food manufacturing, and food retailing. Stout.

Sp Qtr. 2 2-hr cl. Prereq: 320 and 20 additional cr hrs in the social sciences.

**622 Applied Agricultural Price Analysis U G 3**

Regression, correlaton, and time series applied to analysis of agricultural commodity prices. Thraen.

Sp Qtr. 3 cl. Prereq: 420 and Stat 133.

**625 Agricultural Futures and Options Markets U G 5**

Addresses the economic function and price formation value of agricultural futures and options markets. Irwin and Zulauf.

Wi Qtr. 5 cl. 416 or Finance 620, Stat 125 or equiv, Econ 400, Sr standing or above; or permission of instructor.

**640 Strategy in Agribusiness U G 5**

Analysis of important management problems confronting agricultural marketing and farm supply firms, including interpreting and responding to industry and socio-economic trends and change forces. Hahn and Taylor.

Au Qtr. 2 2-hr cl. Prereq: 320 and 416 or equiv, and 450.

**670 Agricultural Law U G 5**

Legal concerns of owning and/or managing farm and agribusiness firms as related to property ownership, finance, business organization, labor, insurance, family, and estate planning.

Sp Qtr. 5 cl. Prereq: 412 or equiv and 416 and Bus-Fin 510 or permission of instructor.

**H683 Honors Project U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr 590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**693 Individual Studies U G 2-5**

Planning, conducting, and reporting a special problem in agricultural economics.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions. These courses are graded S/U.

**693.01 Agribusiness Management and Finance****693.02 Agricultural Marketing and Policy****693.03 Foreign Agricultural Development****693.04 Quantitative Methods in Agricultural Economics****693.05 Resource Economics****693.06 General Agricultural Economics****693.07 Consumption and Demand****694 Group Studies U G 2-5**

Selected topics in agricultural economics to acquaint students with current economic conditions.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 credit hours.

**694.01 Agricultural Management and Finance****694.02 Agricultural Marketing and Policy****694.03 Foreign Agricultural Development****694.04 Quantitative Methods in Agricultural Economics****694.06 General Agricultural Economics****694.07 Consumption and Demand****695 Farm and Agribusiness Management Seminar U G 2**

Topics in farm and agribusiness management selected to reflect emerging problem areas and opportunities for application of analytical tools developed in previous courses.

Wi, Sp Qtrs. 1 2-hr cl. Prereq: 610 or 640 or 670 or permission of instructor. Repeatable to a maximum of 4 cr hrs.

**703 Economics of Consumption U G 4**

Applications of economic theory to consumption analysis, and consumer behavior in making choices in the market place.

Au Qtr. 2 2-hr cl. Prereq: Econ 501 or 705 or equiv.

**705 Economics of Agricultural Production U G 3**

A critical consideration of economic principles as they apply to production problems in agriculture. Forster.

Wi Qtr. 2 1½-hr cl. Prereq: Economics 501 or 705. Not open to students with credit for 805.

**716 Advanced Agricultural Finance U G 3**

Capital budgeting; trade credit management; inventory models; resource control and financial analysis with applications in farm and agribusiness firms. Batte and Schnitkey.

Sp Qtr. 2 2-hr cl. Prereq: 416 or Bus-Fin 620.

**734 Agricultural Trade Policy U G 4**

Institutions, policies, and economic theory of global agricultural trade; agricultural trade in international context of commodity program and macroeconomic policies. Tweeten.

Su Qtr. 2 2-hr cl. Prereq: Econ 501 and 502 or equiv.

**800 Research Methods in Agricultural Economics G 3**

Principles of scientific method in agricultural economics. Randall.

Sp Qtr. 2 1½-hr cl. Prereq: Econ 705, 5 cr hrs math, and 4 cr hrs stat.

**801 Applied Methods in Agricultural Economics Modeling G 4**

Application of statistics to problems in agricultural economics. Hushak and Thraen.

Au Qtr. 2 2-hr cl. Prereq: Econ 741.

**802 Quantitative Methods in Agricultural Economics G 4**

Applications of analytical models to problems in agricultural economics research. Miranda.

Wi Qtr. 2 2-hr cl. Prereq: 800, Econ 741, and Math 634.

**803 Applied Demand Analysis: Food and Agricultural Markets G 4**

Application of demand and consumption theory to the estimation of demand relationships and demand systems in agricultural and natural resource markets. Chern.

Wi Qtr. 2 2-hr cl. Prereq: 801 and Econ 808.

**806 Economics of Agricultural Production G 4**

A further consideration of economic principles as they apply to production problems in agriculture. Hushak and Thraen.

Au Qtr. 2 2-hr cl. Prereq: 705 and Econ 808.

**807 Project Evaluation for Public Choice G 5**

The theory of public choice, cost-benefit analysis, and income distribution assessment applied to evaluation of public investment in agricultural natural resource and rural development projects. Hitzhusen.

Sp Qtr. 4 cl. Prereq: Econ 705.

**809 Applied Welfare Economics and Policy Analysis G 4**

Application of welfare economic theory and methods of problems of agriculture and natural resources. Randall.

Sp Qtr. 2 2-hr cl. Prereq: 803, 806, and Econ 808.

**810 Agricultural Firm Management G 3**

Examination of the operating and strategy problems confronting the managers of farm and nonfarm agribusiness firms, with emphasis on applying and integrating management concepts. Erven.

Au Qtr. 2 1½-hr cl. Prereq: Econ 705 and permission of instructor.

**820 Marketing Economics in Agriculture G 3**

A critical study of contemporary problems in agricultural marketing in the U.S. and world economics with emphasis on the theoretical and policy implications. Jones and Larson.

Au Qtr. 3 cl. Prereq: 620 and Econ 705 and 706.

**830 Agricultural Policy G 4**

Examination of values of American society concerning agriculture, reasons for these values, and alternatives for achieving various goals for U.S. agriculture. Tweeten.

Su Qtr. 4 cl. Prereq: 320 or 420; 530 and Econ 805 and 806.

**831 Resource Economics G 3**

Application of economic theory and decision-making frameworks to current issues of resource use, allocation, and control. Randall.

Wi Qtr. 3 cl. Prereq: Econ 705 and 706.

**832 Seminar in Economic Development of Foreign Agriculture G 3**

Characteristic problems of developing countries, identification and analysis of limiting factors in underdevelopment, and techniques for stimulating economic development through growth in agriculture. Graham.

Sp Qtr. Prereq: Econ 705. Repeatable to a maximum of 8 cr hrs.

**993 Individual Studies G 2-5**

Planning, conducting, and reporting a special problem in agricultural economics fitting the needs of the student, under the guidance of an instructor.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions. These courses are graded S/U.

**993.01 Agricultural Management and Finance****993.02 Agricultural Marketing and Policy****993.03 Foreign Agricultural Development****993.04 Quantitative Methods in Agricultural Economics****993.05 Resource Economics****993.06 General Agricultural Economics****993.07 Consumption and Demand****995 Seminar G 2-4**

Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**999 Research in Agricultural Economics G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Agricultural Education

208 Agricultural Administration Building, 2120 Fyffe Road,  
292-6321

**100 Vocational and Extension Education in Agriculture U 1**

Importance and purpose of agricultural education with emphasis on vocational programs, program component functions, and the professional roles of personnel. Cano and Newcomb.

Au, Wi, Sp Qtrs. 1 cl. This course is available for EM credit.

**280 Experience in Agricultural Education U 1-5**

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 380. Repeatable to a maximum of 15 cr hrs. These courses are graded S/U. Supervised field experience in:

**280.01 Teaching Agriculture in the Public Schools**

Participation in professional activities relating to programs and methods in teaching vocational agriculture.

Application is required one qtr prior to enrollment. Supervised field experience. This course is graded S/U.

**280.02 Cooperative Extension**

Participation in professional experiences involving cooperative extension programs. Smith.

Prereq: Written permission of coordinator of field experience.

**280.03 Other Agricultural Education Programs**

Participation in programmed experience in agricultural education other than teaching vocational agriculture and cooperative extension.

**280.04 Agricultural Occupations**

Participation in agricultural employment experiences.

Open only to dept majors. Repeatable to a maximum of 10 cr hrs.

**290 Communication of Agricultural Concepts U 3**

Procedures and practice in developing, interpreting, and communicating agricultural and natural resources concepts with emphasis upon the use of visual materials and effective presentation. Paulson.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: English 110.

**294 Group Studies U 1-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**342 Leadership Development in Agriculture U 3**

Designed to develop an understanding of leadership with particular emphasis on theory and practice relative to effective functioning as leaders in an agricultural or agriculturally related setting. Smith.

Sp Qtr. 3 cl.

**343 Youth Programs in the Cooperative Extension Service U 1**

An overview of 4-H and youth work with the Cooperative Extension Service, and how it is developed and administered. Clark.

Wi Qtr. 1 cl. Prereq: 100. 280.01 or 280.02 recommended prior to enrollment.

**344 FFA in the Instructional Program U 1**

An analysis of the FFA organization with emphasis on using the FFA as a teaching tool. Cano.

Sp Qtr. 1 cl. Prereq: 100. 280.01 or 280.02 recommended prior to enrollment.

**420 Program Development in Cooperative Extension U 3**

Principles and procedures in developing extension programs in agriculture and home economics, with emphasis on program determination, teaching methods, and relationships with other groups. Rohrer.

Au Qtr. 3 cl.

**440 Supervised Occupational Experience Programs U 1**

Principles and procedures used in selecting, planning, conducting, and evaluating supervised occupational experience programs for vocational agriculture. Henderson.

Au, Sp Qtrs. 1 cl. Prereq: 100. 280.01 or 280.02 recommended prior to enrollment.

**530 Methods of Teaching in Vocational Agriculture and Extension Education U 3**

Examining the learning process with emphasis on planning for instruction, and the use of appropriate methods for teaching in vocational agriculture and extension education. Cano and Newcomb.

Au, Sp Qtrs. 3 cl, 2 lab hrs. Prereq: 100 and 280.01 or 280.02. Not open to students with credit for 330.

**531 Laboratory Teaching U 1**

Principles and practices in the design, delivery, and evaluation of learning in a vocational agriculture laboratory. Gliem.

Sp Qtr. 1 cl. Prereq: 100 and 280.01 or 280.02; prefer concur: 530. Not open to students with credit for 530 prior to Au Qtr 1986.

**532†\* Methods of Teaching and Communicating in Extension U 1**

Exploration of the principles of teaching and learning as related to Extension and the methods of communication, especially as related to adults in the Extension setting. Smith.

Sp Qtr. 1 cl. Prereq: 100 and 280.01 or 280.02; prefer concur: 530.

**533 Adult Education in Vocational Agriculture U 1**

Importance, purpose, organization, and conduct of programs for out-of-school groups in agriculture through public schools. Budke.

Au Qtr. 1 cl. Prereq: 100 and 280.01 or 280.02; prefer concur: 530.

**575 Teaching Vocational Agriculture**

Development of basic cognitive and performance skills required to earn a one-year certificate to teach vocational agriculture.

Su Qtr. Prereq: Eligibility to apply for a vocational agriculture teaching certificate. Repeatable to a maximum of 12 cr hrs; decimal subdivisions not repeatable. Cross-listed with Educational Policy and Leadership and Home Economics Education. These courses are graded S/U.

**575.01 Pre-Service Program U 8**

Orientation to vocational agriculture with emphasis upon purposes and content of such programs in teaching high school and adult students.

8 hrs per day, 20 days.

**575.05 Follow-Up Program U 4**

Orientation to vocational agriculture with emphasis upon purposes and content of such programs in teaching high school and adult students.

8 hrs per day, 10 days. Prereq: 575.01.

**580 Student Teaching in Agriculture U 15**

Supervised participation in teaching and other professional responsibilities of teachers of agriculture including clinical analysis in conferences and seminars. Hedges.

Au, Wi Qtrs. Prereq: 530. Application required 2 qtrs prior to enrollment.

**585 Instructional Program Planning for Vocational Agriculture U 2**

Principles and procedures used in planning and conducting programs of vocational agriculture. Henderson.

Sp Qtr. 2 cl. Prereq: 530.

**622 Continuing Education in Agriculture U G 3**

Principles and practices involved in developing vocational, technical, and extension programs for out-of-school youth and adults. Budke.

Sp Qtr. 1 2½-hr cl.

**631 Methods in Teaching Agriculture U G 3**

Theory, principles, and procedures associated with effective instruction in agriculture at the secondary, technical, and college levels. Barrick, Newcomb, and Warmbrod.

Su (1st term), Wi Qtrs. 1 2½-hr cl.

**640 Instructional Media in Teaching Agriculture U G 3**

Theory and practice in developing and using instructional media and equipment at the secondary, technical, and college levels. Hedges.

Wi Qtr. 1 2½-hr cl.

**641 Occupational Experience in Agricultural Education U G 3**

Principles and procedures used in selecting, planning, conducting, and evaluating occupational experience programs for students. Barrick.

Su Qtr. 1 2½-hr cl.

**642 Youth Organizations U G 3**

An analysis of youth organizations in vocational and extension education with emphasis on planning and conducting such programs. Clark and Newcomb.

Su, Sp Qtrs. 1 2½-hr cl.

**643 Youth Program Management in Non-School Settings U G 3**

Principles, theories, and practices involved in conducting, supervising, and managing a youth program. Clark.

Wi Qtr. 3 cl.

**H683 Honors Projects U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr H590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.



**684 Internship in Agricultural Education U G 1-15**

Guided participation to further enhance professional and/or technical competency in selected areas.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**684.10 Internship in Agricultural Education: Teaching Agriculture in Public Schools**

Prereq: 580

**684.20 Cooperative Extension Education**

Prereq: 530 and 532 or equiv.

**684.30 Technical**

Prereq: 581, 582, and 583.

**684.40 Specialized Agriculture**

**693 Individual Studies U G 1-5**

Planning, conducting, and reporting a special study appropriate to the needs of the student.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**741 Practicum in Managing Student Teaching in Agricultural Education U G 3**

Principles and practices in the design, conduct, and evaluation of student teaching programs in agricultural education. Hedges.

Su Qtr. 1 2½-hr cl. Prereq: Teaching or extension experience and permission of instructor.

**743 Practicum in Teaching Agricultural Mechanics U G 3**

Selection and use of subject matter, resources, and methods of teaching agricultural mechanics. Gliem.

Sp Qtr. 1 4-hr cl. Prereq: 580 or teaching experience.

**770 Evaluation U G 3**

Evaluation principles and procedures used in developing vocational, technical, and extension programs. McCaslin and Van Tilburg.

Sp Qtr. 2 1½-hr cl.

**790 Workshop in Agricultural Education U G 1-5**

Intensive study of selected areas of agricultural education with emphasis on the application of principles and methods in attaining desired objectives.

Su, Au, Wi, Sp Qtrs. Minimum of 3 wks. Prereq: Teaching or extension experience. Repeatable to a maximum of 12 cr hrs.

**795 Seminar U G 1-3**

1- or 2-hr cl. Prereq: Written permission of instructor. A maximum of 15 cr hrs may be earned with not more than 6 hours in any one decimal subdivision.

**795.01 Contemporary Problems**

Au, Wi, Sp Qtrs. This course is graded S/U.

**795.02 Problems and Issues**

Wi Qtr.

**795.04 Program Development**

Au Qtr.

**795.05 Research and Evaluation**

Au Qtr. 2 hr cl. This course is graded S/U.

**810 Principles of Vocational-Technical Education G 3**

An analysis of evolving concepts of vocational and technical education with emphasis upon principles underlying organizations and practice. Adams and McCracken.

Wi Qtr. 1 3-hr cl.

**811 Administration and Supervision G 3**

Principles in developing and administering programs in extension education with attention to federal-state-local relationships, in-service education, and supervisory procedures. Rohrer.

Sp Qtr. 1 2½-hr cl.

**812 Teacher Education G 3**

Principles and methods of teacher education in agriculture including selection and guidance of students, curriculum, field experience, placement, in-service education, and research. Cano and Newcomb.

Au Qtr. 1 2½-hr cl.

**821 Administrative Practices in Vocational Education G 3**

A study of the concepts of vocational education program administration, including management skills, policy development, staff management, finance, and program evaluation. Adams.

Su, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for 811 or Ed-Votec 821. Cross-listed in Education: Vocational-Technical.

**823 Program Planning and Development G 3**

Principles, theory, and practice in developing state and local programs of extension education. Smith.

Wi Qtr. 1 2 ½-hr cl.

**830 Supervision of Instruction in Vocational Education G 3**

A study of the concepts of vocational education supervision including leadership styles, improving instruction, and program and personal evaluation. Barrick.

Su, Wi Qtrs. 1 2 ½-hr cl. Not open to students with credit for Ed-Votec 830. Cross-listed in Education: Vocational-Technical.

**833 Vocational Education Program Planning G 3**

A study of the planning, development, management, and evaluation of instructional systems and vocational education programs. McCracken and Henderson.

Sp Qtr. 1 2 ½-hr cl. Not open to students with credit for 823 or Ed-Votec 833. Cross-listed in Education: Vocational-Technical.

**885 Research Methods G 3**

Principles and techniques of research appropriate for planning, conducting, and reporting research in vocational, technical, and extension education. L. Miller.

Su (1st term), 5 cl; Au, Wi, Sp Qtrs, 1 3-hr cl.

**886 Research Design G 3**

Development of effective design for research problems in vocational, technical, and extension education, including theory, models, and sampling. McCracken.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 885 or equiv.

**887 Analysis and Interpretation of Data G 3**

Application and interpretation of descriptive and inferential statistics for research in vocational-technical and extension education, including the use of the computer. Barrick and Warmbrod.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: 886 or equiv.

**888 Instrumentation and Procedures for Data Collection G 3**

Selection, development, and analysis of various types of instruments and procedures for collecting research data. Van Tilburg.

Su, Wi Qtrs. 2 1½-hr cl. Prereq: 885 or equiv.

**889 Advanced Studies G 3**

Individual field study in partial fulfillment of needs for research experience.

Su, Au, Wi, Sp Qtrs. Prereq: 885. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

**995 Seminar in Research G 1-3**

Further development and direction of individual studies and programs of research. McCracken and Warmbrod.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 886. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Agricultural Engineering

200 Agricultural Engineering Building, 590 Woody Hayes Drive,  
292-9338

## General Prerequisites for Courses Numbered 200

*Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.*

### 223 Introduction to Agricultural Engineering U 2

Principles of engineering measurements, analysis and design with emphasis on both physical and biological concepts of importance in agricultural production and processing. Lamp.

Au Qtr. 1 cl, 1 3-hr lab, up to 2 full-day field trips. Prereq: Soph standing in agri eng.

### 294 Group Studies U 1-5

Basic studies in agricultural engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

## General Prerequisites for Courses Numbered 300 and 400

*Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.*

### 334 Biometeorology of Plant and Animal Systems U 3

Study of the micro- and macro-environmental variables in nature as they relate to engineering of plant and animal production systems. Stombaugh.

Wi Qtr. 3 cl. Prereq: Soph standing in agri eng.

### 431 Electrical Power Systems for Agriculture U 3

Design and specification of systems and components essential for the distribution of electrical power and for the control of electrical systems for agricultural production units.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 433.

### 433 Analysis of Elementary Biological-Physical Systems U 3

Mathematical model formulation and analysis techniques developed and applied to elementary biological and physical systems.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: Math 255 and Eng Mech 410; or equivs.

### 489 Professional Practice U 2

Preparation and submission of a comprehensive report, based on a pre-assigned outline, of actual co-op employment in industry. Lamp.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to Co-Op Program in agri eng. Repeatable to a maximum of 10 cr hrs. Open only to dept majors.

## General Prerequisites for Courses Numbered 500

*Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.*

### 535 Utilization of Energy in Agriculture U G 4

Study of motive and stationary power needs of agriculture, mechanics of traction, characteristics of power sources, morphology of off-the-road vehicle design. Carpenter.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 433 and Mech Eng 501.

### 543 Engineering Soil-Water Management U G 5

Engineering design of drainage, irrigation, and erosion control systems for optimum crop growth, environment, and related water storage structures.

Au Qtr. 3 cl, 2 3-hr labs. Prereq: 334, Civil En 413 and 551 or equiv.

### 544 Engineering Agricultural Machines U G 4

Design of agricultural machines; recognition of the economic, political, and social context in which the machinery is designed, built, distributed, and used. Holmes.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 535, 545, and Mech Eng 350.

### 545 Agricultural Structures U G 4

Analysis and design of frames and members for agricultural structures. Veenhuizen.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Eng Mech 420.

### 546 Agricultural Process Engineering U G 4

Design of processing systems for agricultural products, including thermal processing, grading, size modification, drying, and transportation of bulk and fluid products. Sastry.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 334, Eng Mech 420 and Mech Eng 510.

### 593 Individual Studies U G 1-5

Advanced study of problems not included in regular courses of this department.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. This course is graded S/U.

## General Prerequisites for Courses Numbered 600

*Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.*

### 608 Digital Measurement and Simulation in Agricultural Engineering U G 4

Application of digital measurement systems and dynamic simulation to biological processes and equipment in agricultural engineering. Stombaugh.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 544 and 645 or equivs, and En Graph 200.

### 645 Environmental Engineering of Agricultural Structures U G 4

Functional requirements and principles involved in housing animals and crops; analysis of factors and properties affecting energy exchanges with the environment. Stombaugh.

Wi Qtr. 4 cl. Prereq: 334, Eng Mech 420 and Mech Eng 510.

### 646 Engineering Agricultural Processing Systems U G 4

Design of systems for processing agricultural food, feed, and fiber, utilizing principles of biodynamics, transient diffusion, turbulent and non-ideal transport, and particulate handling.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 425, 433, and Mech Eng 510.

### 650 Design of Waste Management Systems U G 4

Application of bioengineering principles of pollution control in the design of management systems for wastes from food and fiber production, storage, and processing operations.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: Sr standing in engineering, or permission of instructor. Not open to students with credit for 750.

### 681 Analog Simulation U G 5

Principles of analog and hybrid simulation developed and applied to engineering problems in agricultural systems.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 433 or equiv.

### 682 Similitude Theory and Applications U G 3

Similitude theory and applications in engineering and bio-engineering experimental research and development. Carpenter.

Wi Qtr. 3 cl. Prereq: Sr standing in engineering.

**684 Advanced Food Process Engineering U G 3**

Application of heat and mass transfer, fluid flow, food properties, and food processing constraints in the design and selection of food process equipment.

Sp Qtr. 3 cl. Prereq: Ag M&Sys 381, Fd Sc&Nu 541, or permission of instructor. Offered in cooperation with Food Science and Nutrition.

**693 Individual Studies U G 1-5**

Work on problems that are not included in regular courses; practice in development, organization, solution, and report on problems of student's choosing.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of 300 level or higher agri eng courses. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Advanced studies in agricultural engineering with principal emphasis on design.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**695 Professional Development U G 1**

Needs and programs for professional development in engineering related to food and agriculture; opportunities for professional advancement, engineering ethics, and responsibilities to society. Lamp.

Wi Qtr. 1 1-hr cl. Prereq: 3rd yr standing in agri eng.

**General Prerequisites for Courses Numbered 800 and 900**

*Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.*

**850 Seminar G 1**

Gustafson.

Au, Wi, Sp Qtrs. 1 cl. Repeatable.

**894 Group Studies G 1-5**

Graduate studies in agricultural engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**999 Research G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Agricultural Mechanization and Systems

200 Agricultural Engineering Building, 590 Woody Hayes Drive, 292-9338

**110 Engineering in Agriculture U 5**

Basic concepts of engineering and technology essential to the development and function of improved systems for fulfilling our food and agricultural environment needs. Holmes.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. This course is available for EM credit.

**220 Buildings and Equipment for Farmstead Operations U 3**

Functional requirements and planning of buildings and facilities for livestock and crop production; ventilation systems, environmental control and energy conservation techniques. Stombaugh.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Math 116 or 150.

**221 Agricultural Materials Processing Systems U 3**

Principles and functional analysis of agricultural processing systems, with special emphasis on crop drying, handling, and storage. Keener.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: Math 116 or 150.

**230 Power for Agricultural Operations U 3**

A study of power in agriculture with primary emphasis upon power needs for field operations, characteristics of available power sources, selection, and use of power units. Carpenter.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: Math 116 or 150.

**231 Electric Power for Agricultural Operations U 3**

Functional analysis of systems and components essential for distribution and control of electricity for power, heat, and illumination applications in agriculture. Carpenter and Gustafson.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: Math 116 or 150.

**232 Small Air-Cooled Engines U 4**

Principles of operation, maintenance, and repair of small air-cooled engines. Gilem.

Su, Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

**240 Fabrication of Metal in Agri-business and Agricultural Applications U 4**

Principles and techniques in the fabrication of metal using welding and other processes needed in agricultural and agri-business applications. Papritan.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

**241 Building Materials and Construction in Agriculture U 4**

Principles and techniques in the fabrication of wood, concrete, and masonry materials used in agri-business and agricultural applications. Gilem.

Su, Wi, Sp Qtrs. 2 cl, 2 2-hr labs.

**250 Machines for Agricultural Operations U 3**

Analysis of field machine operations with emphasis on recognition and quantitative solution of problems in selection and use of machines for optimum economic performance. Gilem.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Math 116 or 150.

**270 Engineering Methods in Soil and Water Conservation U 3**

Instrument surveying, aerial and topographic maps, rainfall and runoff, and engineering applications of soil and water management on farms and on recreational areas. Papritan.

Au, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: Math 116 or 150.

**293 Individual Studies U 1-5**

Work on problems not in regular courses; practice in development, organization, solution, and reporting on such problems.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Basic studies in agricultural mechanization and systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**305 Rural Housing Technology U 3**

Basic technological factors of rural housing; site selection, drainage, water supply, waste disposal, utilities, and basic construction methods.

Au, Sp Qtrs. 3 cl.

**350 Farm Machinery Management U 3**

Techniques for proper selection and management of field machines for optimum economic return. Holmes.

Sp Qtr. 3 cl. Prereq: Math 116 or 150.

**381 Introduction to Food Process Engineering U 4**

Introduction to engineering operations in food processing, emphasizing heat transfer and fluid flow with applications to sterilization, evaporation, drying, refrigeration, and fluid conveying. Sastry.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Math 151 and Physics 112. Offered in cooperation with Food Science and Nutrition.

**489 Internship in Agricultural Mechanization and Systems U 2**

Ten weeks of planned and supervised experience in an approved business or industry providing professional experiences in Agricultural Mechanization and Systems; written comprehensive report required. Lamp.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dept major, permission of adviser and 12 cr hrs in dept. Repeatable to a maximum of 4 cr hrs.

**500 Farm and Home Safety U G 1**

Causes of accidents; methods for conducting farm and home safety programs; for students interested in vocational agriculture, extension, and farm organizational work. Lamp.

Sp Qtr. 1 cl.

**508 Digital Measurement and Control in Agriculture U G 4**

Use of digital technology and measurement systems to monitor and control biological processes and equipment in agriculture and food processing.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Agr Econ 250 or Cptr/Inf 211. Not open to agri eng majors.

**530 Hydraulic Power Systems for Agriculture U G 3**

A study of the hydraulic principles, system components, and types of circuits commonly used in agricultural hydraulic power systems; circuit trouble-shooting and analysis. Holmes.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 110 and Math 116 or 150, or permission of instructor. Not open to ENG majors.

**550 Pollution Control and Waste Utilization U G 3**

Management and utilization of animal wastes, fertilizers, pesticides, crop residues, milk and food processing, and farmstead and urban solid wastes to abate environmental pollution at the urban-rural interface.

Au Qtr. 3 cl. Not open for grad cr to students majoring in agri eng.

**552 Agricultural Pesticide Equipment U G 3**

Equipment and physical techniques for applying chemicals used in plant disease, insect and weed control; basic physical principles and calibration of equipment. Carpenter.

Sp Qtr. 2 cl, 1 2-hr lab.

**570 Agricultural and Forest Hydrology U G 3**

Hydrology of small watersheds as influenced by watershed management practices; water resource development; control of sediment and floods; and water quality and conservation. Elliot and Ward.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing and Math 116 or 150. Not open for credit to students majoring in agri eng.

**583 Food Process Controls and Instrumentation U G 3**

Concepts, characteristics, and uses of instrumentation and controls in food industries; controller selection, calibration, and adjustment for food processes. Sastry.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 381 or permission of instructor. Offered in cooperation with Food Science and Nutrition.

**591 Workshop U G 1-5**

In-depth study of selected area of agricultural mechanization with emphasis on application of principles, objectives, methods, and equipment to organization, management, and teaching of agricultural mechanics. Gliem.

Su, Au, Wi, Sp Qtrs. Prereq: Teaching or extension experience or permission of instructor. Repeatable to a maximum of 10 cr hrs in any one decimal subdivision or 15 cr hrs in any combination of decimal subdivisions. 15 contact hrs for each hr of or offered.

**591.01 General****591.05 Power and Machinery****H683 Honors Project U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr 590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**693 Individual Studies U G 1-5**

Problems not included in regular courses; practice in development, organization, solution, and reporting on such problems.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Advanced studies in agricultural mechanization and systems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

## Agriculture: Interdisciplinary

100 Agricultural Administration Building, 2120 Fyffe Road, 292-6891

**100 Agriculture Survey U 1**

Academic requirements; University procedures, grading system, resources; student rights and responsibilities; overview of agriculture academic areas of study and services. Darrow, Pfister, Pruckno, and Wagner.

Su, Au, Wi, Sp Qtrs. 2 cl. H100 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 101, Arts Col 100, Arts&Sci 100, Engineer 100, Home Ec 100, Nat Res 100, or UVC 100 or H100.

**351 Agricultural Employment U 1**

Discussion of personal career objectives in agriculture and conducting an effective employment campaign through resumes, cover letters, interviewing, and job offer evaluation. Miller.

Au, Wi Qtrs. 1 cl.

**H590 Agriculture Honors Colloquium U 1**

1 cl.

**H590.01 Research**

Preparation of honors programs, design of honors research projects, and writing of research proposals. Clark and Day.

Au Qtr. 1 cl. Prereq: Enrollment in AGR honors program and jr standing or permission of instructor.

**H590.02 Research Presentation**

Preparation, delivery, and evaluation of oral research reports regarding various disciplines within the field of agriculture. Darrow.

Wi, Sp Qtrs. 1 cl. Prereq: H590.01.

**595 Seminar U 2-5**

Current topics of general interest to undergraduate students in agriculture and natural resources.

Wi Qtr. Arr. H595 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: Jr or sr standing in the college and written permission of instructor. Repeatable to a maximum of 10 cr hrs.

## Agronomy

202 Kottman Hall, 2021 Coffey Road, 292-2001

**General Prerequisites for Courses Numbered 200**

*Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.*

**200 Crop Science U 5**

Study of environmental, genetic, and cultural factors which influence crop plant productivity. Wiebold.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: Biology 110 or 113. Not open to students with credit for Hort 200 or 201. This course is available for EM credit. NS Admis Cond course.

**240 Soil Science U 5**

Introduction to soil physical, chemical, and biological properties as related to land use, environmental quality, and crop production; laboratory includes observation and quantitative determination of these soil properties. Himes.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Chem 101 and 102, or 121 and 122, or equivs. This course is available for EM credit. NS Admis Cond course.

**250 Soil Morphology and Classification U 3**

Techniques and format employed for writing detailed soil descriptions and experience in the classification of soils according to *Soil Taxonomy*. Bigham and Smeck.

Sp Qtr. 2 cl, 1 1-hr lab, 3 Sat field trips. Prereq: 240 or permission of instructor.

**General Prerequisites for Courses Numbered 300 and 400**

Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.

**411 Grain Crops U 4**

A study of the grain crops, their classification, geographic distribution, culture, varieties, improvement, seed production, harvesting, handling, recognition, grading, and utilization. Wiebold.

Au, Wi Qtrs. 4 cl. Prereq: 200.

**412 Forage Crops U 4**

Growth characteristics, tolerances, and requirements of forage plants as related to crop management for hay, silage, pasture, and soilage conservation. Henderlong.

Wi, Sp Qtrs. 4 cl. Prereq: 200.

**413 Principles of Turfgrass Selection and Management U 4**

Adaptation, identification, uses, growth characteristics, growth responses, and fundamental principles essential to the production of quality turf. Danneberger.

Au Qtr. 2 cl, 1 2-hr cl. Prereq: 200 or Hort 201.

**414 Crop Science Laboratory U 2**

Experimental approach to forage and grain crop growth and development with emphasis on the relationship of crop characteristics to management, quality, and utilization.

Wi Qtr. 1 3-hr lab, 1 day field trip. Prereq: 411; prereq or concur: 412.

**422 Weed Control U 4**

A study of weeds, their identification, reproduction and methods of control; emphasis on various aspects of chemical control measures. Harrison and Regnier.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 200.

**442 Soil Management U 5**

An integrated study of fertility, tillage erosion control, and water management in maintaining soil productivity and a quality environment.

Wi Qtr. 5 cl. Prereq: 240 or permission of instructor.

**489 Agronomic Employment Experience U 3**

Su, Au, Wi, Sp Qtrs. Equiv of 10 wks employment. Prereq: Written permission of adviser before employment and 10 hrs of agronomy. Repeatable to a maximum of 6 cr hrs. A final written report must be submitted to the adviser. Open only to dept majors.

**494 Group Studies U 3-5**

Selected topics in crop science and/or soil science.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**General Prerequisites for Courses Numbered 500**

Unless otherwise indicated the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher or 10 cr hrs in courses numbered 200 or higher in the same discipline plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.

**510 Crop Production in Developing Countries U G 5**

Fundamental studies of field and plantation crops in tropical and subtropical countries with emphasis on means and techniques for obtaining production increases. Arscott.

Wi Qtr. 5 cl. Prereq: 200 and 240 or equiv.

**522 Turfgrass Management and Science U G 4**

A study of cultural practices and environmental factors affecting the maintenance of quality turf. Danneberger.

Wi Qtr. 2 cl, 1 2-hr cl. Prereq: 413.

**550 Pedology and Edaphology U G 5**

A comprehensive study of soil with respect to its components, morphology, and genesis; how morphology influences soil behavior especially as it pertains to Ohio conditions. Hall.

Sp Qtr. 3 cl, 1 2-hr lab and field trips. Prereq: 200 or 240 and 442.

**580 Soil Fertility****580.01 Soil Fertility and Fertilizers U G 3**

Principles of soil fertility, plant nutrition, and fertilizer management; environmental considerations and low input concepts in soil fertility.

Wi Qtr. 3 cl. Prereq: 240.

**580.02 Soil Testing and Plant Analysis U G 2**

Methods of evaluating soil fertility and plant nutritional status; reactions and fates of nutrients under varying soil conditions.

Wi Qtr. 2 3-hr labs. Prereq or concur: 580.01.

**591 Workshop in Agronomy U G 3**

Study of selected topics in crop and soil science for teachers of vocational agriculture and extension agents.

Su (1st term) Qtr. 4 2-hr cl per wk for 3 wks. Prereq: At least 5 cr hrs of previous course work in agronomy or the equiv. Repeatable to a maximum of 12 cr hrs.

**593 Individual Studies U G 3 or 5**

Students may select special agronomic problems, not included in regular courses and involving library, laboratory, or field studies.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Undergraduate Seminar U 2**

Review and interpretation of research publications and study of functions of agronomic industries.

Wi, Sp Qtrs. 2 cl. Prereq: 15 cr hrs in agronomy and 3rd or 4th yr standing in agronomy.

**596 Plant Protection Seminar U G 1**

Current topics relative to plant pest management research, technology, and employment.

Wi Qtr. Arr. Not open to students with 2 cr hrs of 596 in entomol, hort, or plnt pth. Repeatable to a maximum of 2 cr hrs. Cross-listed in Entomology, Horticulture, and Plant Pathology. This course is graded S/U.

**598 Turfgrass Science Seminar U G 1**

Academic and industry experts present information and lead discussion on current issues facing the turfgrass industry.

Sp Qtr. 1 cl. Prereq: Jr or sr standing in hort or agronomy, or permission of instructor. Repeatable to a maximum of 2 cr hrs.

**General Prerequisites for Courses Numbered 600**

Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.

**602 Field Crop Ecology U G 3**

A study of the agroecosystem; the ecology of managed agricultural systems; the interrelationships of climates, soils, and organisms in crop production.

Wi Qtr. 3 cl. Prereq: 10 cr hrs of crops courses and 5 cr hrs of soils courses at the 300 level or higher.

**612 Principles of Grassland Management U G 5**

Plant-animal requirements and correlations in the maintenance, management, and utilization of meadows, pastures, and ranges. Henderlong.

Sp Qtr. 5 cl and 1 field trip arr per qtr.

**621 Crop Physiology and Production U G 3**

A study of the physiological aspects of crop growth and how they relate to various cultural practices; main emphasis will be on corn and soybeans. McDonald.

Wi Qtr. 3 cl. Prereq: Botany 436 or equiv.

**625 Field Crop Breeding U G 4**

Principles of genetics and methods of plant breeding applied to the improvement of field crops and the ultimate development of superior varieties. St. Martin.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 200; Agronomy 411 or 412; and Genetics 140 or 500. Not open to students with credit for 530.

**630 Seed Science U G 5**

A study of the physiological processes of seed formation, dormancy, and germination; the production and marketing of seed in commerce. McDonald.

Sp Qtr. 4 cl, 1 2-hr lab.

**640 Agroclimatology U G 3**

A study of the radiation regime of the atmosphere in relation to the thermal and water regimes of soils and their interrelationships in crop production. McCoy.

Au Qtr. 3 cl. Prereq: 15 cr hrs of agronomy, botany, hort, or equiv at the 300 level or above or permission of instructor.

**643 Tropical and Subtropical Soils U G 3**

A study of the physical, chemical, and biological properties and the fertilization, physical, and water management of tropical and subtropical soils; crop adaptation, plantation, and subsistence farming. Logan.

Au Qtr. 3 cl. Prereq: 15 cr hrs of agronomy, numbered 300 or higher or permission of instructor.

**650\* Advanced Soil Classification Morphology and Genesis U G 5**

Theory and principles of soil classification schemes emphasizing the 7th Approximation; classification and genesis of major soils of the world; methods to establish parent material homogeneity and indices of soil weathering. Hall and Smeck.

Wi Qtr. 4 cl, 1 2-hr lab; and 3 2-hr labs or 3 1-day field trips arr per qtr. Prereq: 550, 10 cr hrs from the following: 442, Geol&Min 550 and 650.

**660 Soil Microbiology U G 5**

A study of the morphology and physiology of soil microorganisms and their biochemical transformations of inorganic and organic materials in relation to soil fertility. Sims.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 442, Micrbiol 509, and Chem 241.

**665 Environmental Microbiology U G 3**

The role of microorganisms and underlying biological principles in elemental cycles and degradation of natural and man-made compounds.

Sp Qtr. 3 cl. Prereq: Chem 251 and Micrbiol 509 or 520. Not open to students with credit for Micrbiol 665. Cross-listed in Microbiology.

**670 Soil Fertility and Plant Nutrition U G 3**

Role of the essential nutrients in plant nutrition and crop yield; factors affecting nutrient supply by soil. Himes.

Au Qtr. 3 cl. Prereq: 200 and 240, and 10 cr hrs of agronomy or botany or permission of instructor.

**671 Soil Physics U G 5**

A study of the physical makeup and properties of soil, including structure, thermal relationships, consistency, plasticity, water, and their relationships. Lai.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 442, Physics 131, and Math 151.

**680 Soil Chemistry U G 5**

Introduction to chemical processes in soils and their application in nutrient cycling, plant nutrition waste disposal, acid rains, fate of pesticides, and heavy metals. Logan.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 240 and Chem 123. Not open to students with credit for 570.

**H683 Honors Project U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr 590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**693 Individual Studies U G 3 or 5**

Students may select special agronomic problems, not included in regular courses and involving library, laboratory, or field studies.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Discussion of selected topics in crop science and/or soil science.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**695\* Organic Soils U G 3**

A comprehensive study of organic soils, their formation, chemical and physical characteristics, classification, and management. Everett.

Au Qtr. 3 cl, 2 1-day field trips. Prereq: Geol&Min 101 and 25 or hrs of botany or chem.

**General Prerequisites for Courses Numbered 700**

*Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.*

**750\* Soil Mineralogy U G 5**

Theory and application of methods for analyzing minerals in soil environments, including X-ray, thin section, electron optical, thermal, and wet chemical techniques. Bigham.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 15 cr hrs selected from: 550, 671, 772, Geol&Min 621, 623, 637, 639, Chem 520, 651, 676.

**760\* Soil Biochemistry U G 4**

Soil biochemical techniques, elemental transformations, biologically active compounds, pesticide metabolism, and fate of genetic materials in soils. Dick.

Sp Qtr. 2 2-hr cl. Prereq: 240, Chem 231, and Biochem 511.

**772 Thermodynamics of Soil Solution****772.01 Thermodynamics of Soil Solution U G 3**

A study of the thermodynamics of precipitation-dissolution, electrochemical, and ion-exchange reactions in soils and sediments. Traina.

Wi Qtr. 3 cl. Prereq: Chem 520 or written permission of instructor. Not open to students with credit for 772 or 672. Agronomy students must enroll concurrently in 772.02.

**772.02 Thermodynamics of Soil Solutions: Laboratory U G 2**

An experimental approach to thermodynamics of soil solutions.

Wi Qtr. 2 3-hr lab. Prereq or concur: 772.01.

**798 Current Topics in Environmental Science and Engineering U G 1**

Seminar course which presents current research findings on environmental quality and pollution control.

Au, Sp Qtrs. 1 cl. Prereq: Grad standing in engineer, science, nat res, or agr, or permission of instructor. Not available for simultaneous credit as civil en or nat res. Repeatable to a maximum of 3 cr hrs. Cross-listed in Civil Engineering and Natural Resources.

**General Prerequisites for Courses Numbered 800 and 900**

*Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.*

**822 Physiological and Biochemical Aspects of Herbicides G 5**

Herbicide absorption, course, fate, and mode of action in plants; persistence and fate in soils.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Biochem 631 and Botany 630 or 631.

**825 Advanced Plant Breeding G 3**

Theory and methods of plant improvement; statistical genetics, methods for self- and cross-fertilizing crops, chromosomal manipulation. St. Martin.

Sp Qtr. 2 1½-hr cl. Prereq: 625 or Hort 601; and Genetics 650.

**826\* Qualitative Genetics in Plant Breeding G 4**

In-depth review of recent advances in the theory and methodology of plant improvement using qualitative or simply inherited traits.

Sp Qtr. 2 2-hr cl. Prereq: 625 or Hort 601 or permission of instructor.

**830 Current Topics in Plant Molecular Biology G 3**

Readings from the current literature will be examined in detail for both technical and conceptual content. Kamalay.

Sp Qtr. 2 2-hr cl. Prereq: 621 or Mol Gen 632, Mol Gen 701, Botany 630, or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**865†\* Chemistry of Humic Substances G 4**

The extraction, fractionation, characterization, and properties of humic substances; the laboratory involves the extraction of and the synthesis of humic substances. Himes.

Sp Qtr. 2 cl, 2 3-hr labs. Prereq: 570, 660, Chem 254, and Biochem 511.

**870\* Soil-Plant Relationships G 3**

Discussion of recent literature pertaining to growth response curves, nutrient uptake, movement of nutrients in the soil, and measurement of availability of nutrients to plants. Eckert.

Sp Qtr. 3 cl. Prereq: 20 cr hrs of soil and/or plant sciences and 10 cr hrs of plant physiology.

**871†\* Advanced Soil Physics G 3**

Moisture, gaseous, and thermal processes and regimes in vegetated soils and their influences on plant growth. Lal.

Wi Qtr. 3 cl. Prereq: 671 and permission of instructor.

**872\* Surface and Colloid Chemistry of Soils G 3**

A study of the surface and colloid chemistries of soils, sediments, and reference mineral systems. Traina.

Wi Qtr. 2 1½-hr cl. Prereq: 772.01 or permission of instructor.

**880 Seminar G 1**

Discussion of current problems in agronomy.

Su, Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 6 cr hrs.

**885 Research Principles and Techniques G 1**

The philosophy of graduate education and the description of the techniques and special equipment most useful for conducting research in crop and soil science. Smeck.

Au Qtr. 1 cl. This course is graded S/U.

**887 Techniques of Experimental Design G 5**

A study of experimental designs and their application to agricultural research.

Wi Qtrs. 5 cl. Prereq: Genetics 650 or Stat 529, and 10 cr hrs of agronomy or related subjects at the 400 level or above.

**892 Interdepartmental Seminar in Plant Physiology G 1**

Students will present seminars on their research or related topics in plant physiology and/or attend seminars by local and visiting researchers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Not open to students with 12 cr hrs in Biochem 892, Botany 892, Fd Sc&Nu 892, or Hort 892. Repeatable to a maximum of 12 cr hrs, including cr hrs earned in Biochem 892, Botany 892, Fd Sc&Nu 892, and Hort 892. Cross-listed in Biochemistry, Botany, Food Science and Nutrition, and Horticulture. This course is graded S/U.

**894 Group Studies G 1-5**

Advanced topics in crop science and/or soil science.

Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**993 Individual Studies G 3 or 5**

Students may select special agronomic problems not included in regular courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. These courses are graded S/U.

**993.01 Agronomic Instruction**  
10 hrs lab.

**993.02 Unclassified**

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Air Force Aerospace Studies

353 Converse Hall, 2121 Tuttle Park Place, 292-5441

Air Force aerospace studies leading to a commission in the United States Air Force may be pursued on either a four-, three- or two-year basis. The academic requirements in all these programs are essentially identical. Compressed courses are offered at summer encampments to afford cadets the opportunity to obtain course material in which they are deficient. The General Military Course (first two years of enrollment, normally freshman/sophomore) deals with aerospace doctrine and history of military aviation. The Professional Officer Course (last two years of enrollment, normally juniors and seniors) deals with communicative skills, leadership and management training, and national defense policy.

Air Force aerospace studies courses are open to a limited number of non-cadet students with the permission of the instructor. Initial enrollment in the ROTC program may be completed by scheduling Air Sci 101 during Autumn Quarter registration. For registration instructions during other academic terms, contact the Department of Air Force Aerospace Studies.

**General Military Course Freshmen and Sophomores****101 The USAF—Organization, Tactical Forces, and Strategic Offensive Forces U 1**

An introduction to the mission and organization of the US Air Force; an examination of tactical forces in the Tactical Air Command and the strategic forces in the Strategic Air Command.

Au Qtr. 1 cl, 1 lab hr.

**102 Systems Development, Transportation Communications, and Logistics in the USAF U 1**

A study of nine major Air Force commands that provide vital support to the Air Force mission; also, an examination of the key role played by the Air Force Reserve and Air National Guard.

Wi Qtr. 1 cl, 1 lab hr.

**103 USAF—Professionalism, Doctrine, and the US/Soviet Balance of Power U 1**

Discussion of the officer as a professional; examination of USAF/DOD doctrine; study of the relationship between the Soviet Union and the US and the balance of forces.

Sp Qtr. 1 cl, 1 lab hr.

**201 Introduction to the Development of Air Power U 1**

A study of the development of air power from mythology through the 1940's.

Au Qtr. 1 cl, 1 lab hr.

**202 The Growth of Air Power to Prominence U 1**

A study of air power during the 1950's.

Wi Qtr. 1 cl, 1 lab hr.

**203 Concepts and Doctrine Governing the Employment of Air Power U 1**

A study of air power and its employment during the 1960's, 1970's, and 1980's.

Sp Qtr. 1 cl, 1 lab hr.

***Professional Officer Course Juniors, Seniors, and Graduate Students*****301 Management and Communication U 3**

Development of oral and written communicative skills with videotape practicum; emphasis on types of military writing and speaking format peculiar to the Air Force; general study of management, looking particularly at development and use.

Au Qtr. 3 cl, 1 1-hr lab. Prereq: Completion of General Military Courses or AFROTC Six-Week Summer Camp; or permission of instructor.

**302 Management—Behavior, Decision Making, and Planning Techniques U 3**

Management course stressing motivational and behavioral processes in individual/group dynamics; in depth study of decision making, planning techniques, and organizational structure.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: 301 or permission of instructor.

**303 Leadership and Staff Functions U 3**

A study of military leadership and organizational ethics; investigation of the politics and tactics in management with emphasis on organizational and personal values; introduction to officer career development and administrative and staff functions required of junior Air Force officers.

Sp Qtr. 3 cl, 1 1-hr lab. Prereq: 302 or permission of instructor.

**401 National Security Policy and Military Professionalism U 3**

An examination of the needs for national security and an analysis of the evolution of the American defense strategy and policy; actors and processes; a special topic focuses on the military as a profession.

Sp Qtr. 3 cl, 1 1-hr lab. Prereq: 303 or permission of instructor.

**402 Defense Policy and Decision Making U 3**

Investigation into the strategy and management of conflict, the formulation and implementation of US defense policy, and a study of US interest in regions around the world.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: 401 or permission of instructor.

**403 Strategic Issues and Preparation for Active Duty U 3**

Investigation of current and future strategic issues; arms control; introduction to the military justice system; preparation for active duty as an Air Force officer.

Au Qtr. 3 cl, 1 1-hr lab. Prereq: 402 or permission of instructor.

## Allied Medicine

School of Allied Medical Professions

127 School of Allied Medical Professions Building, 1583 Perry Street, 292-5618

**102 Introduction to Health Professions U 2**

An introduction to the professions, both undergraduate and graduate, that contribute to the delivery of health care in America.

Wi Qtr. 2 cl.

**330 Introduction to Anesthetic Agents U P 5**

An introductory course in the pharmacology and use of inhalation anesthetic agents, local anesthetic agents, muscle relaxants, and other adjuvant drugs.

Wi Qtr. 2 2½-hr cl. Prereq: Enrollment in School of Allied Medical Professions; or colleges of Nursing, Dentistry, Medicine, Optometry, Veterinary Medicine; or permission of instructor. Not open to students with credit for Nur Anes 330 or 331 or 332.

**340 Applied Science in Anesthesia U P 5**

An overview of chemistry and physics related to the administration of anesthesia.

Au Qtr. 5 cl. Prereq: Chem 102 and Physics 112, or equivs, or permission of instructor. Not open to students with credit for Nur Anes 340.

**419 Electronic Principles in Medical Instrumentation U 5**

The use of electronic components, circuits, operational amplifiers, and differential amplifiers in medical instrumentation.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Physics 112, Math 152, and permission of instructor.

**425 Critical Phases in Life I U 3**

An examination of man's development from conception to death and factors critical to his continuing health.

Au, Sp Qtrs. 3 cl. Prereq: Biology 110 or equiv, and 5 hrs psych.

**500 Medical Terminology**

Terminology pertaining to the treatment of disease, including standard abbreviations, anatomic, diagnostic, symptomatic, eponymic, laboratory, pathologic, radiology, anesthetic, operative, and drug terms.

Au Qtr. 3 cl. Not open to students with credit for 500.01 or 500.02. Cross-listed in Medical Record Administration.

**505 Principles of Disease I U 3**

Basic pathophysiology and its application to the organ systems.

Au Qtr. 3 cl. Prereq: Admission to the School of Allied Medical Professions and Physiol 312 or Zoology 232; or permission of instructor.

**506 Principles of Disease II U 3**

A continuation of 505.

Wi Qtr. 3 cl. Prereq: 505.

**520 Musculoskeletal Disease U G 2-3**

Principles, clinical aspects, and therapeutic procedures related to diseases of the musculoskeletal system.

Sp Qtr. 2-3 cl. Prereq: Admission to the School of Allied Medical Professions or written permission of instructor.



**525 Introduction to Neurodevelopmental Handling U G 2**

Neurodevelopmental management techniques for infants up to two years; geared to physical handling of motor problems resulting from developmental disabilities.

Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor. Not open to students enrolled in physiother.

**530 Neuromuscular Disease U G 3**

Survey of injury and disease of the central, peripheral, and autonomic nervous systems; presentation of clinical material.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**565 Coping with Terminal Illness and Death U 3**

An exploration of the psycho-social needs of the dying, alternative approaches to meeting those needs, and the impact of the attitudes of attending health professionals.

Au, Wi Qtrs. 1 3-hr cl. Prereq: Permission of instructor, 4th yr standing, or health profession credential.

**591 Health Care Organization U 3**

An examination of the roles of public and private organizations in planning and supporting health care, including study of health trends, social legislation, and current professional issues.

Au, Sp Qtrs. 3 cl. Prereq: Enrollment in School of Allied Medical Professions or School of Nursing or permission of instructor.

**610 The Hospital as an Educational Institution U G 3**

Hospital as a clinical learning environment for medical and allied medical professionals; in-service education; patient and community health education; continuing education.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**612 Managing the Health Care Training Function at the Departmental Level U G 3**

The techniques of in-service training programs; discussion and analysis of the role and function of the training manager.

Wi Qtr. 1 2-hr cl, 1 1½-hr cl. Prereq: Sr or grad standing in all med or health-related major, Jr or sr med comm major. Cross-listed in Medical Communications.

**627 Management of Patient Education Systems U G 3**

Planning, organizing, and evaluating patient education systems and programs in health care organizations.

Au Qtr. 1 2-hr cl, 1 hr arr. Prereq: Sr standing in med comm or med ilus, related health professions major or grad standing in health professions. Cross-listed in Medical Communications as 625. Not open to students with credit for Med Comm 625.

**630 Management of Hospital Departments U P G 3**

An analysis of the management process and its application to the hospital setting.

Su, Au, Sp Qtrs. 3 cl. Prereq: Enrollment in School of Allied Medical Professions or permission of instructor.

**640 Health Promotion and Disease Prevention in Acute Care Organizations U G 3**

Programs in acute care institutions are examined as a means of marketing services, reducing health care costs and changing the roles of allied health practitioners.

Sp Qtr. 2 1½-hr cl. Prereq: Sr or grad standing in allied health or a related field. Cross-listed in Medical Communications.

**648 Microcomputer Applications in Health Science U G 3**

Overview of microcomputer applications in health sciences with practical applications related to discipline specific needs.

Su, Au Qtrs. 2 2-hr cl. Prereq: Cptr/Inf 201 or 211, or permission of instructor. Cross-listed in Medical Record Administration.

**650 Application of Computers in Health Sciences U G 3**

Basic concepts related to the application, analysis, planning, and use of computers in health care, education, and research.

Su, Au, Sp Qtrs. 2 2-hr cl. Cross-listed in Medical Record Administration.

**654 Computer Applications in Managing Health Information Systems U G 3**

Information resource management in health care, health information databases, software applications, and systems selection.

Su, Au, Wi Qtrs. 3 cl. Prereq: 650, Med Rec 648, or permission of instructor. Cross-listed in Medical Record Administration.

**665 Understanding the Aging Process P G 3**

Study of physical and mental health components of normal aging with emphasis on critical components of successful aging, presented as basis for delivery of health services.

Au Qtr. 2 1½-hr cl.

**680 Research Design in Biomedical Sciences****680.01H Research Design in Biomedical Sciences U 3**

Concepts related to initiating and conducting research; experimental design; use of computer graphics and statistics; and analysis of research reports.

Wi Qtr. 1 2-hr cl, 1 hr arr. Prereq: Eligible for honors program in allied health. This course is graded S/U.

**680.02 Research Design in Biomedical Sciences G 3**

Concepts related to initiating and conducting research; experimental design; use of computer graphics and statistics; and analysis of research reports.

Wi Qtr. 1 2-hr cl, 1 hr arr. Prereq: Grad standing in allied health, pathology, or related field. The design of experiments and statistical concepts are further developed in Stat 528, 529, 530, 641, 645, 661, and Biostat 615.

**693 Individual Studies U G 1-5**

Guided study of selected topics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. H693 (honors) may be available to students enrolled in an honors program and/or by permission of a division within the school. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Supervised group studies of special topics within the various professions of the allied health field.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to maximum of 15 cr hrs.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs. Limited to students in allied medical professions, education, law, medicine, nursing, social work, and theology (Columbus seminars).

**700.01 Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi, Sp Qtrs.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Sp Qtr.

**700.03 Ethical Issues U G 3**

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, mind control, malpractice, social responsibility of the professions.

Au Qtr.

**700.04 Interprofessional Seminar in Clinical Practice U G 3 or 5**

Interprofessional teamwork in clinical settings.

Wi Qtr. Arr. Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Interprofessional exploration of the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. Prereq: Sr standing or permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr. Prereq: Permission of instructor. This course is graded S/U.

**700.07 Interprofessional Approaches to Child Abuse and Neglect U G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**730 Managerial Leadership in Allied Health G 3**

Application of managerial leadership principles for the development and administration of allied health departments in the health care system.

Au Qtr. 1 3-hr cl. Prereq: Admission to AMP grad program or permission of instructor.

**795 Seminar G 1-3**

Investigation of current topics of interest to allied health practitioners.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of Instructor. Repeatable to a maximum of 15 cr hrs.

**850 Issues in Allied Health G 3**

Discussion and critical examination of current issues in the allied health field and their impact on the health professions.

Su, Wi Qtrs. 1 2-hr cl, 1 hr arr.

**870 Fundamentals of Curriculum in Allied Health Education G 3**

Study of curriculum antecedents and issues in allied health; an orientation for health professionals dealing with the major curriculum forces which shape allied health education.

Sp Qtr. 3 cl. Prereq: Ed-F & R 841 or Ed-P&L 841.

**889 Practicum G 2-5**

Practical experience in the educational or administrative setting within the allied health fields.

Su, Au, Wi, Sp Qtrs. 1 1-hr cl, lab arr. Repeatable to a maximum of 10 cr hrs.

**889.01 Educational**

Practical experience in an educational setting within the allied health fields.

Prereq: 3 cr hrs in educational methodology.

**889.02 Administration**

Practical experience in an administrative setting within the allied health fields.

Prereq: HHSA 815 or equiv and written permission of instructor.

**999 Research G 1-9**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

## Anatomy

4072 Graves Hall, 333 West 10th Avenue, 292-4831

For related courses see Medicine and Zoology.

**199 Basic Human Anatomy U 5**

The basics of human anatomy supplemented by demonstrations of human material. Guy.

Au, Wi Qtrs. 3 cl, 3 hrs lab. Prereq: Enrollment in NUR or PHR or DHY or AMP or permission of instructor. Not open to students with credit for 200. Not for students planning to take 201.

**200 Introductory Anatomy U 6**

Fundamental principles of human anatomy, supplemented by demonstrations of human material. Guy.

Sp Qtr. 3 cl, 3 2-hr labs. Prereq: Enrollment in AMP, NUR, or Prepharmacy or permission of instructor. Not open to students with credit for 199.

**201 Neuromuscular Anatomy U 5**

Neuromuscular anatomy of the human body. Chidley.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: Enrollment in AMP or permission of instructor.

**601 Human Anatomy for Dental Students P G 7**

The integrated study of the gross, microscopic, neurologic, and embryonic anatomy of the human body. Hayes and staff.

Au Qtr. 6 cl, 1 3-hr lab. Prereq: Dent fresh standing or permission of instructor.

**602 Human Anatomy for Dental Students P G 7**

A continuation of 601. Hayes and staff.

Wi Qtr. 6 cl, 1 3-hr lab. Prereq: 601 or permission of instructor.

**603 Human Anatomy for Dental Students P G 7**

A continuation of 602. Hayes and staff.

Sp Qtr. 6 cl, 1 3-hr lab. Prereq: 602 or permission of instructor.

**693 Individual Studies in Anatomy U G 2-5, P 6, 12, 18**

Designed to enable the student to pursue a minor investigation in some anatomical field of his choice.

Su, Au, Wi, Sp Qtrs. 1 month, offered all months. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit. This course is graded S/U.

**700 Human Histology U G 6**

A microscopic study of cells, tissues, and organs with particular emphasis on human; consideration of microscopic structure in relation to function of various organ systems. Hayes.

Sp Qtr. 3 cl, 3 2-hr labs. Prereq: Permission of instructor.

**710 Embryology I G 3**

Designed to acquaint the anatomy graduate student with a basic knowledge of human embryology. Delphia.

Au Qtr. Arr. Prereq: Permission of instructor. 710 and 711 must be taken in sequence beginning in the Au Qtr.

**711 Embryology II G 3**

Continuation of 710.

Wi Qtr. Arr. Prereq: 710 and permission of instructor. 710 and 711 must be taken in sequence beginning in the Au Qtr.

**712 Gross Anatomy I G 8**

Designed to acquaint the anatomy graduate student with a basic knowledge of human gross anatomy by regional dissection. Negulesco.

Au Qtr. Arr. Prereq: Permission of instructor. 712 and 713 must be taken in sequence beginning in the Au Qtr.

**713 Gross Anatomy II G 4**

Continuation of 712.

Wi Qtr. Arr. Prereq: 712 and permission of instructor. 712 and 713 must be taken in sequence beginning in the Au Qtr.

**714 Histology I G 6**

Designed to acquaint the anatomy graduate student with a basic knowledge of human histology. Hayes.

Au Qtr. Arr. Prereq: Permission of instructor. 714 and 715 must be taken in sequence beginning in the Au Qtr.

**715 Histology II G 5**

Continuation of 714.

Wi Qtr. Arr. Prereq: 714 and permission of instructor. 714 and 715 must be taken in sequence beginning in the Au Qtr.

**716 Neuroanatomy G 7**

Designed to acquaint the anatomy graduate student with a basic knowledge of human neuroanatomy. Martin.

Sp Qtr. Arr. Prereq: Permission of instructor.

**750 Radiologic Anatomy G 2**

Anatomy of specific regions or areas as it applies to the interpretation and understanding of diagnostic images. Hines.

Sp Qtr. Arr. Prereq: Satisfactory completion of Med Coll 662, or Anatomy 712 and 713 or equiv and permission of instructor. Repeatable to a maximum of 8 cr hrs. Cross-listed with Radiology 750.

**805 Anatomical Techniques G 5**

The preparation of biological materials for light and electron microscopy. DePhilp.

Sp Qtr. Arr. Prereq: Permission of instructor. Open only to grad students in anatomy.

**850 Seminar in Anatomy G 1**

Discussions of research in progress and reports from the literature of current anatomical problems.

Su, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

**875 Electron Microscopy Techniques G 5**

Theoretical and practical aspects of chemical fixation and sectioning of biological materials and the operation of the electron microscope. Burry.

Sp Qtr. 2 1-hr cl, 2 3-hr labs. Prereq: Permission of instructor.

**911 Advanced Studies in Anatomy G 3 or 5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**911.01 Blood and Hemopoiesis**

Morphology of normal and abnormal human blood and bone marrow; developmental hemopoiesis and cellular immune response in various animals. Ackerman, Jones, and St. Pierre.

**911.02 Connective Tissue and Bone**

Activities of fibrous connective tissues emphasizing formation and maintenance of fibers and ground substance; dynamics of the structure, chemistry, and metabolism of bone. Melfi.

**911.03 Embryology**

Mammalian embryological development emphasizing descriptive or experimental approach; metabolic aspects of development including enzymatic changes, hormonal effects, environmental factors, and teratogenic agents. Delphia, Clark, Hayes, and Sucheston.

**911.04 Microscopic Anatomy**

Advanced studies in selected areas of microscopic anatomy. Ackerman, Hayes, and St. Pierre.

**911.05 Neuroanatomy**

Advanced study of a particular system or systems in the central nervous system, including literature perusal. Martin, Clark, Bresnahan, and King.

**911.06 Current Topics in Cell Biology G 3-5**

Advanced studies in selected areas of cell biology, with a focus on the structural components of the cell and an emphasis on interrelationships of the cells compartments.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**911.07 Ultrastructure of the Central Nervous System**

Ultrastructure of neuron, neuroglia, and the neuropil of the mammalian central nervous system. King and Burry.

**911.09 Instrumentation and Techniques in Experimental Neuroanatomy**

Practical experience in learning techniques utilized in neuroanatomical research problems. Martin, Bishop, Clark, and Burry.

**911.10 Principles of Human Cytogenetics**

Human cytogenetics as related to autosomal and sex chromosomes; technique of tissue culture for study of human chromosome(s) and karyotype analysis. Hayes.

**911.13 Topographical Anatomy**

Study of unmounted serial cross sections of selected regions of the human body emphasizing the inter-relationship of structures to one another in a three-dimensional perspective. Hines and Negulesco.

**911.14 Advanced Regional Dissections**

Careful dissection of one or more regions of the body, supplemented with literature research. Hines and Negulesco.

**999 Research in Anatomy G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtr's. This course is graded S/U.

## Anesthesiology

N425 University Hospital, 410 West 10th Avenue, 293-8487

The faculty of the Department of Anesthesiology is responsible for the clinical instruction of Med III and Med IV students enrolled in Med Coll 664. The curriculum emphasizes anatomy, applied physiology, and clinical pharmacology as they relate to the discipline of anesthesiology. Additional electives include surgical intensive care and applied or basic research opportunities.

## Animal Science

110 Animal Science Building, 2029 Fyffe Road, 292-6401

**100 Domestic Animals in the Service of Man U 5**

The role of the animal industry in the world and the importance of the application of science in meeting the needs in the production, distribution, and utilization of animal products. Bowman, Schmidt, and Stephens.

Au, Wi, Sp Qtrs. 5 cl. Offered in cooperation with Dairy Science and Poultry Science. This course is available for EM credit.

**200 Introductory Animal Science U 5**

Introduction to selection, breeding, feeding, management, marketing, and utilization of beef cattle, swine, and sheep; a limited discussion of the horse. Bowman, Davis, and Turner.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: 100. This course is available for EM credit.

**241 Fundamentals of the Horse Industry U 5**

Uses of the horse, the economic impact on society, and the basic science of equine nutrition, reproduction, genetics, disease control, housing, and general management.

Au Qtr. 3 cl, 1 3-hr lab.

**250 Meat Selection and Identification U 3**

Structure and composition of beef, pork, veal, and lamb used to emphasize merchandising for domestic and institutional purposes. Parrett.

Au, Wi Qtrs. 3 2-hr labs. Not open to students with credit for 452.

**312 Application of Reproductive Management to Livestock U 4**

A practical introduction to the various tools and techniques available to improve the reproductive performance of livestock. Pope.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 200 or Dairy Sc 201 or Poultry Sc 200. Cross-listed in Dairy Science.

**420 Principles of Animal Improvement U 5**

An introduction to the methods available for bringing about genetic change in farm animals. Davis, Fechtmeier, and Irvin. Au, Wi, Sp Qtrs. 5 cl. Prereq: 100, Math 148 or equiv, and Genetics 140. Not open to students with credit for Dairy Sc 420 or Pltry Sc 420. Cross-listed in Dairy Science and Poultry Science.

**430 Principles of Animal Nutrition U 5**

A study of the fundamental principles of nutrition in mammals and birds. Tyznik.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122 and Math 148 or equiv. Not open to students with credit for Dairy Sc 430 or Pltry Sc 430. Cross-listed in Dairy Science and Poultry Science.

**452 Principles of Meat Science U 3**

Analysis of the principles of meat science as related to meat animal value factors, processing technology, and merchandising systems affecting the producer, processor, and consumer. Parrett.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 5 cr hrs animl sc.

**453 Meat Science Products Laboratory U 3**

Procedures and value factors involved in meat animal harvest, carcass evaluation, fresh meat processing, cured-processed meat production, and retail merchandising. Parrett.

Au, Wi, Sp Qtrs. 2 3-hr labs. Prereq or concur: 452.

**455 Meat Animal and Carcass Evaluation U 3**

The factors that influence the value of meat animals, carcasses, and wholesale cuts in accordance with recognized grading standards; laboratory practice. Althouse.

Wi Qtr. 1 cl, 2 2-hr labs. Prereq: 200.

**460 Principles of Animal Biotechnology and Growth U 5**

Evaluation of biological processes which contribute to prenatal and postnatal growth of meat animals and the application of biotechnology to improve animal growth and development.

Wi Qtr. 5 cl. Prereq: 200 or Dairy Sc 201 or Pltry Sc 201, and Animl Sc 430 or Dairy Sc 430 or Pltry Sc 430, and Biology 113.

**489 Internship in Animal Science U 1-6**

Supervised preplanned employment experience and/or on-site problem solving study program with approved animal production industry or research enterprise; written comprehensive report required.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in animl sc and permission of instructor. Open only to dept majors. This course is repeatable to a maximum of 10 cr hrs and is graded S/U.

**494 Group Studies U 3-5**

Special topic area group studies formally proposed for a specific quarter by an animal science faculty member.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**500 Livestock Selection and Evaluation U G 5**

Laboratory exercises employing current standards of animal excellence including carcass value for the selection and improvement of farm livestock. Turner.

Wi Qtr. 5 2-hr lab-discussions. Prereq: 200 and jr standing.

**Livestock Marketing**

See Agr Econ 522. Offered in cooperation with Agr Econ.

**522 Genetic Improvement of Beef Cattle U G 3**

Use of genetic principles to develop breeding plans for selection of seedstock herds for economic traits and their utilization in commercial production. Turner.

Wi Qtr. 3 cl. Prereq: 420 or Dairy Sc 420 or Pltry Sc 420.

**523 Genetic Improvement of Swine U G 3**

Application of genetic principles for swine improvement; selection, mating, testing for predicting genetic value, and use of data in decision-making criteria for economically important characteristics. Irvin.

Sp Qtr. 3 cl. Prereq: 420 or Dairy Sc 420 or Pltry Sc 420.

**542 Beef Cattle Production and Management U G 5**

The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of beef cattle. Day.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 200, 420, 430, and 452.

**543 Swine Production U G 5**

The application of science and basic principles of nutrition, physiology, genetics, health, economics, meats, and housing in integrated management systems for modern swine production. Shurson.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 200, 312, 420, 430, and 452.

**544 Sheep Production and Management U G 5**

The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of sheep. Baertsche.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 200, 420, 430, and 452.

**550 Meat Processing U G 3**

Fundamental changes in soft animal tissues resulting from comminution and application of chemicals and heat. Parrett.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 452.

**563 Advanced Swine Production Science U 5**

Integration of swine production advances and their application to modern swine service systems; swine literature will be evaluated.

Sp Qtr. 3 2-hr cl. Prereq: 543 and permission of instructor.

**581 Equine Reproduction Management U G 5**

Study of equine reproductive management and its use in a breeding and foaling program with emphasis on mare and stallion care for maximum reproductive efficiency. Kline.

Sp Qtr. 3 1-hr cl, 2 2-hr labs. Prereq: 200, 420, 430, and 312 or Vet Phys 411.

**593 Individual Studies U G 2-5**

Special assignments and elementary research; problems assigned after consultation with instructor in charge.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**610 Physiology of Lactation U G 3**

The physiological, endocrine, nutritional, and environmental factors influencing the synthesis and ejection of milk. Schmidt.

Au Qtr. 2 1-hr cl, 1 2-hr lab. Prereq: Vet Phys 411 and 20 cr hrs or animl sc or dairy sc or vertebrate biology. Not open to students with credit for Dairy Sc 610. Cross-listed in Dairy Science.

**612 Physiology of Reproduction U G 5**

Physiology and endocrinology of the reproductive system; factors influencing reproductive performance. Ottobre and Pate.

Au, Sp Qtrs. 3 cl, 1 hr recitation, 1 2-hr lab. Prereq: Vet Phys 411 and 20 cr hrs or animl sc or dairy sc or vertebrate biology. Not open to students with credit for Dairy Sc 612. Cross-listed in Dairy Science.

**630 Nutrition and Feeding of Nonruminant Animals U G 5**

The nutrition of swine, poultry, and laboratory animals; principles and practice. Latshaw and Lepine.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or Dairy Sc 430 or Pltry Sc 430 or equiv. Not open to students with credit for Pltry Sc 630. Cross-listed in Poultry Science.

**631 Nutrition and Feeding of Ruminant Animals U G 5**

The nutrition of dairy cattle, beef cattle, and sheep; principles and practice. Firkins, Loerch, and Tyznik.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or Dairy Sc 430 or Pltry Sc 430 or equiv. Not open to students with credit for Dairy Sc 631. Cross-listed in Dairy Science.

**632 Equine Nutrition U G 5**

Physiology, biochemistry, and practical application of feeding horses. Tyznik.

Sp Qtr. 5 cl. Prereq: 430.

**635 Nutrition Applied to Farm Animals U G 3**

Application of nutrient requirements, feed formulation, and feed technology to providing adequate nutrition for farm animals. Lilburn and Weiss.

Sp Qtr. 3 cl. Prereq: 630 or 631 or 632 or Dairy Sc 631 or Pltry Sc 630. Not open to students with credit for 735 or Dairy Sc 635 or 735, or Pltry Sc 635 or 735. Cross-listed in Dairy Science and Poultry Science.

**650 Advanced Meat Technology U G 3**

Evaluation of scientific contribution to meat products and processing. Ockerman.

Sp Qtr. 2 cl, 2 1-hr labs. Prereq: 15 cr hrs chem, 5 cr hrs micrbiol, and 5 cr hrs anatomy.

**651 Laboratory Analysis of Meat Products U G 5**

Analysis of meat products by physical, chemical, and microbiological techniques. Ockerman.

Wi Qtr. 2 cl, 2 1-hr labs, 4 hrs arr. Prereq: 452 and 453 or permission of instructor, 10 cr hrs chem, and 5 cr hrs micrbiol.

**654 Quality Control Interpretation U G 3**

Sampling, statistical plotting, and chart interpretation using examples drawn from the food area. Ockerman.

Sp Qtr. 3 cl.

**693 Individual Studies U G 3-5**

Special assignments and advanced research; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. H693 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 3-5**

Special assignments and advanced research; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**710\* Advanced Reproductive Physiology U G 3 or 5**

Recent advances in research in mammalian reproduction; optional individual research experience in reproductive problems with small and large mammals for additional credit. Ottobre.

Wi Qtr. 2 2-hr cl. Prereq: 612 or Dairy Sc 612; and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Dairy Sc 710. Cross-listed in Dairy Science.

**721 Genetics of Animal Populations I U G 3**

Parameters of static populations, genetic arrays and equilibria, and statistical measures; partitioning the phenotypic variance mutation, migration, selection, and chance. Irvin.

Wi Qtr. 3 cl. Prereq: 420 or Genetics 500; and Genetics 650 or equivalents. Not open to students with credit for Dairy Sc 721 or Pltry Sc 721. Cross-listed in Dairy Science and Poultry Science.

**722 Genetics of Animal Population II U G 3**

Selection for polygenic characters, mating systems, and development of breeding plans. Irvin.

Sp Qtr. 3 cl. Prereq: 721 or Dairy Sc 721 or Pltry Sc 721 or equiv. Not open to students with credit for Dairy Sc 722 or Pltry Sc 722. Cross-listed in Dairy Science and Poultry Science.

**733 Nutrition in the Support of Growth U G 5**

A functional approach to the study of nutrition for support of growth and maintenance in animals and humans. Ramsay and White.

Au Qtr. 5 cl. Prereq: 630, 631, 632 or Dairy Sc 631 or Pltry Sc 630 or Humn Nutr 610; prereq or concur: Biochem 511 or Physchem 611 and permission of instructor. Not open to students with credit for Dairy Sc 733 or Fd Sc&Nu 733 or Pltry Sc 733. Cross-listed in Dairy Science, Food Science and Nutrition, and Poultry Science.

**734 Nutrition in the Support of Reproduction U G 3**

A functional approach to the study of nutrition for support of reproduction in animals and humans. Day and Latshaw.

Wi Qtr. 3 cl. Prereq: 630 or 631 or 632 or Dairy Sc 631 or Pltry Sc 630; prereq or concur: Biochem 511 or Physchem 611. Not open to students with credit for Dairy Sc 734 or Pltry Sc 734. Cross-listed in Dairy Science, Food Science and Nutrition, and Poultry Science.

**800 Seminar G 1**

Discussions of current animal science research.

Su, Au, Wi, Sp Qtrs. 1 1-hr cl. Prereq: Animl sc grad standing or permission of instructor. Students may not register for more than 10 cr hrs under this number. These courses are graded S/U.

**800.01 Introduction to Seminar****800.02 Nonruminant Nutrition****800.03 Ruminant Nutrition****800.04 Reproductive Physiology Seminar****800.05 Biotechnology and Growth****800.06 Animal Genetics****800.07 Meat Science Seminar****800.08 Interdisciplinary Seminar****810 Advances in Physiology of Domestic Animals G 3**

Au, Wi, Sp Qtrs. 1 4-hr cl. Prereq: Written permission of instructor and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Dairy Sc 810 or Pltry Sc 810. Cross-listed in Dairy Science and Poultry Science.

**810.01\* Anterior Pituitary Function**

Bacon.

Au Qtr.

**810.02†\* Endocrinology of Reproduction**

Wi Qtr. Pate.

**810.03 Immunology and Immunogenetics**

Hines.

Sp Qtr.

**810.05\* Mammalian Germ Cells**

Wi Qtr. Pope.

**820 Current Topics in Animal Genetics**

Prereq: Acceptable courses in animal genetics, math, and statistics. Not open to students with credit for Dairy Sc 820 or Pltry Sc 820. Repeatable to a maximum of 12 cr hrs. Cross-listed in Dairy Science and Poultry Science.

**820.01\* Selection Index Theory G 1-3**

Allaire.

Au Qtr.

**820.02†\* Non-additive Genetic Variance G 1-3**

Wi Qtr.

**820.04†\* Modeling of Breeding Systems G 1-3**

Allaire and Davis.

Sp Qtr.

**820.07 Seminar in Animal Genetics Research G 1**

Review of literature related to genetics improvement of agricultural animal populations. Allaire.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Acceptable courses in animal genetics, math, and stat. Not open to students with credit for Dairy Sc 820 or Pltry Sc 820. This course is graded S/U. Repeatable to a maximum of 12 cr hrs. Cross-listed in Dairy Science and Poultry Science.

**830 Advanced Studies in Nutrition G 3**

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 630 or 631 or Humn Ntr 610; Fd Sc&Nu 761 and 762; 10 grad cr hrs in physiol. Not open to students with credit for Dairy Sc 830 or Humn Ntr 830 or Pltry Sc 830. Cross-listed in Dairy Science, Food Science and Nutrition, Human Nutrition and Food Management, and Poultry Science.

**830.01\* Energy**

Latshaw, Palmquist, and Snook.

Wi Qtr.

**830.02†\* Minerals**

Mahan.

Wi Qtr.

**830.03\* Proteins and Amino Acids**

Sp Qtr.

**830.04†\* Vitamins**

Sp Qtr.

**830.05†\* Lipids**

Palmquist.

Au Qtr.

**830.07†\* Rumen Microbiology**

Dehority.

Su Qtr. This course is not available in humn ntr or pltry sc.

**830.08\* Carbohydrates**

Roehrig.

Au Qtr.

**840 Advanced Studies in Molecular Endocrinology G 5**

Combined lecture/laboratory course on the molecular and cellular basis of hormone action and state-of-the-art methodologies in molecular endocrinology.

Su Qtr. Prereq: Biochem 511 or equiv and permission of instructor. Cross-listed in Dairy Science and Poultry Science.

**850 Molecular Biology Techniques G 4**

Combined lecture/laboratory in the techniques of nucleic acid isolation, analysis, hybridization, sequencing, cloning, expression, and associated biotechnologies.

Su Qtr. 10 2-hr cl, 10 4-hr lab. Prereq: Biochem 521 or 613 or equiv. Not open to students with credit for Dairy Sc or Pltry Sc 850. Cross-listed in Dairy Science and Poultry Science.

**856\* Food in International Agriculture G 3 or 5**

A study of international food production, processing, and utilization. Ockerman.

Su Qtr. 5 cl, 1 1-hr lab. Repeatable to a maximum of 6 or hrs.

**898 Interdepartmental Seminar in Nutrition G 1**

A seminar in nutrition and in related fields of food technology.

Sp Qtr. Given cooperatively by Animal Science, Dairy Science, and Food Science and Nutrition. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Anthropology

244 Lord Hall, 124 West 17th Avenue, 292-4149

**200 Introduction to Physical Anthropology U 5**

A scientific examination of man as a biological and cultural organism based on primate evolution from living and fossil evidence; evolutionary theory and population adaptability. Brainard, Poirier, Sciulli, and staff.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 251. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**201 Introduction to Prehistory U 5**

World prehistory from the origin of human culture through the development of civilization illustrated by selected examples; archaeological field method; concepts of analysis and interpretation. Dancey, Sumner, and Yerkes.

Su, Au, Wi, Sp Qtrs. 5 cl. H201 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 261. BER/LAC/LAR course. SS Admis Cond course.

**202 Introduction to Cultural Anthropology U 5**

Comparative survey of tribal and peasant peoples in the several world culture regions; culture concepts; study of selected topics. Arewa, Chen, Kim, Messenger, Moore, Walker, and Zaharlick.

Su, Au, Wi, Sp Qtrs. 5 cl. H202 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 210. BER/LAC/LAR course. SS Admis Cond course.

**294 Group Studies U 2-5**

Designed to give groups of students an opportunity to pursue special studies in topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 or hrs.

**300 Human Origins U 5**

The search for human origins through a reconstruction of the human and non-human primate fossil records of the last 60 million years; emphasis on human skeletal, behavioral, and social patterns. Poirier.

Au, Wi, Sp Qtrs. 2 2½-hr and 1-hr cl. Prereq: 200 or permission of instructor. Not open to students with credit for 530.

**301 Modern Human Physical Variation U 5**

Survey of modern human biological diversity; examination of the underlying evolutionary and adaptational mechanisms responsible; exploration of the interplay between biology and behavior in adaptation. Brainard.

Au, Wi, Sp Qtrs. 2 2-hr cl, 1 arr arr. Prereq: 200 or permission of instructor. Not open to students with credit for 535.

**350 Prehistoric Indians of the Ohio Valley U 5**

The archaeology and cultural history of the Ohio Valley from the first human settlement to European colonization, emphasizing the Adena, Hopewell, and Ft Ancient traditions. Yerkes.

Sp Qtr. 3 cl, 3 weekend field trips. Prereq: 201 or permission of instructor.

**401 Fundamentals of Archaeology U 5**

Introduction to basic archaeological theory and practice including fundamental field and laboratory; principles of survey, excavation, chronological analysis, typology, and palaeoethnography. Sumner.

Au Qtr. 4 cl, 1 1-hr lab. Prereq: 201 or permission of instructor.

**402 Physical Anthropology of Selected World Regions U 5**

Description and analysis of simple and complex hereditary characteristics in order to evaluate origin adaptations and affinities of populations in a world region. Sciulli.

5 cl. Prereq: 200 or permission of instructor.

**402.01 North American Indians****421 Regional Survey Course in Cultural Anthropology U 5**

A survey of the cultures of selected regions.

Au, Wi, Sp Qtrs. 5 cl.

**421.01 China**

A general survey of the traditional Chinese culture and society; family, kinship, and socio-political organizations; their transformations during the last century. Chen.

Not open to students with credit for 414. BER/LAC/LAR course.

**421.02 Southeast Asia U 5**

Survey of the peoples of the region and their cultures; prehistoric origins; diversity and similarity; processes of modernization. Chen.

5 cl. Not open to students with credit for 414.

**421.04 Changing Societies in Africa**

Study of the ways in which the retention of established customs and the acceptance of innovation have interacted in selected spheres of life in contemporary Africa. Arewa.

**421.06 Ireland**

An examination of Irish prehistory and history and of Irish peasant culture and its influence on contemporary esthetics and its diffusion to the Americas. Messenger.

Prereq: 202 or equiv or permission of instructor. Not open to students with credit for 620.09.

**421.08 Indians of North America**

Development of culture change in North American Indians. Zaharlick.

Not open to students with credit for 412.

BER/LAC/LAR course.

**421.09 Japan**

A general survey of traditional Japanese culture and society: family, kinship, values, religion, and politics; recent changes during modernization. Moore.

Prereq: 202 or equiv or permission of instructor. Not open to students with credit for this topic under 694 Au Qtr 1984 or 1985.

**421.10 India**

A survey of Indian society and culture: family, kinship, caste, political and economic life, religions, and worldviews; the rural-urban continuum. Walker.

Sp Qtr. Prereq: 202 or equiv or permission of instructor.

**421.11 Korea**

An anthropological survey of traditional and contemporary Korean culture and society with emphasis on kinship, community organization, social structure, modernization, and economic development.

Sp Qtr. 5 cl. Prereq: 202 or equiv.

**450 Cultural Conflict in Developing Nations U 5**

Analysis of cultural conflict in developing nations resulting from rapid and extensive technological and social change. Chen and Moore.

Au, Sp Qtrs. 5 cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences. LAR course.

**460 Women, Culture, and Development U 5**

An analysis of the dramatic changes occurring in women's lives in response to development and modernization; developing and developed countries contrasted. Bourguignon and Kim.

Au, Wi, Sp Qtrs. 5 cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences. LAR course.

**520 Socio-Cultural Dimensions of Japanese Business U G 5**

An exploration of features of Japanese culture and society and how they are manifested in the world of Japanese business. Moore.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 202 or permission of instructor.

**525 History of Anthropological Theory U G 5**

Major theoretical viewpoints in anthropology seen in their historical context. Messenger.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 202 or permission of instructor.

**552 Old World Prehistory U G 5**

Detailed examination of topics of special interest in current prehistoric research. Sumner.

Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: 201 or equiv or written permission of instructor. Not open to students with credit for 551.03 or 551.04.

**552.01 The Old Stone Age**

Palaeolithic in Africa, Asia, and Europe; current theory, research, and problems regarding our understanding of the early hunting-gathering way of life.

Au Qtr.

**552.02 Agricultural Origins in Europe and the Near East**

Origin and development of agricultural and animal husbandry in the Near East and Europe: 15,000-4,000 B.C.

**552.03 Rise of Civilization in Mesopotamia and Iran**

Background and development of early civilization in Mesopotamia and Iran; 5,000-2,000 B.C.; theoretical emphasis on development of early states, urbanism, writing, and trade.

Wi Qtr.

**553 New World Prehistory U G 5**

Detailed surveys of native American prehistory in select regions from the earliest evidence of occupation to the intrusion of Old World populations.

Au, Wi, Sp Qtrs. Prereq: 201.

**553.01 Aztecs, Maya, and their Predecessors**

The archaeology and cultural history of Mexico and Guatemala with emphasis on agricultural origins and the development of complex society. Dancey.

Au Qtr. 4 cl. Not open to students with credit for 551.02.

**553.02 Prehistoric Indians of Eastern North America**

Survey of the archaeology and cultural history of North America east of the Rocky Mountains. Yerkes.

Sp Qtr. 4 cl. Not open to students with credit for 550, 551, or 551.01.

**553.03 Prehistoric Indians of Western North America**

Survey of the archaeology and culture of North America north of Mexico and west of the Rocky Mountains, including the American Southwest. Dancey.

Wi Qtr. 4 cl. Not open to students with credit for 550, 551, or 551.01.

**565 Archaeological Training Expedition U 8-16**

Survey and excavation of prehistoric archaeological sites; trains students in methods and techniques of archaeological field research. Dancey and Yerkes.

Su Qtr. 8 cr hrs for either term. Full time in expedition camp. Prereq: 401 or equiv and written permission of instructor. Not open to students with credit for 664.

**601 Medical Anthropology U G 5**

Biocultural and sociocultural aspects of health in modern and prehistoric populations.

Au, Wi, Sp Qtrs. 5 cl.

**601.01 Biosocial Aspects of Health**

Biomedical and biosocial influences on problems of human health throughout the world, focusing upon the evolutionary implications of those problems. Brainard.

**601.03 Biocultural Adaptations in Prehistory**

Effects of culture and biology on adaptations and the evolution of prehistoric populations. Sciulli.

**602 Special Topics in Archaeology U G 5**

Detailed examination of select topics concerning the recovery and analysis of archaeological data.

Prereq: 401.

**602.01 Strategy of Archaeological Field Research**

Design of archaeological data recovery programs and their implementation through survey, excavation, and other methods. Dancey.

Sp Qtr. 5 cl, 3 field trips arr. Not open to students with credit for 555, 556, or 556.02.

**602.02 Archaeological Laboratory Methods**

Practical experience in the laboratory analysis of archaeological materials with emphasis on stone, bone, and ceramic artifacts; preparation of reports on analytical procedures and results. Dancey, Sumner, and Yerkes.

Wi Qtr. 5 cl, 6 lab hrs.

**602.03 Environmental Archaeology**

A survey of the principles, methods, and techniques of prehistoric environmental analysis; emphasis on understanding Pleistocene and Holocene environments as they relate to archaeology. Yerkes.

Au Qtr. 5 cl.

**620 Special Topics in Cultural Anthropology U G 5**

Detailed examination of topics of special interest in contemporary cultural anthropology.

5 cl. Prereq: 202 or equiv or permission of instructor.

**620.02 The Anthropology of Women****620.03 Peasant Society and Culture****620.05 Cultural Ecology****620.06 Folkloristic Anthropology****620.07 Anthropology of Education**

**620.08 The Anthropology of Sex**

Primate sexual behavior; sex and the origins of society and culture; sexual maturation and enculturation; cross-cultural sexuality; sex in art and folklore; sex research. Messenger. Sp Qtr.

**620.11 Anthropology of Religion**

World views in tribal and peasant cultures with an emphasis on religion; integration of religion with other aspects of culture. Messenger.

Not open to students with credit for 515.

**620.12 Psychological Anthropology**

Anthropological contributions to the field of social psychology; variations in personality as associated with variations in culture; the range of personality differences within various cultures. Bourguignon.

Not open to students with credit for 600.

**620.13 Tribal Society and Culture**

Forms of social organization in simpler societies; dynamics of social relations in such societies; a comparison of simpler forms of social structure with complex forms. Chen.

Sp Qtr. Not open to students with credit for 505.

**620.14 Anthropology of the Arts**

Anthropological perspectives on expressive culture: art, music, dance, etc., in tribal and peasant cultures. Messenger.

Not open to students with credit for 400.

**620.15 Economic Anthropology**

An analysis of economic rationality in non-market and market societies; resource allocation, work organization, product disposition, exchange, money, trade, and development. Moore.

Sp Qtr.

**626 Urban Anthropology U G 5**

An examination of urban life and the variety of the urban experience around the world; and the nature of anthropological research in cities. Kim.

Sp Qtr. 5 cl. Prereq: 202 or permission of instructor. Not open to students with credit for 620.04.

**630 Language and Culture in Education U G 5**

Examination of the problems of educating children of diverse cultural and linguistic backgrounds in the U.S. school system. Zaharlick.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 202 or equiv or grad standing.

**640 Special Topics in Physical Anthropology U G 5**

Topics of current concern to physical anthropologists.

Brainard, Poirier, and Sciulli.

Au, Wi Qtrs. 5 cl. Prereq: 200 or equiv or permission of instructor.

**640.01 Monkeys, Apes, and Humans (Primate Behavior)****640.02 Growth and Development****640.03 Dental Anthropology****656 Issues in Archaeological Theory U G 5**

Examination of the assumptions and concepts underlying analysis of archaeological data; methods of reconstructing cultural history, past lifeways, and explaining cultural change. Dancey.

Wi Qtr. 4 cl. Prereq: 401. Not open to students with credit for 556.01.

**675 Introduction to Anthropological Linguistics U G 5**

Relations of language to social organization, world view, socialization, and cultural analysis. Callaghan.

Wi Qtr. 5 cl. Prereq: 10 or hrs in anthrop or permission of instructor. Not open to students with credit for 575.

**685 Summer Field School in Archaeology U G 3-12**

Practical experience in archaeological fieldwork including site survey, excavation, surveying and mapping, preservation, and other related methods and techniques of data recovery. Dancey, Sumner, and Yerkes.

Su Qtr. Full time in expedition camp. Prereq: Permission of instructor. Repeatable to a maximum of 24 or hrs. Field school is conducted at a site within commuting distance of the Columbus campus.

**693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: 30 or hrs in anthrop or written permission of instructor. Repeatable to a maximum of 20 or hrs, not more than 4 in any one decimal subdivision. These courses are graded S/U.

**693.01 Theory****693.02 History****693.03 Anthropological Linguistics****693.04 Research Methodology****693.05 Prehistory****693.06 Ethnography****693.07 Physical Anthropology****694 Group Studies U G 2-15**

Designed to give groups of students an opportunity to pursue special studies in topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**701 Advanced Topics in Physical Anthropology U G 5**

Discussion of advanced topics in human variation and hominid evolution; emphasis on critical analysis and evolution of theoretical topics in research design.

2 2-hr cl, 1 hr arr. Prereq: Permission of instructor.

**701.01 Modern Human Physical Variation**

The racial classification of man on a biological basis; the evolution of *Homo sapiens* and the development of human variability; racial differences and mixtures. Brainard.

Not open to students with credit for 535 or 803.04.

**701.02 Hominid Paleoanthropology**

A comprehensive study of the fossil hominids; fossils of *Homo sapiens* and their relation to other fossil hominids. Poirier.

**702 Theories in Cultural Anthropology U G 5**

Major theoretical orientations in cultural anthropology; the developmental histories of the major theoretical schools and examination of their respective philosophical foundations. Arewa.

Au Qtr. 2 2-hr cl, arr time. Not open to students with credit for 803.01 or 803.02.

**703 Culture and Language U G 5**

Development and range of anthropological concerns with language; emphasis on utility of linguistic approaches, methods, and theories to other subdisciplines of anthropology. Zaharlick.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 675 or Linguist 601, or equiv and permission of instructor.

**710 Field Methods in the Study of Culture U G 5**

Theoretical and practical preparation for the field study of cultures. Messenger.

Au, Wi Qtrs. 2 2-hr cl, arr time. Prereq: Permission of instructor. Not open to students with credit for 810G.

**H783 Honors Research U 3-5**

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the anthrop courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in anthrop. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 or hrs. This course is graded S/U.



**801 Seminars in World Prehistory G 5**

Au, Wi, Sp Qtrs. Prereq: Admission to grad program.

**801.01 Archaeology of Hunter-gatherer Societies**

Advanced study of hunter-gatherer band society from theoretical, ethnographic, and archaeological perspectives. Yerkes.

**801.02 Origins of Food Production and Complex Societies**

Advanced theoretical and comparative study of the origins of food production and the rise of complex societies in major New World and Old World centers. Sumner.

Not open to students with credit for 803.07.

**805 Seminars in Ethnology G 3-5**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 45 cr hrs, not more than 10 of which shall be in any one of the following topics.

- A— North America
- B— South America
- C— East Asia
- D— Southeast Asia
- E— Oceania
- F— South Asia
- G— Middle East
- I— Europe
- J— Circumpolar
- K— Caribbean
- L— Africa

**810 Seminars in Cultural Anthropology G 3-5**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 45 cr hrs, not more than 10 of which shall be in any one of the following topics.

- A— Nature of Culture
- B— Acculturation, Change, and Stability
- C— Ethnopsychiatry
- D— Enculturation
- E— Social Organization
- F— Religious Behavior
- I— Peasant Cultures
- J— Cultural Evolution
- K— Human Ecology
- L— Anthropology of Political Systems
- M— Anthropological Linguistics. Not open to students with credit for 803.08.
- N— Anthropology of Law
- P— Anthropology of Education
- Q— Study Design and Data Analysis
- R— Theory and Problems in Cultural Anthropology
- T— Experiments in Anthropological Fieldwork: Realism and Reflexivity
- U— Ethnographic Field Experience

**820 Seminars in Physical Anthropology G 3-5**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- A— Evolutionary Theory
- B— Quantitative Methods
- C— Field and Laboratory Methods
- D— Primates of Paleogene
- E— Fossil Hominids
- F— Non-Human Primate Behavior
- G— Population Genetics
- I— Biocultural Adaptation
- J— Primate Anatomy
- K— Biomedical Anthropology
- L— Physiological Anthropology
- M— Field Methods in Primate Behavior
- N— Special Topics
- P— Human Growth and Development

**830 Seminars in Prehistory G 3-5**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 30 cr hrs, not more than 10 of which shall be in any one of the following topics.

- A— Method and Theory
- B— North American Archaeology
- C— Middle Eastern Archaeology
- D— Archaeology of High Civilizations
- E— Special Problems in Archaeology

**993 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. 2 conf hrs. Repeatable to a maximum of 20 cr hrs, not more than 10 of which shall be in any one of the following topics. This course is graded S/U.

- A— Theory
- B— History
- C— Anthropological Linguistics
- D— Research Methods
- E— Prehistory
- F— Ethnology
- G— Physical Anthropology
- I— Unclassified
- J— Cultural Anthropology

**998 Research in Anthropology: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Anthropology: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Arabic

256 Cunz Hall, 1841 Millikin Road, 292-9255

**101 Elementary Literary Arabic I**

Sound and writing systems, morphological patterns, basic sentences with brief dialogues.

Su, Au, Wi, Sp Qtrs. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**101.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs in 101.03.

**102 Elementary Literary Arabic II**

Continuation of morphological patterns and basic syntactic structures, with long dialogues and simple pieces of expository prose.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Au, Wi, Sp Qtrs. Prereq: 101.01 or 5 cr hrs of 101.03 or 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**102.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 101.01, or 5 cr hrs of 101.03 or 101.51, or permission of instructor. Students may register for 101.51 or 102.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs in 102.03.

**103 Modern Literary Arabic I**

Complex morphological forms and syntactic structures; reading; oral and written practice.

Not open to native speakers of this language through regular course enrollment or EM credit.

**103.01 Classroom Track U 5**

Au, Wi, Sp Qtrs. 5 cl. Prereq: 102.01, or 5 cr hrs of 102.03 or 102.51, or 110. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**103.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 102.01, or 5 cr hrs in 102.03 or 102.51, or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs in 103.03.

**104 Modern Literary Arabic II**

Emphasis on modern standard literary Arabic reading, writing, speaking, and aural comprehension.

Not open to native speakers of this language through regular course enrollment or EM credit.

**104.01 Classroom Track U 5**

Au, Wi, Sp Qtrs. 5 cl. Prereq: 103 or 112. Not open to students with credit for 602. This course is available for EM credit.

**104.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 103.01, or 5 cr hrs in 103.03 or 103.51, or permission of instructor. Students complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with 80% proficiency required for advancement.

**151 Basic Colloquial Arabic I U 5**

Introduction to phonology and grammar of the spoken language of educated urbanites of the Eastern Arab world.

Au Qtr. 5 cl. Not open to students with credit for 106 or 201. Does not satisfy ASC foreign language requirement.

**152 Basic Colloquial Arabic II U 5**

Continuation of 151; analysis of and drill in morphological and syntactic patterns; expansion of vocabulary; practice in conversation.

Wi Qtr. 5 cl. Prereq: 151 or permission of instructor. Not open to students with credit for 107 or 202. Does not satisfy ASC foreign language requirement.

**205 Intermediate Literary Arabic**

Complex sentence structures with emphasis on speaking and aural comprehension; readings adapted from Arabic texts of all periods.

**205.01 Classroom Track U 5**

Au, Wi, Sp Qtrs. 5 cl. Prereq: 104.01 or 5 cr hrs of 104.51. Students must register for and complete 5 cr hrs during the qtr.

**205.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 104.01, or 5 cr hrs of 104.51, or permission of instructor. Students register for and complete 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

**241 Culture of the Contemporary Arab World U 5**

A general survey and examination of the socio-cultural structure of the modern Arab world.

Su, Au, Wi, Sp Qtrs. 5 cl. H241 (honors) may be available to students enrolled in an honors program or by permission of dept. Taught in English. BER/LAC/LAR course.

**Masterpieces of Near Eastern Literature in Translation**

See JANELL 272.

**253 Intermediate Colloquial Arabic U 5**

Intensive practice in speaking Arabic with emphasis on various cultural aspects of Arab life.

Sp Qtr. 5 cl. Prereq: 152 or permission of instructor. Does not satisfy ASC foreign language requirement. Not open to students with credit for 153.

**293 Individual Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**294 Group Studies U 1-15**

Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

**371 Classical and Medieval Arabic Literature in Translation U 5**

Reading and analysis of major works of Arabic literature from the 5th to the 17th centuries including classical poetry, the Qur'an, and the Arabian Nights.

Wi Qtr. 5 cl. Not open to students with credit for 271 and 272.

**372 Modern Arabic Literature in Translation U 5**

Reading and analysis of representative works of the 19th and 20th centuries; discussion of development of major movements and genres in modern Arabic literature.

Au Qtr. 5 cl. Prereq: English 110 or 111 or equiv. Not open to students with credit for 273.

**401 Intermediate Literary Arabic Reading U 5**

Developing reading skills through reading adapted and authentic Arabic texts; selections reflect cultural and literary aspects of Arab-Islamic civilization.

Sp Qtr. 5 cl. Prereq: 205 or permission of instructor.

**402 Review of Arabic Grammar U 5**

Review of Arabic grammar; practice in translation; reading on a wide range of topics in a variety of genres and styles.

Sp Qtr. 5 cl. Prereq: 205 or permission of instructor. Not open to students with credit for 603.

**403 Intermediate Arabic Conversation and Composition U 5**

Practice in aural comprehension, conversation, and controlled compositions on various aspects of Arabic culture.

Au Qtr. 5 cl. Prereq: 205. Not open to students with credit for 604.

**603 Advanced Arabic Conversation and Composition U G 5**

Intensive practice in speaking and writing Arabic at an advanced level based on contemporary literary usage; conducted entirely in Arabic.

Wi Qtr. 5 cl. Prereq: 403 or permission of instructor. Not open to students with credit for 601.

**610 Introduction to Arabic Linguistics U G 5**

An introduction to the structure of the Arabic language, both spoken and written.

Wi Qtr. 5 cl. Prereq: 103 or 152, and Linguist 601, or permission of instructor.

**611 History of the Arabic Language U G 5**

Survey of the evolution of the Arabic language in its cultural and historical setting.

Wi Qtr. 5 cl. Prereq: Permission of instructor.

**626 Introduction to the Qur'an U G 5**

A linguistic, literary, and cultural analysis of selected chapters from the Qur'an.

Au Qtr. 5 cl. Prereq: 403.

**627 Classical Arabic Poetry U G 5**

Selected readings from classical and medieval Arabic poetry; Arabic metrics and literary theory.

Sp Qtr. 5 cl. Prereq: 403.

**628 Classical Arabic Prose U G 5**

Selected readings reflecting the evolution of Arabic prose literature from its origins to the late Abbasid period.

Wi Qtr. 5 cl. Prereq: 403.

**651 Contemporary Arabic Prose Fiction U G 5**

Reading and analysis of short stories and novels representative of major developments and trends of the 20th century.

Au Qtr. 5 cl. Prereq: 403. Not open to students with credit for 622 or 625.

**652 Contemporary Arabic Poetry and Drama U G 5**

Reading and analysis of plays and poems representative of major developments and trends of the 20th century.

Sp Qtr. 5 cl. Prereq: 403. Not open to students with credit for 623 or 624.

**671 The Qur'an in Translation U G 5**

An introduction, in English, to the literary, religious, and cultural implications of the fundamental Book of Arabic literature and of Islamic civilization.

Au Qtr. 5 cl.

**672 Arabic Folk Narrative in Translation U G 5**

Literary and cultural aspects of *1001 Nights* and other popular narratives (epics, legends, folktales) in the Arab world.

Sp Qtr. 2 2-hr cl.

**680 Basic Bibliographic and Reference Tools in Arabic and Islamic Studies U G 5**

Sp Qtr. 5 cl. Prereq: 10 cr hrs in Middle Eastern history or literature or equiv.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**710 Studies in Arabic Linguistics U G 5**

Advanced analytical study of synchronic, diachronic, sociolinguistic, and dialectal topics and problems.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 610 or 611 or permission of instructor. Repeatable to a maximum of 20 cr hrs.

**721 Studies in Arabic Poetry U G 5**

Advanced study of specific poetic periods, figures, and/or topics involving extensive reading and discussion of appropriate primary and secondary source materials.

Su, Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: 10 cr hrs of Arabic literature at the 600 level or equiv. Repeatable to a maximum of 15 cr hrs.

**722 Studies in Arabic Prose U G 5**

Advanced study of specific periods, authors and/or genres of prose writing (literary or non-literary) involving extensive reading and discussion of primary and secondary materials.

Su, Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: 10 cr hrs of Arabic literature at the 600 level or equiv. Repeatable to a maximum of 20 cr hrs.

**H783 Honors Research U 3-5**

Offers undergraduates with special aptitudes a greater opportunity to do independent study and research than is possible in normal course work.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Arabic courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. At least 2 qtrs are required of candidates for the degree BA *with distinction* in Arabic. Failure to receive a mark of S in this course is a disqualification for special honors. This course is graded S/U.

**801 Teaching Arabic at the College Level G 5**

Methods and techniques for the teaching of Arabic at the college level.

Au Qtr. 2-wk intensive workshop followed by 1 2-hr cl weekly. Prereq: TA in JANELL or permission of instructor. For students enrolled in this course, the minimum number of hrs required for graduation is increased by 5 cr hrs.

**811 Seminar in Arabic Studies G 5**

Intensive investigation of a selected topic or problem in Arabic linguistics, philology, literature, or literary culture.

Su, Au, Wi, Sp Qtrs. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. Preparation of major research paper is required.

**998 Research in Arabic G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Architecture

189 Brown Hall, 190 West 17th Avenue, 292-5567

**200 Outlines of Architecture U 3**

Introduction to architecture; emphasis upon the nature of the art/science of architecture and its physical and cultural context.

Su, Au, Wi Qtrs. 3 cl. H200 (honors) may be available to students enrolled in an honors program. Required for students intending to major in arch. VPA Admis Cond course.

**201 Introduction to Architectural History U 3**

Introduction to architecture, emphasis on three-dimensional qualities of complex architectural form and space as determined by cultural history.

Au, Wi Qtrs. 3 cl. VPA Admis Cond course.

**202 Introduction to Basic Design in Architecture U 5**

An introduction to basic design problem solving; concepts of point, line, plane, and space organization; principles of unity/variety, order, balance, proportion, scale, etc.; orthographic projection and axonometrics; pattern diagramming; and basic design consequences of human activity.

Su, Au, Wi, Sp Qtrs. 1 cl, 6 lab hrs. VPA Admis Cond course.

**241 Architectural Design I U 6**

Studio introduction to architectural design problem solving; concepts of architectural aesthetic principles; value drawing techniques; model building; anthropometrics; and human gathering and circulation patterns.

Au Qtr. 3 cl, 9 lab hrs. Prereq: 200 and 202. Only open to students who are enrolled in AHR, have completed math and physics requirements, have earned a minimum of 45 cr hrs with a minimum cumulative pt-hr ratio of 2.15; or have permission of the undergraduate committee.

**242 Architectural Design II U 6**

Studio focusing upon elementary diagramming and analysis of human needs; concepts of color theory; natural lighting; historical design precedents; and horizontal and vertical movement systems.

Wi Qtr. 3 cl, 9 lab hrs. Prereq: 241 and 271; concur 272. Open only to students enrolled in arch.

**243 Architectural Design III U 6**

Studio focusing upon elementary architectural programming; concepts relating human use to architectural form, space, symbol and site; site analysis; functional diagrams, matrices and charts; barrier-free design and 19- and 20th-century design precedents.

Sp Qtr. 3 cl, 9 lab hrs. Prereq: 242 and 272. Open only to students enrolled in arch.

**271 Architectural Graphics: Freehand Drawing for Architects U 3**

Fundamental freehand drawing principles necessary to the investigation, visualization, and presentation of architectural design ideas.

Au Qtr. 1 cl, 5 lab hrs. Concur: 241.

**272 Architectural Graphics: Constructed 3-D Drawings U 3**

Study and application of graphic theory and techniques such as axonometrics, perspectives, and shades and shadows.

Wi Qtr. 1 cl, 5 lab hrs. Prereq: 271 or permission of instructor; concur: 242.

**273 Architectural Presentation Techniques U 3**

Study and application of architectural presentation techniques in pencil, ink, and other media.

Sp Qtr. 1 cl, 5 lab hrs. Prereq: 272 or permission of instructor.

**293 Individual Studies in Architecture U 1-5**

Designed for students who desire to pursue, individually, special studies in the discipline.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies in Architecture U 1-5**

Designed for students who desire to pursue, in a group, special studies in the discipline.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 15 cr hrs.

**301 History of Ancient Architecture U 3**

Survey of history of architecture of Mesopotamia, Egypt, Greece and Rome; includes historical inquiry, physical and cultural influences, theories, and analysis techniques.

Au Qtr. 3 cl. H301 (honors) may be available to students enrolled in an honors program. Open to majors and non-majors.

**302 History of Medieval Architecture U 3**

Survey of history of architecture of Early Christian, Byzantine, Romanesque, and Gothic periods; includes physical and cultural influences, historical inquiry, theories, and analysis techniques.

Wi Qtr. 3 cl. H302 (honors) may be available to students enrolled in an honors program. Open to majors and non-majors.

**303 History of Renaissance and Baroque Architecture U 3**

Survey of history of architecture of Renaissance, Mannerist, and Baroque periods; includes historical inquiry, physical and cultural influences, theories, and analysis techniques.

Sp Qtr. 3 cl. H303 (honors) may be available to students enrolled in an honors program. Open to majors and non-majors.

**304 History of Enlightenment and 19th-Century Architecture U 3**

Survey of history of Enlightenment and 19th-Century architecture; includes historical inquiry, physical and cultural influences, theories, and analysis techniques.

Au Qtr. 3 cl. H304 (honors) may be available to students enrolled in an honors program. Open to majors and non-majors.

**305 History of Modern Architecture U 3**

Survey of history of modern architecture, includes historical inquiry, physical, and cultural influences, theories, and analysis techniques.

Wi Qtr. 3 cl. H305 (honors) may be available to students enrolled in an honors program. Open to majors and non-majors.

**309 Evolution of the Architectural English Environment U 3**

Survey of the development of the English architecture in response to the physical characteristics of the island and the changing social, political, and economic context.

Sp Qtr. 3 cl. Open to majors and non-majors.

**326 Introduction to Building Construction U 3**

Introduction to construction materials and building systems; survey of building industry and its relation to architectural practice.

Au Qtr. 3 cl, 2 hrs lab. Prereq: Jr standing or permission of instructor.

**327 Building Construction I U 3**

Detailing of building sections, simple enclosures and structural assemblies emphasizing wood and steel construction.

Wi Qtr. 3 cl, 2 hrs lab. Prereq: 326.

**328 Building Construction II U 3**

Detailing of building sections, simple enclosures, and structural assemblies emphasizing masonry and concrete construction.

Sp Qtr. 3 cl, 2 hrs lab. Prereq: 327.

**341 Architectural Design IV U 7**

Studio focusing upon analysis of historical and contemporary building types, graphic and verbal architectural analysis, and programmatic diagrams, matrices, etc.; human behavioral influences on architecture.

Au Qtr. 2 cl, 10 lab hrs. Prereq: 243 and 272. Open only to students enrolled in arch.

**342 Architectural Design V U 7**

Studio focusing upon relationship of wood and masonry material and construction to architectural design; introduction to building codes; bearing wall and post and beam structural systems.

Wi Qtr. 2 cl, 10 lab hrs. Prereq: 341. Open only to students enrolled in arch.

**343 Architectural Design VI U 7**

Studio focusing upon relationship of steel and concrete materials and construction to architectural design; introduction to zoning codes; skeletal and rigid frame structural systems.

Sp Qtr. 2 cl, 10 lab hrs. Prereq: 342. Open only to students enrolled in arch.

**401 Survey of Architectural Theory U 3**

Survey of architectural theory which reviews the history of architecture while searching for reinterpretations, strategies, structures, and precedents for theory in Western intellectual history.

Sp Qtr. 3 cl. Prereq: 301, 302, 303, 304, and 305. Not open to students with credit for 673.

**426 Introduction to Architectural Structures U 3**

Survey of statics and strength of materials; survey of structural systems with emphasis on integrated structural behavior and selection of the best structural system.

Au Qtr. 3 cl. Prereq: Math 150 and Physics 111.

**427 Wood and Steel Structure U 3**

Principles, elements, computations, detailing, and connections for structural wood and steel.

Wi Qtr. 3 cl. Prereq: 426.

**428 Masonry and Concrete Structure U 3**

Principles, elements, computations, detailing, and connections for structural masonry and concrete.

Sp Qtr. 3 cl. Prereq: 427.

**441 Architectural Design VII U 8**

Studio focusing upon the relationship of buildings and site; site analysis; alternative energy and passive solar design; computer-aided design.

Au Qtr. 1 cl, 11 lab hrs. Prereq: 343. Open only to students enrolled in arch.

**442 Architectural Design VIII U 8**

Studio focusing upon application of human behavioral analysis techniques to architectural design; programming; post occupancy evaluation.

Wi Qtr. 1 cl, 11 lab hrs. Prereq: 441 or permission of Undergrad Committee. Open only to students enrolled in arch.

**443 Architectural Design IX U 8**

Studio focusing upon relationship of mechanical systems, life cycle costing, value engineering and project financial feasibility to architectural design.

Sp Qtr. 1 cl, 11 lab hrs. Prereq: 442 or permission of the Undergrad Committee. Open only to students enrolled in arch.

**H444 Special Honors Design Studies U 8**

Studio for group and/or individual design studies.

Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing in arch with a minimum cumulative pt-hr ratio of 3.20, permission of instructor and Dept Honors Committee. Accepted students may substitute this course for 441, 442, or 443.

**604 History and Preservation of 19th- and 20th-Century American Architecture U G 3**

Investigation of 19th- and 20th-century American architecture with emphasis upon issues of preservation and conservation.

Au Qtr. 3 cl. Prereq: Grad standing or 4th yr standing in arch or permission of instructor.

**605 Research Methods in Architectural History and Preservation U G 3**

A survey of literary and physical research techniques in architectural history and preservation; identification and recording of historic buildings; field work in inventory techniques.

Sp Qtr. 3 cl. Prereq: Grad standing or 4th yr standing in arch or permission of instructor.

**606 Architectural Preservation: Administration and Practice U G 3**

An outline of regulations, laws, economic incentives, funding sources, and technical/design guidelines as they affect architectural preservation.

Wi Qtr. 3 cl. Prereq: 4th yr standing or grad standing in arch or permission of instructor.

**621 Architectural Environmental Simulation U G 3**

The study of environmental forms and physical phenomena affecting human comfort, convenience, and safety through the use of simulations.

Sp Qtr. 2 2-hr cl.

**641 Accelerated Architectural Design I U G 5**

Architectural analysis and problem solving for students in the 3+ Architecture Graduate Program.

Au Qtr. Prereq: Admission to the 3+ Master of Architecture Program.

**642 Accelerated Architectural Design II U G 5**

Continuation of 641.

Wi Qtr. Prereq: 641. Open only to students in the 3+ Master of Architecture Graduate Program.

**643 Accelerated Architectural Design III U G 5**

Continuation of 642.

Sp Qtr. Prereq: 642. Open only to students in the 3+ Master of Architecture Graduate Program.

**653 Passive Solar Energy I U G 3**

Investigation of the current development of energy conservation aspects in a building design in relation to passive solar energy.

Au Qtr. 3 cl. Prereq: 4th yr or grad standing in arch or permission of instructor.

**654 Passive Solar Energy II U G 3**

Study of energy evaluation of various types of passive solar energy systems and their applications in energy conservation in a building design.

Wi Qtr. 2 2½-hr cl. Prereq: 653 and arch major.

**660 Computer-Aided Architectural Design and Graphics U G 4**

Usage and development of computer graphics techniques in two and three dimensions as they apply to architectural drafting and design.

**660.01 Two-Dimensional Computer-Aided Architectural Design and Graphics**

Two dimensional vector graphics oriented programming with emphasis on parameterization techniques and transformational operators applicable to architectural design and drafting.

Au Qtr. 2 2-hr cl. Prereq: En Graph 294A or equiv and permission of instructor.

**660.02 Three-Dimensional Computer-Aided Architectural Design and Graphics**

Three dimensional graphics oriented programming with emphasis on parameterization/transformations as they apply to derivation and perspective drafting of architectural compositions.

Wi Qtr. 2 2-hr cl. Prereq: 660.01 or equiv and permission of instructor.

**660.03 Integrated Computer Aids for Architectural Design**

Color graphics and texture, sculpting operators, spatial grammars, and data structures as they apply to architectural design.

Sp Qtr. 2 2-hr cl. Prereq: 660.02 or equiv and permission of instructor.

**661 Architectural Environmental Systems U G 3**

Survey of building energy sources, climate and site, energy and arch design, environmental comfort, heat loss and gain, plumbing and storm water systems, lighting fundamentals, and light sources.

Au Qtr. 3 cl. Prereq: Physics 112 or permission of instructor. Not open to students with credit for 461.

**662 Electrical Systems in Architecture U G 3**

Survey of daylight design, lighting design and application, principles of electricity, electrical systems and materials, service and utilization, and electric wiring design.

Wi Qtr. 3 cl. Prereq: 661 or equiv.

**663 Mechanical Systems in Architecture U G 3**

Survey of heating, cooling, and ventilation; environmental planning; climate control systems; solar energy; energy conservation; fire protection; acoustics; noise control and building signal and life-safety systems.

Sp Qtr. 3 cl. Prereq: 661.

**671 Social and Psychological Influences on Architecture U G 3**

Survey of the relationships between man-made surroundings and selected social/psychological processes basic to human functions; the application of this material to programming, design, and evaluations of settings for human use.

Au Qtr. 3 cl. Prereq: Arch 3rd yr standing or above.

**672 Economic Influences on Architecture U G 3**

Survey of economic issues and methods relevant to practice of architecture including the building delivery systems, market analysis, computation of present, future and annual worth; life cycle costing, depreciation, and tax implications.

Wi Qtr. 3 cl. Prereq: Arch 3rd yr standing or above.

**685 Field Investigations in Architectural Preservation U G 5**

Su Qtr. 3 cl, 10 hrs field lab. Prereq: Permission of dept.

**685.01 Research Techniques**

Architectural preservation research involving primary and secondary source literature and official public records, as well as physical research.

**685.02 Planning and Design**

Architectural preservation design including programming, design, and detailing in architectural restoration projects.

**685.03 Fabric Analysis and Measured Drawings**

Analysis of architectural structure and enclosure systems and preparation of measured drawings using photogrammetric techniques as well as hand measurements.

**693 Individual Studies in Architecture U G 1-5**

For students majoring in arch desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor and completion of dept independent study form. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies in Architecture U G 1-5**

For students majoring in arch desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor and completion of dept independent study form. Repeatable to a maximum of 15 cr hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****700 Allied Arts U G 3**

Analysis of arts related to architecture and the expression of the nature of materials in architectural ornament, furniture and furnishings, and the garden.

Sp Qtr. 3 cl. Prereq: Arch 4th yr or grad standing in arch or permission of instructor.

**701 History of Architectural Theory U G 3**

Survey of architectural theories as stated by architects, historians, and architectural critics.

Wi Qtr. 3 cl. Prereq: Arch 4th yr standing or permission of instructor.

**721 Architecture Acoustics U G 3**

The geometry of architectural design for good acoustics within auditoria, lecture rooms, music rooms, churches, etc., where hearing is important.

Sp Qtr. 3 cl. Prereq: Grad standing in arch or permission of instructor.

**722 Introduction to Architecture Photogrammetry U G 3**

An introduction to the geometry of central projection and to methods of gaining architectural manual data for photography.

Sp Qtr. 3 cl. Prereq: Grad standing in arch or permission of instructor.

**724 Structural Design in Architecture U G 3**

Analysis and design of structural elements and systems; emphasis on integration of structures and building design.

Au Qtr. 3 cl. Prereq: 428 or permission of instructor.

**725 History of Structures in Architecture U G 3**

Survey of structural concepts as related to the evolution of modern structural analysis, methods of construction, and architectural theory.

Wi, Sp Qtrs. 3 cl. Prereq: 428 or permission of instructor.

**751 Practice of the Design Professions I U G 3**

History of professions and their clients; the professional's interaction with society and government substantive aspects of practice, including organization and communication; legal aspects of construction.

Au Qtr. 3 cl. Prereq: Grad standing in arch or permission of instructor.

**752 Practice of the Design Professions II U G 3**

Management of construction contracts; bonds and insurance operational procedures during negotiation and construction phases; arbitration; office and project case studies.

Sp Qtr. 3 cl. Prereq: Grad standing in arch or permission of instructor.

**H783 Honors Research U 3**

Research and investigation for each student with individual conferences resulting in a proposal, objectives, bibliography, and other research.

Wi Qtr. Arr. Prereq: 4th yr standing in arch with a minimum cumulative pt-hr ratio of 3.20, permission of instructor and Dept Honors Committee. This course is graded S/U.

**H784 Honors Project U 8**

Development and promulgation of an honors project as proposed in H783.

Sp Qtr. Arr. Prereq: H783, 4th yr standing in arch with a minimum cumulative pt-hr ratio of 3.20, permission of instructor and Dept Honors Committee. Accepted students may substitute this course for 443. Completion and acceptance of the project is required for graduation with distinction in BS Arch.

**801 Architectural Theory: Criticism G 3**

Investigations in architectural criticism and strategies for interpreting buildings.

Au Qtr. 3 cl. Prereq: Grad standing in Arch; concur: 841.

**802 Architectural Theory: Investigation of Context G 3**

Investigations of architecture and its physical context.

Wi Qtr. 3 cl. Prereq: Grad standing in Arch; concur: 842.

**803 Architectural Theory Seminar G 3**

Investigations of Contemporary Architectural Theory

Prereq: 802. Repeatable to a maximum of 6 cr hrs. Students select two of the following decimal subdivisions.

**803.01 Architectural Issues I**

Au, Wi, Sp Qtrs.

**803.02 Architectural Issues II**

Au, Wi, Sp Qtrs.

**803.03 Architectural Issues III**

Au, Sp Qtrs.

**803.04 Computer-Aided Architectural Design Issues**

Au, Sp Qtrs.

**803.05 Architectural Preservation Issues**

Sp Qtr.

**803.06 Passive Solar Design Issues**

Sp Qtr.

**841 Advanced Architectural Design I G 5**

Studio focusing on coordination and integration of material presented in the undergraduate design sequence with specific implementation of a comprehensive approach to building design.

Au Qtr. 8 lab hrs. Concur: 801.

**842 Advanced Architectural Design II G 5**

Continuation of 841.

Wi Qtr. 8 lab hrs. Concur: 802.

**844 Architectural Studio Options G 5**

Creative exploration of architectural design through studios taught by distinguished visiting critics and faculty members.

Su, Au, Wi, Sp Qtrs. 8 lab hrs. Prereq: 802 and 842.

Repeatable to a maximum of 20 cr hrs. Students select four of the following decimal subdivisions.

**844.01 Advanced Design I**

Au, Wi, Sp Qtrs.

**844.02 Advanced Design II**

Au, Wi, Sp Qtrs.

**844.03 Advanced Design III**

Au, Wi, Sp Qtrs.

**844.04 Computer-Aided Architectural Design**

The grade P will be assigned. A letter grade will be assigned two qtrs after completion of course.

Au, Wi, Sp Qtrs.

**844.05 Architectural Preservation Design**

Sp Qtr.

**844.06 Passive Solar Design**

Sp Qtr.

**893 Individual Studies in Architecture G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in arch, permission of instructor, and completion of dept independent study form. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies in Architecture G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in arch, permission of instructor. Repeatable to a maximum of 15 cr hrs.

**899 Interdepartmental Seminar G 1-15**

See Interdepartmental Seminars.

Su, Au, Wi, Sp Qtrs.

**999 Research in Architecture G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Art

146 Hopkins Hall, 128 North Oval Mall, 292-5072

**162 Concepts and Issues in Art U 2**

An orientation for new art students and a survey of art making.

Au, Sp Qtrs. 2 cl.

**170 Beginning Drawing U 5**

An introduction to basic freehand drawing, exploration of a range of drawing methods, media, concepts; emphasis on drawing from observation.

Su, Au, Wi, Sp Qtrs. 1 cl, 5 2-hr labs. This course is available for EM credit. VPA Admis Cond course.

**172 Visual Studies: Two Dimensional Art U 5**

Basic concepts of two-dimensional art dealing with visual structure, process, content, and invention.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. This course is available for EM credit. VPA Admis Cond course.

**180 Beginning Sculpture U 5**

An introduction to the principles of sculpture, emphasizing basic forming processes and materials.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 581. This course is available for EM credit. VPA Admis Cond course.

**182 Visual Studies: Three-Dimensional Art U 5**

Basic concepts of three-dimensional art dealing with the organization of space and form, using a variety of materials, processes, tools.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq or concur: 172. This course is available for EM credit.

**190 Introduction to Fine Art U 5**

An investigation of concepts and themes in visual art through studio experience.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Not open to art, art educ, hist art, or ind dsgn majors. BER course. VPA Admis Cond course.

**230 Introduction to Molten Glassworking U 5**

Introduction to glass as a fluid material for artistic expression; emphasis on the development of original imagery made from molten glass.

Au, Wi, Sp Qtrs. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**231 Beginning Cold Glassworking U 5**

Exploration of contemporary possibilities for the visual imagery of preformed glass using traditional techniques as a departure point; emphasis on innovational approaches.

VPA Admis Cond course.

**240 Fundamentals of Ceramic Art U 3**

Introduction to the art phases of the ceramic field; laboratory practice in the hand forming process.

Su, Au, Wi, Sp Qtrs. 1 cl, 6 lab hrs. VPA Admis Cond course.

**242 Introduction to Ceramic Art U 3**

Introduction to the ceramic arts through the use of the potter's wheel with lectures covering a broad survey of the field of ceramics.

Su, Au, Wi, Sp Qtrs. 1 cl, 6 lab hrs. VPA Admis Cond course.

**244 Ceramic Art Studio I U 3**

Intermediate course utilizing potter's wheel as forming process.

Su, Au, Wi, Sp Qtrs. 9 lab hrs. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**245 Ceramic Art Studio II U 3**

Studio practice in designing ceramic wares with emphasis on the hand forming processes.

Au, Wi, Sp Qtrs. 3 2-hr studios, 3 hrs arr. Prereq: 244 or permission of instructor.

**246 Ceramic Art Studio III U 3**

Advance throwing and forming.

Sp Qtr. 9 lab. hrs. Prereq: 244 or permission of instructor.

**260 Visual Studies: Special Projects Laboratory U 3**

Introduction to independent investigation in the arts: research, development, and presentation of solutions.

Au, Wi, Sp Qtrs. 3 2-hr labs. Prereq: 170, 172, and 182.

**261 Expanded Arts: An Introduction U 5**

Multimedia studio experiences relating to contemporary art problems.

Prereq: 170 or 172 or 180 or 182 or permission of instructor.

**268 Introduction to Fiber Arts U 5**

The use of textiles and fibers in the design and construction of contemporary art forms.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 172 or 190 or 290.

**272 Beginning Life Drawing U 5**

Drawing from the human figure; discussion of drawing as related to significant traditions; lectures and demonstrations.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 170 and 172. This course is available for EM credit.

**273 Beginning Painting U 5**

Introductory painting emphasizing fundamentals and their utilization as a basis for individual development; student initially works from still life; subsequent projects increase in complexity.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor. This course is available for EM credit.

**274 Intermediate Drawing U 5**

An intermediate level drawing-color experience exploring a variety of media and directions; lectures, discussions, demonstrations.

Au, Wi, Sp Qtrs. 5 3-hr labs. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**280 Construction Sculpture U 5**

Study of three-dimensional form through the use of power and hand tools.

Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**281 Metal Fabrication U 5**

A multimedia introduction to the sculpture process in metal fabrication, casting, forging with related materials; mold making.

Au, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**282 Life Sculpture U 5**

Aspects of the human form studied in relation to the materials of sculpture; experimentation in a choice of materials: clay, wax, cement, plaster, and metal.

Au, Wi Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**290 Fundamentals of Art U 5**

An introduction to art through studio experience, exploration of two-dimensional and three-dimensional media, by an analysis of form and expression.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs. Not open to majors in art, art educ, hist art, or ind dsgn. BER course. VPA Admis Cond course.

**293† Individual Studies U 2-5**

Preliminary studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

293.09 Drawing

293.10 Painting

**294† Group Studies U 1-5**

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**372 Visual Studies: Color U 5**

An introduction to seeing and using color for all disciplines; projects deal with color organization, phenomena, and interaction.

Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**376 Beginning Relief Printmaking U 5**

Introduction to the practice and examination of several modes of artistic expression in the relief processes of printmaking.

Au, Wi, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**377 Beginning Serigraphy U 5**

Introduction to the practice and examination of several modes of artistic expression in the serigraphic processes of printmaking.

Au, Wi, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**378 Beginning Intaglio Printmaking U 5**

Introduction to practice and examination of several modes of artistic expression in the intaglio processes of printmaking.

Au, Wi, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**379 Beginning Lithography U 5**

Introduction to the practice and examination of several modes of artistic expression in the lithographic processes of printmaking.

Au, Wi, Sp Qtrs. 5 2-hr cl, 5 hrs arr. Prereq: 162, 170, 172, 182, 260, and 272; and Hist Art 210 or 211 or 212; or equivs with permission of instructor.

**441 Ceramic Composition U 3**

Ceramic computations for art students; methods of representing ceramic composition; laboratory study and discussion of raw materials and their uses in bodies and glazes.

Au Qtr. 2 cl, 2 2-hr labs.

**468 Elements of Weaving U 5**

An introduction to the creative and functional aspects of handweaving; experience in the construction, warping, threading, and the manipulation of both traditional and modern design techniques.

Au, Wi, Sp Qtrs. 5 2-hr labs. Prereq: 172 or 190 or 290 or permission of instructor.

**561 Expanded Arts I U G 5**

A creative and conceptual multimedia exploration of the various aspects of the self, time, and movement; introduction of alternatives in medium, technique, and product.

Prereq: Jr standing or permission of instructor.

**561.01 Aspects of Self**

Au Qtr. 6 studio hrs, 4 hrs arr. Prereq: Permission of instructor.

**561.02 Aspects of Time**

Wi Qtr. 6 studio hrs, 4 hrs arr. Prereq: Permission of instructor.

**561.03 Aspects of Movement**

Sp Qtr. 6 studio hrs, 4 hrs arr. Prereq: Permission of instructor.

**572 Intermediate Life Drawing U 5**

Advanced drawing problems utilizing life model, various media; observing and translating figure and environment as related elements in pictorial organization; outside assignments involving figure groups.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 272. Repeatable to a maximum of 20 cr hrs, including cr hrs earned in 570.

**573 Intermediate Painting U 5**

Intermediate painting; traditional subject matter such as figures, still lifes, and concepts relative to contemporary directions in painting.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 273 and 274. Repeatable to a maximum of 10 cr hrs.

**587 Third Year Sculpture Class U 5**

Advanced study of sculptural processes, techniques, and concepts.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 280, 281, and 282. Open only to sculpture majors.

**587.01 Part 1****587.02 Part 2**

Prereq: 587.01.

**587.03 Part 3**

Prereq: 587.02.

**591 Studio Practice I U 2-5**

Intermediate studio practice, following and continuing the basic program of courses undertaken in the first two years.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. The following decimal subdivisions, with the exception of 591.12, are open only to jrs and srs majoring in art. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

**591.03 Ceramics****591.04 Glass****591.06 Printmaking****591.07 Weaving****591.11 Sculpture****591.12 Expanded Arts****595 Undergraduate Seminar in Studio Art U 2**

Presentations of studio work by seminar students, faculty, and visiting artists, with selected readings; accompanied by critical discussion emphasizing contemporary issues.

Wi Qtr. 1 2-hr cl. Prereq: Jr or sr standing in an art major or permission of instructor.

**630 Intermediate Molten Glassmaking U G 5**

Molten glass as an artist's material; emphasis on the involvement of a personal aesthetic through series studies.

Au, Wi, Sp Qtrs. Prereq: 230.

**631 Intermediate Cold Glassworking U G 5**

Innovational approach in fabricated glass imagery; emphasis on the growth of artistic development through series studies.

Au, Wi, Sp Qtrs. Prereq: 231.

**641 Ceramic Reproduction Processes U G 5**

Studies in the designing, fabrication, and uses of models and molds in such multiple ceramic production processes as casting, jigging, and pressing.

Wi Qtr. 5 2-hr labs, 5 hrs arr. Prereq: Permission of instructor.

**642 Advanced Ceramic Laboratory U G 3**

Design and construction of large ceramic art forms.

Au Qtr. 3 2-hr labs, 3 hrs arr. Prereq: Permission of instructor.

**647 Survey of Ceramic Form and Technique U G 3**

Slide lectures; designed specifically to give the student potter an understanding of historical forms and technical processes; presented in chronological sequence.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**661 Expanded Arts II U G 5**

A creative and conceptual multimedia exploration of the various aspects of reflection, situation art, and space; introduction of alternatives in medium, technique, and product.

Prereq: Jr standing or permission of instructor.

**661.01 Aspects of Reflection**

Au Qtr. 6 studio hrs, 4 hrs arr.

**661.02 Aspects of Situation Art**

Wi Qtr. 6 studio hrs, 4 hrs arr.

**661.03 Aspects of Space**

Sp Qtr. 6 studio hrs, 4 hrs. arr.

**668 Advanced Weaving U G 3-5**

Group investigation of technical aspects of loom weaving with emphasis on individual expression and creativity; basic hand spinning processes explored. Creager.

Au, Wi, Sp Qtrs. 9 to 15 lab hrs arr. Prereq: 468 and written permission of instructor.



**670 Advanced Drawing I U G 5**

Special problems in drawing, utilizing a wide range of media and methods and exploring a variety of materials in experimental approaches to drawing.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 274.

**673 Advanced Painting U G 5**

Research problems in painting with emphasis upon current directions, new media and techniques; lectures, discussions, and field trips.

Su, Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 10 or hrs of 573. Repeatable to a maximum of 20 cr hrs.

**674 Figure Painting U G 5**

Figure painting utilizing life and costumed models; advanced problems involving figure groups.

Sp Qtr. 5 2-hr labs, 5 hrs arr. Prereq: 570 and 673 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**675 Photomechanical Printmaking U G 5**

Designed to introduce the technology of photomechanical reproduction utilized by the printing industry as a tool to be used by the printmaking student.

Au, Sp Qtrs. 2 2½-hr labs, 2 1½-hr labs, 7 hrs arr. Prereq: 377 or 378 or 379, and written permission of instructor. Not open to students with 15 cr hrs in 686. Repeatable to a maximum of 15 cr hrs.

**676 Advanced Relief Printmaking U G 5**

An intensive exploration of the relief processes as a means for individual expression.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 376. Open only to art or art educ majors, or by permission of instructor.

**677 Advanced Serigraphy U G 5**

An intensive exploration of the serigraphic processes as a means for individual expression.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 377 or permission of instructor.

**678 Advanced Intaglio U G 5**

An intensive exploration of the intaglio process as a means for individual expression.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 378 or permission of instructor.

**679 Advanced Lithography U G 5**

An intensive exploration of the lithographic processes as a means for individual expression.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 379 or permission of instructor.

**687 Fourth Year Sculpture Class U 5**

Study of sculptural processes, concepts, and self analysis as an artist.

Au, Wi, Sp Qtrs. 5 2-hr labs, 5 hrs arr. Prereq: 587.03. Open only to sculpture majors.

**687.01 Part 1****687.02 Part 2**

Prereq: 687.01.

**687.03 Part 3**

Prereq: 687.02.

**691 Studio Practice II U G 2-5**

Advanced studio practice beyond 591.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. The following decimal subdivisions, with the exception of 691.12, are open only to srs or grad students majoring in art. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

**691.03 Ceramics****691.04 Glass****691.06 Printmaking****691.07 Weaving****691.09 Drawing**

Prereq: Grad standing or 10 cr hrs of 673, and submission of 10-15 drawings/paintings on Advising Day previous to the intended qtr of study; open only to students with successful review by the area faculty and a completed, signed ISA form.

**691.10 Painting**

Prereq: 670 or grad standing, and submission of 10-15 drawings/paintings on Advising Day previous to the intended qtr of study; open only to students with a successful review by the area faculty and a completed, signed ISA form.

**691.11 Sculpture****691.12 Expanded Arts****693 Individual Studies U G 2-5**

Advanced study for students in specialized programs.

Prereq: Permission of instructor. Each decimal subdivision repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

**693.07 Weaving****693.10 Painting****693.11 Sculpture****693.12 Expanded Arts****694 Group Studies U G 2-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

**694.01 General****694.03 Ceramics****694.06 Printmaking****694.07 Weaving****694.09 Drawing****694.10 Painting****694.11 Sculpture****694.12 Expanded Arts****696 Senior Exhibition U 2**

Required exhibition of studio work by seniors in BFA programs, accompanied by development of a portfolio of work and an artist's statement; independent study tutorial.

Su, Au, Wi, S Qtrs. Arr. Prereq: Sr standing in a BFA art program and permission of instructor. Normally to be taken within the final two qtrs of study.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****H783 Honors Research U 3-5**

A research investigation resulting in a senior honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a 3.30 cumulative pt-hr ratio in an art major, permission of instructor under whose supervision the work is to be completed, and the College of the Arts Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**891 Studio Practice III G 2-5**

Graduate-level studio practice.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in art or permission of instructor. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

**891.03 Ceramics****891.04 Glass Art****891.06 Printmaking****891.07 Weaving****891.09 Drawing****891.10 Painting****891.11 Sculpture****891.12 Expanded Arts**

**893 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

- 893.03 Ceramics
- 893.06 Printmaking
- 893.10 Painting
- 893.11 Sculpture
- 893.12 Expanded Arts

**894 Group Studies G 1-5**

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

- 894.03 Ceramics
- 894.06 Printmaking
- 894.10 Painting
- 894.11 Sculpture
- 894.12 Expanded Arts

**895 Seminar in Studio Art G 2**

Presentations by students, faculty, and visiting artists, with critical discussion emphasizing contemporary issues.

Au, Wi Qtrs. 1 2-hr cl. Prereq: Grad standing. Repeatable to a maximum of 4 cr hrs.

**896 Studio Humanities Teaching Techniques G 2**

Exercises and discussions exploring techniques used in organizing, presenting, and evaluating materials taught in studio art classes, with special reference to the studio humanities program.

Au Qtr. 1 2-hr cl. Prereq: Permission of instructor and grad standing in studio art.

**991 Studio Practice IV G 2-5**

Advanced graduate studio practice.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in art or permission of instructor. Each decimal subdivision repeatable to a maximum of 45 cr hrs.

- 991.03 Ceramics
- 991.04 Glass Art
- 991.06 Printmaking
- 991.07 Weaving
- 991.09 Drawing
- 991.10 Painting
- 991.11 Sculpture
- 991.12 Expanded Arts

**999 Research in Art G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Art Education

340 Hopkins Hall, 128 North Oval Mall, 292-7183

**120 Orientation to Art Education U 3**

Career possibilities explored through the history, theory, and issues of art education. Marantz.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Recommended concur: 189. Not open to students with credit for 200.

**160 Introduction to the Contemporary Arts U 5**

A study of the role of the arts in American society based on live, recorded, and filmed performances and exhibitions. Hutchens.

Au, Wi, Sp Qtrs. 4 cl, 1 hr arr. Not open to students with credit for Arts Col 160. BER/LAC/LAR course. VPA Admis Cond course.

**189 Field Experience Survey U 3**

Directed field experience at urban and suburban sites to discover the range of settings for art education. Marantz.

Au, Wi, Sp Qtrs. 2 cl, 6 hrs field experience. Recommended concur: 120.

**250† Beginning Jewelry and Metalsmithing U 3**

Fundamental knowledge of and processes for manipulating metals for the design and creation of jewelry and metalwork. Duncan.

Au, Wi, Sp Qtrs. 3 2-hr cl, 3 hrs arr. Not open to students with credit for 210. Repeatable to a maximum of 9 cr hrs. VPA Admis Cond course.

**289 Field Experience U 3**

Strategies and curricular content for the teaching of art as related to audience and setting.

Au, Sp Qtrs. 2 cl, 6 hrs field experience. Prereq: Soph standing. Repeatable to a maximum of 18 cr hrs in any combination of decimal subdivisions.

- 289.01 Pre-School
- 289.02 Elementary
- 289.03 Secondary
- 289.04 Adults
- 289.05 The Exceptional Student
- 289.10 Civic, Business, and Cultural Settings

**360 Criticism of Visual Form U 3**

Looking at and talking about art as a component in art education through description, interpretation, and evaluation of visual form. Lankford.

Au Qtr. 3 cl. Prereq: Soph standing and one course in art or hist art.

**401 Methods in Planning for Art Education U 3**

Planning for the teaching of art studio, criticism, history, and the study of art in society for elementary and secondary schools. Koroscik.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 120 and 189, and successful completion of 25 cr hrs in studio art or hist art.

**408 Planning for Non-Traditional Settings U 3**

Art education curriculum planning for museum patrons, and for audiences including the elderly, the handicapped, the incarcerated, and the mentally ill.

Sp Qtr. 2 2-hr cl. Prereq: 6 cr hrs in art educ, including either 189 or 289; or permission of instructor. For art educ or educ majors.

**420 Argument and Personal Theory in Art Education U 3**

Examination of the nature of argument and selected theories of art and art education toward refining the student's personal theoretical positions. Efland.

Au Qtr. 2 2-hr cl. Prereq: 120.

**430 History of Art Education U 3**

Examination of art education; study of changes in art and art teaching. Efland.

Wi Qtr. 3 cl.

**440 Graphic Communication Techniques for Art Teachers U 3**

Projects, discussions, and readings dealing with the design and symbolic use of letters and their relationship with other images toward communicating ideas in an educational context. Lankford.

Au, Wi Qtrs. 3 2-hr labs.

**445 Teaching of Studio Activities U 3**

Exploration of instructional application of various art materials for educational settings. Wasson.

Au, Sp Qtrs. 2 3-hr labs. Prereq: 120 and 189; concur: 289; and successful completion of 25 combined cr hrs in studio art and hist art. 401 recommended. Repeatable to a maximum of 9 cr hrs.

**450† Intermediate Jewelry and Metalsmithing U 3**

Development of skills in manipulating metals and in using processes and techniques of metal forming and embellishment for jewelry and metalwork design and construction. Duncan.

Au, Sp Qtrs. 3 2-hr labs, 3 hrs arr. Prereq: 6 cr hrs of 250 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

**465† Topics in Contemporary Art for Art Educators U 3**

An undergraduate seminar dealing with aspects of contemporary art with emphasis on its relationship to art education theory and practice. Arnold.

Sp Qtr. 3 cl. Prereq: Jr standing in art educ.

**489 Laboratory Field Experience U 3**

Strategies and curricular content for teaching art studio, art criticism, art history, and the study of art in society.

Su, Wi, Sp Qtrs. 1 cl, 5 hrs lab field experience. Prereq: 289, 401 or 408, 445, and written permission of 489 coordinator. Repeatable to a maximum of 9 cr hrs.

**489.01 Pre-School**

**489.02 Elementary**

**489.03 Secondary**

**489.04 Adults**

**493 Individual Studies U 1-5**

Individual studies and project work in specified problems of the field of art education.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**494 Group Studies U 1-5**

Group studies in professional areas of specified content.

Su, Au, Wi, Sp Qtrs. Prereq: 120 or 200 or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**500 Art for Elementary Teachers U 3**

Problems of teaching in terms of personal knowledge about art, insight into children's art work, and understanding of elementary school curriculum.

Su, Au, Wi, Sp Qtrs. 3 2-hr labs. Prereq: Art 190 or 290.

**560 Studio Critique in Teaching Art U 3**

Student and teaching discussion as a means toward evaluating art classroom performance. Barrett.

Sp Qtr. 1 2½-hr cl. Prereq: Jr standing and 9 cr hrs in art educ.

**586 Student Teaching in Art in Elementary Schools U 3-8**

Practical and theoretical study in educational settings working with elementary school-age children and cooperating teachers. Petrovich-Mwaniki.

Au, Wi Qtrs. Individual conferences and a wkly seminar. Prereq: 4th yr standing and written permission of art educ field experience coordinator. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**587 Student Teaching in Art in Secondary Schools U 3-15**

Practical and theoretical study in educational settings working with secondary school-age students and cooperating teachers. Koroscik.

Au, Wi Qtrs. Individual conferences and a wkly seminar. Prereq: 4th yr standing and written permission of art educ field experience coordinator. Repeatable to a maximum of 15 cr hrs for 7-12 certification or 8 cr hrs for K-12 certification. This course is graded S/U.

**589 Internship in Art Education U 1-15**

Students intern at non-public school sites to synthesize and apply what they have learned in the classroom through concentrated practice in the field.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Completion of all other program requirements. Each decimal subdivision repeatable to a maximum of 15 cr hrs. These courses are graded S/U.

**589.01 Arts Administration**

**589.02 Museum Education**

**589.03 Pre-art Therapy**

**589.04 Community Residential and Arts Centers**

**589.05 Art Criticism**

**589.06 Media Studies**

**589.07 Other**

**595 Seminar on Topical Issues in Art Education I U 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 120 or 500. Repeatable to a maximum of 15 cr hrs.

**601 Curriculum Design for Art Appreciation U G 3**

Examination of art appreciation programs and concepts toward planning curriculum for the study of art history, popular art, art criticism, and aesthetics for specific educational settings. MacGregor.

Sp Qtr. 1 2½-hr cl. Prereq: 401 or 408 or 500 or equiv.

**610† Planning for the Arts in Education U G 3**

Study and development of plans to produce arts advocacy and arts curricula for various educational purposes, needs, and settings. Marantz or MacGregor.

Wi Qtr. 1 2½-hr cl. Prereq: Sr standing.

**620 Theory of Art Education U G 3**

Development of aesthetic sensitivity from the theoretical perspectives offered by philosophy, psychology, and the social sciences with implications for teaching. Efland.

Sp Qtr. 2 1½-hr cl. Prereq: 420 or 430, and Philos 240. Not open to students with credit for 603.

**631 Nontraditional Art Education Settings U G 3**

Study of theories of non-traditional art education programs and the corresponding settings.

Au Qtr. 2 1½-hr cl. Prereq: Sr standing.

**635 Photographic Criticism U G 3**

Readings, lectures, and discussions dealing with the study and practice of photographic criticism to facilitate and enrich the understanding of criticism and photography. Barrett.

Wi Qtr. 2 2-hr cl. Prereq: 654, or Photog 606 or 521, or permission of instructor. Not open to students with credit for Photog 635. Cross-listed in Photography and Cinema.

**636 The Arts in Education U G 3**

Examination of ideas about the arts in education through analysis of programs, projects, and political processes that involve the visual arts, dance, music, and theatre. MacGregor.

Wi Qtr. 1 2½-hr cl. Prereq: Sr standing.

**650† Advanced Jewelry and Metalsmithing U G 3**

Further development of skills in manipulating metals; concepts of designing and executing jewelry and metalwork. Duncan.

Au, Wi, Sp Qtrs. 3 2-hr cl, 3 hrs arr. Prereq: 6 cr hrs of 450 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

**651 The Role of Newer Media in Art Education U G 3**

Study of the role of photographic and electronic arts in art education through an examination of literature, research, and practical applications. Barrett.

Au, Wi Qtrs. 3 2-hr cl. Prereq: Jr standing.

**652 Computer Graphics in the Arts and Education U G 3**

Application of computer imaging for the arts and interactive educational programs.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Sr or grad standing.

**655† Advanced Multimedia Materials for Art Education U G 3**

Development and presentation by advanced students of instructional packages for art education; emphasis on design and revision of previously designed materials. Barrett.

Sp Qtr. Lec/lab. Prereq: 651. Not open to students with credit for 605.

**657† Bookmaking U G 3**

Conception, design, construction, and criticism of limited edition books as aesthetic objects. Tauber.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 25 cr hrs of art or photog or ind dsgn, or permission of instructor.

**662† Television: An Art Education Perspective U G 3**

Application of the television medium in art education curricula and research, examined and developed through criticism and readings. Barrett.

Sp Qtr. 1 3-hr cl. Prereq: Jr standing.

**665 Content and Structure in Arts Education U G 3**

Students from art, dance, music, and theatre education engage in dialogue, research, and peer teaching focusing upon the educational content and structure of each discipline. Lankford.

Sp Qtr. 1 2½-hr cl. Open only to majors in art, dance, music, and theatre education and to grad students seeking certification. Not open to students with credit for Music 665. Cross-listed in Music.

**670 Public Policy and the Arts U G 3**

Issues in arts policymaking as they affect community arts services. Hutchens.

Au Qtr. 1 2½-hr cl.

**671 Role of the Community Arts Administrator U G 3**

The administrative role in economic development, human resource development, and organizational development in the arts. Hutchens.

Wi Qtr. 1 2½-hr cl, arr. Prereq: 670 or permission of instructor.

**672 Planning for Community Arts Services U G 3**

Grantsmanship, fundraising, marketing, and public relations. Hutchens.

Sp Qtr. 1 2½-hr cl. Prereq: 671 or permission of instructor.

**691 Applied Research in Art Education U G 2-5**

Studies in empirical, philosophical, curriculum, or studio problems in art education.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**693 Individual Studies U G 1-15**

Advanced study for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 45 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

698.01 Domestic

698.02 Foreign

**720 Philosophy of Art Education Literature Survey U G 3**

Discussion of writings by art educators, aestheticians, artists, critics, and others for historical perspective on and to distinguish the nature of philosophy of art education. Lankford.

Sp Qtr. 3 cl.

**731 Evaluation in Art Education U G 3-5**

Evaluation of student performance in art; informal instruments for collecting data for use in assessing programs. Efland.

Au Qtr. 2 2-hr cl. Prereq: 807 or equiv with written permission of instructor.

**750 Computer Animation Production I G 5**

The study of computer animation languages, 3-D data generation, and animation script development leading to the production of film/video.

Au Qtr. 2 2-hr cl, 3 2-hr labs. Prereq: Cptr/Inf 221 and 222 or equivs, and permission of instructor.

**751 Computer Animation Production II G 5**

Continued study of computer animation languages, 3-D data generation, and animation script development leading to the production of film/video.

Wi Qtr. 2 2-hr cl, 3 2-hr labs. Prereq: 750 and permission of instructor.

**752 Computer Animation Production III G 5**

Advanced study of computer animation languages, 3-D data generation, and animation script development leading to the production of film/video.

Sp Qtr. 2 2-hr cl, 3 2-hr labs. Prereq: 751 and permission of instructor.

**760† Art Criticism in Art Education U G 3**

An examination of methods of art criticism and the application of these methods to the classroom situation.

Au Qtr.

**765\* Contemporary Art and Art Education U G 3**

A study of recent developments in contemporary art and the implication of those developments on art education practice and curriculum design. Arnold.

Sp Qtr. 4 cl. Prereq: Written permission of instructor.

**776 Workshop in Art Education U G 1-5**

Small group demonstrations of trends, processes, and teaching materials for curriculum development in art education; preparation of study materials for teaching art.

Su, Au, Wi, Sp Qtrs. Prereq: 620 or equiv and permission of instructor. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

A program of reading and research arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a pt-hr ratio of 3.50 in the major area and permission of instructor under whose supervision the work is to be completed and the Honors Committee of either the College of the Arts or the College of Education. Repeatable to a maximum of 15 cr hrs. Satisfactory completion of at least 8 cr hrs is required of candidates for an undergrad degree *with distinction* in art educ. This course is graded S/U.

**795 Seminar on Topical Issues in Art Education II U G 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in art educ or permission of dept. Repeatable to a maximum of 15 cr hrs.

**801 Current Perspectives on Art Education G 2**

Repeatable to a maximum of 6 cr hrs in each decimal subdivision.

**801.01 Departmental Symposium**

Departmental faculty make formal presentations for formal response and general discussion.

Au Qtr.

**801.03† Visiting Professionals Symposium**

Resource persons from the community and professions make formal presentations for formal response and discussion.

Su Qtr. Prereq: 801.01 or 801.02 or 804.

**804† Issues in Art Education G 3-5**

An introduction to alternative conceptions of the functions of art education within the context of general education and the contemporary culture milieu.

Au Qtr.

**805† Empirical Problems in Art Education G 3-5**

An introduction to the language, methodology, and application of empirical research in art education; the identification and isolation of appropriate empirical problems in the field.

Koroscik.

Sp Qtr.

**807 Curriculum Problems in Art Education G 3-5**

An examination of the functions of curricular plans as tools for transforming selected conceptions of art education into teacher and student activities in the classroom. Efland.

Wi Qtr.

**820† Problems in Philosophy of Art Education G 3-5**

Discussion of sets of readings on instructor-selected topics of historical interest for the structure of their arguments and their art education practice implications. Lankford.

Wi Qtr. Prereq: 720.

**889 Internship in Art Teaching G 2-15**

Supervised professional teaching experience toward certification for post-degree students and extended field work for graduate students.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**893 Individual Studies G 1-15**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs. This course is graded S/U.

**894 Group Studies G 1-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**911 Research Problems in Art Education G 3-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

**998 Research in Art Education: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Art Education: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**400 Career Planning Seminar U 1**

Discussion of careers for liberal arts majors; employment trends; effective job search strategies; resumes, vitae, and cover letter preparation; graduate and professional school opportunities; interviewing techniques.

Wi, Sp Qtrs. 2 cl. These courses are graded S/U.

**400.01 General**

Prereq: Soph or jr standing. Not open to srs except by permission of instructor; or to Capstone students; or to students with credit for 400.02.

**400.02 Capstone Program**

Prereq: Soph or jr standing in Capstone program. Not open to srs except by permission of instructor; or to students with credit for 400.01.

**489 Professional Practice**

Su, Au, Wi, Sp Qtrs. Arr.

**489.01 Credit Cooperative Education Program U 2**

Employment through the Cooperative Education program conducted under the supervision of an ASC faculty member; midterm and comprehensive final reports required.

Prereq: Admission to co-op education program, minimum cumulative pt-hr ratio of 2.50, soph standing or above, and completion of credit co-op education agreement form with instructor under whose supervision the work is to be completed. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**489.02 Noncredit Cooperative Education Program U 0**

A cooperative education or internship assignment conducted under the supervision of the employer; monitoring and evaluation by the director of the co-op program.

Prereq: Permission of the director of the co-op education program. Repeatable to a maximum of 5 times. This course is graded S/U.

## Arts, College of the

304 Mershon Auditorium, 30 West 15th Avenue, 292-5172

**294 Group Studies U 1-5**

Interdepartmental course involving studies in two or more areas of the visual and performing arts.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

**494 Group Studies U 1-5**

Group studies in selected interdisciplinary areas in the arts.

Arr. Prereq: Jr standing or above, and permission of instructor. Repeatable to a maximum of 15 cr hrs.

**693 Individual Studies U G 2-5**

Advanced studies for students engaged in interdisciplinary investigations within the College of the Arts.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Interdepartmental course involving studies in two or more areas of the visual and performing arts.

Prereq: Permission of dean. Repeatable to a maximum of 18 cr hrs.

## Astronomy

5040 Smith Laboratory of Physics, 174 West 18th Avenue, 292-1773; Perkins Observatory, Delaware, Ohio

**150 Descriptive Astronomy U 5**

Mankind's view of the nature of the physical universe, and the manner in which it arrived at that view; telescopes and planetarium may be used.

Su Qtr. Prereq: Math 075 or 076 or 102, or Math Placement Level R. Not open to students with credit for 161, 162, 191, or 192. Not intended for ASC BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

## Arts and Sciences

141 Denney Hall, 164 W 17th Avenue, 292-7226

**100 Arts and Sciences Survey U 1**

Academic requirements; University procedures, grading system, resources; student rights and responsibilities; overview of arts and sciences academic areas of study and services.

Su, Au, Wi, Sp Qtrs. H100 (honors) may be available to students in the Arts and Sciences Honors Program or by permission of the ASC Honors Director. Prereq: Enrollment in the Colleges of the Arts and Sciences. Not open to students with credit for 101 Au Qtr 1982, Agr 100, Arts Col 100, Engineer 100, Home Ec 100, Nat Res 100, or UVC 100. This course is graded S/U.

**101 Freshman Seminar U 1**

Seminars on varying topics taught by University faculty.

Prereq: Fr or soph standing or permission of instructor.

Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

**294 Interdisciplinary Group Studies U 1-5**

Study of special or interdisciplinary topics at an introductory level.

H294 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Open to students who meet instructor's stated prereqs. Repeatable to a maximum of 15 cr hrs.

**298 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**298.01 Domestic****298.02 Foreign**

**155 Current Topics in Astronomy U 5**

A detailed study of several topics of current interest in the fields of astronomy, astrophysics, and cosmology, presented for non-science majors.

Sp Qtr. 5 cl. Prereq: 150 or 192, and Math 075 or 076 or 102, or equiv; or written permission of instructor. Not recommended for students with a grade of below B in 150. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**161 Introduction to Solar System Astronomy U 5**

Motions, evolution, and present physical characteristics of the sun and its family of planets, satellites, comets, and minor bodies.

Au, Wi Qtrs. 5 cl. Prereq: Math 075 or 076 or 102, or Math Placement Level R. Not open to students with credit for 150 or 191. Not intended for ASC BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**162 Introduction to Stellar, Galactic, and Extragalactic Astronomy U 5**

Structure, motions, and evolution of stars, interstellar material, galaxies, and the universe as a whole.

Wi, Sp Qtrs. 5 cl. Prereq: 161 or 191. Not open to students with credit for 150 or 192. Not intended for ASC BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**291 Basic Astrophysics and Planetary Astronomy U 4**

Motions and physical nature of objects in the solar system; electromagnetic radiation, telescopes, and astronomical detectors.

Au Qtr. 4 cl. Prereq or concur: Physics 133; or permission of instructor. Not open to students with credit for 191. Intended only for BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**292 Stellar, Galactic, and Extragalactic Astronomy and Astrophysics U 4**

Observational and physical properties of the sun and stars; stellar structure and evolution; interstellar medium; galaxies and cosmology.

Wi Qtr. 4 cl. Prereq: 291 or permission of instructor. Not open to students with credit for 192. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**294 Group Studies U 1-5**

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**350† Methods of Astronomical Observation U 5**

Introduction to astronomical observational techniques and methods for interpreting observations, including topics from spherical astronomy and practical experience with astronomical instrumentation and data sources.

Sp Qtr. 3 cl, 1 2-hr lab plus independent observation. Prereq: 150 or 162 or 192, Math 153, and Physics 133.

**601†\* History of Astronomy U G 3**

Babylonian, Egyptian, Chinese, and Mayan astronomy; Greco-Roman period and Middle Ages; Renaissance and Reformation; modern trends in astronomy.

Wi Qtr. Prereq: 150 or 161 or 162 or 191 or 192 or permission of instructor.

**605†\* Introduction to Celestial Mechanics U G 3**

Application of the laws of motion to planets, satellites, and stars; the two-, three-, and N- body problems; introduction to orbit and perturbation theory.

Wi Qtr. Prereq: Math 255 or 556, and Physics 261 or 525; or permission of instructor.

**640 Stellar Astronomy U G 4**

Distances, luminosities, radii, temperatures, and masses of stars; the distribution and motion of stars; interstellar matter; and galactic dynamics.

Au Qtr. Prereq: 192 or 292, Math 254, and Physics 133; or permission of instructor. Not open to students with credit for 650.

**641 Introduction to Astrophysics U G 4**

Astrophysics of stellar interiors and atmospheres; interstellar medium and nebulae.

Wi Qtr. 2 2-hr cl. Prereq: 640; Math 255 or 556, and Physics 531; or permission of instructor. Not open to students with credit for 651.

**642 Extragalactic Astronomy U G 4**

Observed properties of galaxies; cosmology.

Sp Qtr. 2 2-hr cl. Prereq: 641 or permission of instructor.

**652 Solar System U G 4**

The physical nature of the solar surface, planets, satellites, comets, asteroids, meteors, and diffuse matter in the solar system; cosmogony of the solar system.

Sp Qtr. Prereq: 150 or 162 or 191, and 641; or permission of instructor.

**689\* Astronomical Uses of Applied Mathematics U G 3**

Application of numerical methods for solution of integral, differential, and linear equations of particular interest to astronomy; aspects of statistics of particular relevance to astronomy.

Au Qtr. Prereq: Math 255 or permission of instructor.

**693 Individual Studies U G 1-15**

Independent library or laboratory work on a special problem in observational or theoretical astronomy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 40 or hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 or hrs.

**H783 Honors Research U 3-5**

A program of study arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the astron courses taken, with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS *with distinction* in astron. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**785†\* Observational Techniques I U G 4**

Photoelectric and photographic photometry.

Au Qtr. Prereq: 350, Physics 532 and 657 or permission of instructor; and sr (Rank 4) standing or above.

**786†\* Observational Techniques II U G 3**

Observational spectroscopy.

Sp Qtr. Prereq: 785.

**801†\* Astronomy Seminar I G 2**

Seminars conducted on astronomical topics of current interest; students will participate actively in the presentation and discussion of materials.

Au Qtr. Prereq: 10 or hrs each at 600 level or higher in astron, physics, and math; or permission of instructor. Repeatable to a maximum of 8 or hrs. This course is graded S/U.

**802†\* Astronomy Seminar II G 2**

Continuation of 801.

Wi Qtr. Prereq: 801. Repeatable to a maximum of 8 or hrs. This course is graded S/U.

**803†\* Astronomy Seminar III G 2**

Continuation of 802.

Sp Qtr. Prereq: 802. Repeatable to a maximum of 8 or hrs. This course is graded S/U.

**830†\* Properties of Stars and Galactic Structure G 5**

Observed properties of stars; distribution and motions of stars and gas in the galaxy.

Au Qtr. 3 1½-hr or 5 cl. Prereq: 641 and Physics 533 or 706; or permission of instructor.

**831†\* Single Stars I G 5**

Theoretical aspects of the atmospheres, interiors, and evolution of single stars, including the sun.

Wi Qtr. 2 2-hr or 3 1½-hr cl. Prereq: 830 and Math 255 or 556; or permission of instructor.

**832†\* Single Stars II G 5**

Continuation of 831.

Sp Qtr. Prereq: 831 or permission of instructor.

**836†\* Observed Properties of Stars G 3**

Photometric and spectroscopic observations of stars, including infrared and ultraviolet wave lengths; observations of intrinsic variable stars.

Wi Qtr. 2 1½-hr or 3 cl. Prereq: 830 or permission of instructor.

**838†\* Binary Stars G 4**

An examination of the properties of visual, spectroscopic, and eclipsing binaries; their physical interactions and evolution.

Sp Qtr. 2 2-hr cl. Prereq: 832 and 836, or permission of instructor.

**839†\* Advanced Topics in Astrophysics G 4**

Complex stellar models, collapsed objects; radiative processes of astrophysical interest; sources of jets of materials, gamma rays, cosmic rays.

Sp Qtr. 2 2-hr cl. Prereq: 832 or permission of instructor.

**841†\* Astronomical Instrumentation and Data Analysis G 5**

Design and use of astronomical instrumentation and introduction to modern detector technology; reduction and analysis of astronomical data.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**850 Current Topics in Astronomy G 1-5**

Staff members and visiting lecturers present material on their current research problems.

Au, Wi, Sp Qtrs. Prereq: 10 or hrs at 600 level or higher in each of astron, physics, and math; or permission of instructor. Repeatable to a maximum of 15 or hrs.

**871\* Stellar Systems and Interstellar Matter I G 5**

Radio and optical observational and theoretical aspects of multiple star system dynamics, structure and statistics; interstellar gas and dust; external systems and cosmology.

Au Qtr. Prereq: 651; Elec Eng 810 or Physics 656; Math 255 or 556, and 551; Physics 780.20 or Stat 521; or permission of instructor.

**872\* Stellar Systems and Interstellar Matter II G 5**

Continuation of 871.

Wi Qtr. Prereq: 871 or permission of instructor.

**873\* Stellar Systems and Interstellar Matter III G 5**

Continuation of 872.

Sp Qtr. Prereq: 872 or permission of instructor.

**880 Directed Research G 3**

Participation by the student in the research being conducted by a professor.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 or hrs only under supervision of different faculty members. This course is graded S/U.

**894 Group Studies G 1-5**

Special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 15 or hrs.

**999 Research in Astronomy and Astrophysics G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Atmospheric Sciences

103 Bricker Hall, 190 North Oval Mall, 292-2514

**General Meteorology**

See Physics 503—A description of weather phenomena and the physical processes underlying them; intended primarily for nonphysics majors.

**Climatology**

See Geog 520—The elements and the controls of climate; types of climate and their distribution; climates and their effects on the economic and other activities of man.

**Microclimatology: Boundary Layer Climatology**

See Geog 622.01—Theory of exchanges of energy and mass at the earth-atmosphere interface as it relates to microclimates with particular emphasis upon radiation and climate.

**Microclimatology: Microclimatological Measurements**

See Geog 622.02—Practical experience in the fabrication of instruments, deployment of measurement systems in the field and recording of data related to microclimates.

**Synoptic Meteorology: Synoptic Analysis and Forecasting**

See Geog 623.01—Theory and practice in synoptic weather analysis and forecasting.

**Synoptic Meteorology: Severe Storm Forecasting by Radar and Satellite**

See Geog 623.02—The theory and application of radar and satellite imagery in weather forecasting; emphasis on severe thunderstorms, tornadoes, and hurricanes; analysis of their evolution and structure.

**631 Atmospheric Thermodynamics U G 5**

An analysis of the fundamentals of atmospheric thermodynamics and their application to meteorological problems.

Au Qtr. 5 cl. Prereq: Math 153.

**637 Dynamic Meteorology I U G 5**

Fundamental problems in dynamic meteorology; components of the equations of atmospheric motion are derived, and vorticity and divergence in the development of meteorological systems.

Wi Qtr. 5 cl. Prereq: 631 or Aero Eng 505, and Math 415.

**638 Dynamic Meteorology II U G 5**

Advanced problems in dynamic meteorology; use of the equations of motion in numerical models of the atmosphere, especially those used by the National Weather Service.

Sp Qtr. 5 cl. Prereq: 637 or Aero Eng 765.

**693 Individual Studies in Atmospheric Sciences U G 1-5**

Independent studies on selected atmospheric sciences related topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 or hrs. This course is graded S/U.

**694 Group Studies in Atmospheric Sciences U G 1-5**

Special studies on topics directly related to the atmospheric sciences.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs.

**Fundamentals of Atmospheric Dynamics**

See Aero Eng 765—Advanced level treatment of basic topics in the dynamics and thermodynamics of atmospheric motion.

**Dynamic Climatology**

See Geog 821—Dynamics, thermodynamics, energy conservation, flows, conversion processes; large scale circulation patterns with particular emphasis upon turbulence at the synoptic scale; weather processes, and regional climates.

**Microclimatology**

See Geog 822—Radiation and turbulence processes, conduction; variation wind, temperature, humidity, soil moisture, evaporation, soil temperature; influence of vegetation and artificial structures.

**Applied Climatology**

See Geog 823—Analysis of climatic and environmental change on various time scales; man's impact on climate; theory and application of long-range and climate forecasting.

**881 Atmospheric Sciences Seminar G 2**

A multidisciplinary seminar reviewing the state-of-the-art of selected topics in atmospheric sciences-related fields.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**893 Individual Studies in Atmospheric Sciences G 1-5**

Reviews the state-of-the-art of selected topics in the atmospheric sciences-related fields of meteorology and climatology, air environment studies, or aeronomy and solar-terrestrial relations.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**894 Group Studies in Atmospheric Sciences G 1-5**

Advanced studies on topics directly related to the atmospheric sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**999 Research in Atmospheric Sciences G Arr**

Research for thesis or dissertation purpose only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in atmospheric sciences. This course is graded S/U.

## Aviation

Ohio State University Airport, 2160 West Case Road, 292-5460

**294 Group Studies in Aviation U 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**300 The National Aviation System U 3**

A comprehensive survey of the national aviation system.

Su, Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Not open to students with credit for 111.

**310 Private Pilot Fundamentals U 5**

Study of flight fundamentals, aircraft operation, weather, and regulations essential for the private pilot.

Su, Au, Wi, Sp Qtrs. 5 cl, or 1 2-hr cl and 1 3-hr cl. Prereq: Math 116. Not open to students with credit for 211.

**322 Aviation History U 3**

A survey of the evolution of aviation; emphasis on the development of the national aviation system and its social, economic, and political impact.

Wi Qtr. 3 cl, or 1 3-hr cl. Not open to students with credit for Aviation History 294.

**324\* Distinguished Aviation Lecture Series U 2**

An overview of contemporary opportunities, challenges, and trends in aviation; invited presentations by distinguished guest speakers supplemented by faculty lectures.

Sp Qtr. 2 1-hr cl. Repeatable to a maximum of 6 cr hrs.

**341 Private Pilot Flight Lab I U 2**

Laboratory course providing students an opportunity to learn the fundamentals of flight and airplane operation leading to solo flight.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 200.

**342 Private Pilot Flight Lab II U 2**

Laboratory course providing students an opportunity to learn the fundamentals of flight and airplane operation leading to Private Pilot certification.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 310 and 341. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 202.

**410 Aviation Weather U 3**

Overview of weather theory; identification of aviation weather hazards and methods for obtaining current weather data.

Au, Wi Qtrs. 3 cl or 1 3-hr cl. Prereq: 310. Not open to students with credit for 320.

**411 Aircraft Performance U 3**

Studies of airframe components, performance and design characteristics, power plants, and federal certification of aircraft.

Au, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 310 and Physics 111.

**413 Commercial Pilot Fundamentals U 3**

A study of high-performance airplane operational considerations, systems, and components and the Federal Aviation Regulations which govern the operations, privileges, and limitations of commercial pilots.

Au Qtr. 1 3-hr cl. Prereq: 410.

**414 Flight Physiology U 3**

An examination of the adverse effects of flight on human physiological functions, perceptions, and performance.

Au Qtr. 3 cl or 1 3-hr cl. Prereq: 310. Not open to students with credit for 432.

**415 Instrument Flight Fundamentals U 3**

Study of flight by reference to instruments, IFR regulations, and procedures in the national airspace system.

Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 410.

**417 Advanced Multiengine Operations U 2**

The study of the principles of operation of the contemporary corporate airplane.

Wi Qtr. 1 2-hr cl. Prereq: 411. Not open to students with credit for 450.

**418 Air Transport Operations U 3**

Examination of the elements of airline transport operations and the functions of the aircraft dispatcher and flight engineer.

Sp Qtr. 1 3-hr cl. Prereq: 411 and 415. Not open to students with credit for Air Transport Operations 294.

**421 Flight Instruction Methodology U 3**

Principles of teaching aeronautical subjects.

Au Qtr. 1 3-hr cl. Prereq: 411, 413, and 415.

**422 Instrument Instruction Methodology U 2**

Principles of teaching instrument flight theory and requirements.

Sp Qtr. 1 2-hr cl. Prereq: 421. Not open to students with credit for 451.



**441 Commercial Flight Lab 1 U 3**

Development of commercial pilot skills and experiences, fundamentals of instrument flight.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 342. Obtain equipment usage charge and permission slip at OSU Airport prior to scheduling. Not open to students with credit for 401.01.

**442 Commercial Pilot Flight Lab 2 U 3**

Further development of commercial pilot skills and experience, completion of instrument flight instruction.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 415 and 441. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.02.

**443 Commercial Pilot Flight Lab 3 U 3**

Complex airplane (SEL) flight instruction.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 442. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.03.

**444 Commercial Pilot SEL Flight Lab 4 U 3**

SEL commercial and instrument flight skills.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 413 and 443. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.04.

**445 Commercial Pilot SEL Flight Lab 5 U 3**

Leads to SEL commercial certificate.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 444. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.04.

**446 Commercial Pilot MEL Flight Lab 4 U 3**

Development of MEL commercial pilot flight skills; leads to multi-engine rating.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 413 and 443. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.06.

**447 Commercial Pilot MEL Flight Lab 5 U 3**

Development of MEL instrument flight skills; leads to MEL instrument rating.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 446. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.04.

**461 Flight Instructor ASEL Flight Lab U 3**

Development of skills and experience necessary for certification as flight instructor airplane SEL.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 421 and 445. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.05.

**462 Flight Instructor Instrument Airplane Flight Lab U 3**

Development of skills and experience necessary for flight instructor instrument rating.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 422 and 445 or 447. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.07.

**463 Flight Instructor AMEL Flight Lab U 3**

Development of skills and experience necessary for airplane MEL rating.

Su, Au, Wi, Sp Qtrs. 5 1-hr labs. Prereq: 421 and 447. Obtain equipment usage charge and permission slip at University Airport prior to scheduling. Not open to students with credit for 401.07.

**489 Professional Practice in Industry U 2**

Actual employment in a co-op program in the aviation industry and the preparation of a report based on the work experience.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Admission to co-op program in aviation and written permission of dept. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**493 Individual Studies in Aviation U 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**510 The National Airspace System U 3**

Overview of proposed national airspace system careers, implementation, airspace, facilities, safety, new electronic systems, economic, social, and political implications.

Au Qtr. 1 3-hr cl. Prereq: 415. Not open to students with credit for the National Airspace System 294.

**520 Aviation Communication U 3**

Communication skills and theory for the aviation professional; includes pilot/ATC radio communications, public relations, organizational structure, and written and verbal reports.

Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 300 and 310. Not open to students with credit for Aviation Communication 294.

**522 Principles of Aviation Organizations U 3**

Applied study of communication in and the structure of aviation organizations: FBO, FAR 135, FAR 121, and Corporate.

Sp Qtr. 3 cl or 1 3-hr cl. Prereq: 520.

**530 Aviation Law U 3**

Study of the legal system and the important legal concepts affecting aviation.

Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 520. Not open to students with credit for 521.

**532 Aviation Safety Investigation U 3**

Functions of air safety investigation, aircraft accident reconstruction and investigation, aircraft accident prevention, and role of expert witness.

Wi Qtr. 1 3-hr cl. Prereq: 411, 413, and 415. Not open to students with credit for Aviation Safety Investigation 294.

**540 Aviation Human Factors U G 3**

An examination of human factors problems in aviation safety including aircraft design, aviation systems design, and human behavior.

Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 310; 410 and 415 recommended. Not open to students with credit for 519.

**550 Aviation Management U 3**

A blend of accepted business procedures and practical techniques applied to aviation management; includes general aviation, airlines, airports, aircraft, and air traffic control.

Au, Wi, Sp Qtrs. 3 cl or 1 3-hr cl. Prereq: 300 and 310. Not open to students with credit for Aviation Management 294.

**552 Airport Management U 3**

Comprehensive study of airport operations and management; role of the airport manager in planning, finance, administration, public relations, socio-political and environmental considerations, and operational requirements and maintenance.

Sp Qtr. 1 3-hr cl. Prereq: 550. Not open to students with credit for Airport Management 294.

**593 Individual Studies in Aviation U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Senior Seminar U 2**

Selected studies of theory and practice in aviation; topic varies quarterly.

Wi Qtr. 1 2-hr cl. Open only to aviation majors with sr standing.

**640 Man-Machine Simulation in Training and Engineering U G 3**

An analysis of current research and problems in man-machine simulation of complex systems for training and research.

Sp Qtr. 3 cl or 1 3-hr cl. Prereq: 415 and 540. Not open to students with credit for 619.

**650 Air Transportation Analysis U 3**

Analysis and planning of air transportation systems; focus on air transportation supply and demand components, and examples from U.S. domestic and international airlines, passenger and cargo.

Wi Qtr. 3 cl or 1 3-hr cl. Prereq: 550 and Econ 200. Not open to students with credit for Airline Planning Techniques 294.

**694 Group Studies in Aviation U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 or hrs.

## Biochemistry

776 Biological Sciences Building, 484 West 12th Avenue, 292-6771

**105 Molecular Basis of Life U 5**

Introduction to the molecular processes underlying life, with applications to biological phenomena of social importance. Snell.

Sp Qtr. 5 cl. Not open to students with credit for Biophys 105. Recommended for nonscience majors; not intended for ASC BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**211 Elements of Biochemistry U 5**

A survey of important concepts in biochemistry stressing the qualitative rather than the quantitative view; suitable for students without an organic chemistry background. Snell.

Au, Sp Qtrs. 5 cl. Prereq: Chem 102 or 122. Credit does not count toward a major in biochem. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**251 Man and His Food U 5**

Integrated treatment of the biological, chemical, nutritional, economic, and cultural concepts basic to feeding the populations in developed and underdeveloped countries of the world. Snell.

Su, Au Qtrs. 5 cl. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**294 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs for different subject matter only.

**500† Microcomputers in Biochemistry U G 5**

An introduction to data and numerical analysis and computer programming in Basic for students in biochemistry and related fields. Scott.

Au Qtr. 3 cl. Prereq: Chem 123 and Math 152.

**511 Introduction to Biological Chemistry U G 5**

An introductory course in biochemistry dealing with the molecular basis of structure and metabolism of plants, animals, and microorganisms.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Chem 123 and 242 or 252, and 2 qtrs of biological sciences. The organic chemistry requirement may also be satisfied by Chem 231 with a grade of at least C. This course is available for EM credit.

**512 Biochemistry of Physiological Processes U G 5**

The biochemical basis for physiological processes in higher animals; topics include digestion and absorption, respiration, blood function, kidney function, and endocrine control. Serif.

Sp Qtr. 5 cl. Prereq: 511 or equiv; a course in physiolog recommended.

**521 Introduction to Biological Chemistry: Laboratory U G 5**

Assay techniques for chemical constituents and metabolic reactions of living cells.

Su, Au, Sp Qtrs. 2 cl, 2 3-hr labs. H521 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq for 521: 511 or 613 or equiv. Prereq for H521: 511 or 613 or equiv, and Chem 221.

**613 Biochemistry and Molecular Biology U G 4**

An introductory course in biochemistry and molecular biology developing in three quarters the molecular basis of structure and function of living cells. Doskotch.

Au Qtr. 4 cl. Prereq: Chem 242 or 253, and 2 qtrs of biological sciences. Not open to students with credit for 511 without written permission of instructor. Not open to students with credit for 513. This course is available for EM credit.

**614 Biochemistry and Molecular Biology U G 4**

Continuation of 613. Ross.

Wi Qtr. 4 cl. Prereq: 613. This course is available for EM credit.

**615 Biochemistry and Molecular Biology U G 4**

Continuation of 614. Breitenberger.

Sp Qtr. 4 cl. Prereq: 614. This course is available for EM credit.

**635 Plant Biochemistry U G 5**

The biochemistry of plants, emphasizing the similarities and differences as compared to other life forms. Breitenberger and Sayre.

Au Qtr. 5 cl. Prereq: 511 or 614. Not open to students with credit for 631 prior to Wi Qtr 1988 or for Botany 635. Cross-listed in Botany.

**693 Individual Studies U 2-5 G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs for undergrad credit and to a maximum of 40 or hrs for grad credit. This course is graded S/U.

**694 Group Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**702 Molecular Genetics: Regulation of Gene Expression U G 3**

Transcription, translation, and regulation of gene expression in prokaryotes and eukaryotes; emphasis on concepts and experimental analysis of gene regulatory mechanisms. Marzluf.

Wi Qtr. 3 cl. Prereq: Genetics 701 or permission of instructor. Not open to students with credit for 611 or Genetics 611.

**708 Protein and Enzyme Laboratory U G 5**

Purification, characterization, and study of the physical and catalytic properties of enzymes and proteins. Ives and Swensen.

Wi Qtr. 3 4-hr labs. Prereq: 521 and 761; or equivs; or permission of instructor.

**710 Molecular Biology Laboratory U G 5**

Isolation of recombinant phage and phage DNA, subcloning of DNA fragments, restriction enzyme analysis, nucleic acid hybridization, RNA metabolism. Dean.

Sp Qtr. 3 4-hr labs. Prereq: 521 and 611 or 702; or equivs; or permission of instructor.

**721 Physical Biochemistry U G 3****721.01 Physical Biochemistry I**

Introduction to physical chemistry with emphasis on biological applications; designed for students in the life sciences. Scott.

Au Qtr. 3 cl. Prereq: 511 or 615, Math 153, and Physics 113 or 133; or permission of instructor.

**721.02 Physical Biochemistry II**

A continuation of 721.01; additional topics in thermodynamics, statistical mechanics, and chemical kinetics, with applications to biochemistry. Scott.

Wi Qtr. 3 cl. Prereq: 721.01 or equiv with written permission of instructor.

**721.03 Physical Biochemistry III**

A continuation of 721.02.

Sp Qtr. 3 cl. Prereq: 721.02. Not open to students with credit for 721.01 or 721.02 prior to Sp Qtr 1982.

**761 Advanced Biochemistry: Proteins U G 3**

An advanced treatment of protein biochemistry. Means.

Au Qtr. 3 cl. Prereq: 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for 705, Chem 761, or Physchem 705 or 761. Cross-listed in Chemistry and Physiological Chemistry.

**762 Advanced Biochemistry: Enzymes U G 2**

An advanced treatment of enzymology.

Au Qtr. 2 cl. Prereq: 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for 705, Chem 762, or Physchem 705 or 762. Cross-listed in Chemistry and Physiological Chemistry.

**763 Advanced Biochemistry: Membranes and Bioenergetics U G 2**

An advanced treatment of membranes and bioenergetics. Gross.

Wi Qtr. 2 cl. Prereq: 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for 707, Chem 763, or Physchem 707, or 763. Cross-listed in Chemistry and Physiological Chemistry.

**765 Advanced Biochemistry: Physical Biochemistry U G 2**

Diffusion, electrophoresis, sedimentation; light and x-ray scattering, x-ray and neutron diffraction, fluorescence, polarimetry, mass spectroscopy, nuclear magnetic resonance. Marshall and Ross.

Wi Qtr. 2 cl. Prereq: 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for Chem 765 or Physchem 765. Cross-listed in Chemistry and Physiological Chemistry.

**766 Advanced Biochemistry: Nucleic Acid Chemistry and Structure U G 2**

Reactions, synthesis, and conformations of nucleosides, nucleotides, oligonucleotides, and polynucleotides. Behrman.

Sp Qtr. 2 cl. Prereq: 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for Chem 766 or Physchem 766. Cross-listed in Chemistry and Physiological Chemistry.

**770 Protein Engineering U G 2**

Current research on genetic engineering of proteins for biotechnological and theoretical studies. Dean and Swenson.

Au Qtr. 2 cl. Prereq: 702, 761, and Micrbiol 680 or Mol Gen 701.

**781 Eukaryotic Genome: Structure and Expression U G 3**

Current research on the structure and expression of genes in higher eukaryotes. Johnson.

Au Qtr. 3 cl. Prereq: 611 or 702, or Genetics 611 or equiv.

**H783 Honors Research U 3-5**

A program of reading and research for each student with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the courses in biochem and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BA or BS *with distinction* in biochem. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**785 Research Principles and Techniques U 2-5 G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs for undergrad credit and a maximum of 40 cr hrs for grad credit.

**795 Special Topics in Biochemistry U G 1-3**

Lecture/discussion in a seminar format of publications, current research, or research techniques in biochemistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 521 and 615; or permission of instructor. Repeatable to a maximum of 40 cr hrs. This course is graded S/U.

**811 Advanced Topics in Molecular Genetics G 3**

An examination of the current research in molecular genetics by selective reading assignments and critical analysis during class discussion periods. Lambowitz, Marzluf, and Perlman.

Wi Qtr. 3 hrs arr. Prereq: 611 or 702, or Genetics 611. Not open to students with credit for Genetics 811. Repeatable to a maximum of 6 cr hrs. Cross-listed in Genetics.

**850 Seminar in Biological Chemistry G 2**

Au, Wi, Sp Qtrs. 1 or 2 cl. Repeatable to a maximum of 40 cr hrs. This course is graded S/U.

**890 Interdepartmental Seminar in Molecular, Cellular, and Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Biochemistry, Genetics, Microbiology, and Zoology. This course is graded S/U.

**999 Research in Biochemistry G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Biology

112 Rightmire Hall, 1060 Carmack Road, 292-9861

See also courses in Biochemistry, Botany, Entomology, Molecular Genetics, Microbiology, and Zoology.

**107 Nature of the Biological World I U 5**

Elementary description of the biological world, emphasizing principles and contemporary viewpoints.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 3-hr rec-lab. Prereq: Math 075 or 076 or 102, or Math Placement Level R. Not open to students with credit for 113 or H115. Not intended for BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**108 Nature of the Biological World II U 5**

Continuation of 107.

Au, Wi, Sp Qtrs. 3 cl, 1 3-hr rec-lab. Prereq: 107. Not open to students with credit for 113, 114, H115, or H116. Not intended for BS students. BER/LAC/LAR course. NS Admis Cond course.

**110 General Biology U 5**

An introduction to the biological sciences, emphasizing the important concepts and principles which tend to unify the study of life at various levels of organization.

Su, Au, Wi, Sp Qtrs. 2 cl, 3 bio-learning center hrs. Not open to students with credit for 107, 108, 113, 114, H115, or H116. Credit for this course will not count toward the minimum number of hrs required for graduation, if a student completes 107 and 108, or 113 and 114, or H115 and H116. Not intended for students who will major in one of the biological sciences or those who will pursue post-baccalaureate health sciences curricula. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

Biology 110 provides for individualized instruction and opportunities for self-paced learning; all Biology 110 sections use the CMI format (computer managed instruction); the course utilizes computer terminals for limited repeat testing, storage and retrieval of performance records, and generation of individualized study prescriptions following tests.

**113 Biological Sciences: Energy Transfer and Development U 5**

Exploration of biology and biological principles; topics include cell structure and function, reproduction and development of plants and animals, bioenergetics, genetics, and evolution.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 3-hr lab. Prereq: Chem 121. Not open to students with credit for H115. This course and 114 provide a comprehensive two-qtr sequence in general biology. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**114 Biological Sciences: Form, Function, Diversity, and Ecology U 5**

Continuation of 113; diversity in structure, function, behavior, and ecology among prokaryotes and eukaryotes.

Au, Wi, Sp Qtrs. 4 cl, 1 3-hr lab. Prereq: 113. Not open to students with credit for H116. BER/LAC/LAR course. NS Admis Cond course.

**H115 Honors Biology I U 5**

Fundamental concepts of modern biology; an in-depth study of life processes with close interaction with research faculty from the College of Biological Sciences and bio-professional fields.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Honors standing and performance on a pre-test with permission of instructor. Not open to students with credit for 113. This course and H116 are a two-qtr sequence in general biology for beginning students. BER/LAC/LAR course. NS Admis Cond course.

**H116 Honors Biology II U 5**

Continuation of H115.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: H115. Not open to students with credit for 114. BER/LAC/LAR course. NS Admis Cond course.

**592 Workshop in Biology U G 1-5****592.01 Workshop for Middle School Teachers: Part 1 G 3**

Lecture and discussion of fundamental areas of biology as well as corresponding laboratory modules suitable for use in middle school life science classes.

Su Qtr. 2 wks, M-F, all-day cl. Prereq: Middle school or jr high school teachers employed in Ohio who teach life sci or general sci with a life sci component. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**592.02 Workshop for Middle School Teachers: Part 2 G 3**

Participants develop, test, and perfect a new laboratory exercise; discuss and solve problems relating to use of materials for 592.01 and their new exercise.

Sp Qtr. 6 2-hr cl, 1 2-day workshop. Prereq: 592.01. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

## Biomedical Engineering

257 Dreese Laboratories, 2015 Neil Avenue, 292-6014

**Advanced Mammalian Physiology I**

See Physiol 601—First of a two-quarter sequence presenting the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

**Introduction to Neuroscience**

See Zoology 532—Introduction to the nervous system, emphasizing its system aspects; signal processing in invertebrates and vertebrates is examined in relation to structure and function.

**Introduction to Sensory Biophysics**

See SensBiop 601—Anatomy and function of sensory systems; psychophysical research methods; mathematical descriptions of information transfer; biophysical models.

**Stochastic Processes in the Biological Sciences**

See Biostat 601—Introduction to discrete stochastic processes, random walk, Markov Chains, birth and death processes, epidemic process, processes for competing among species, diffusion processes, and applications.

**Advanced Mammalian Physiology II**

See Physiol 602—Continuation of 601.

**Introduction to Ultrasonics**

See Eng Mech/Weld Eng 634—Ultrasonic waves in solids and fluids; ultrasonic generators and systems; physical ultrasonics; applications of ultrasonics.

**Introduction to Design in Biomedical Engineering**

See Mech Eng 687—Introduction of engineering students to design problems in biomedical engineering; analysis in biomechanics, biofluid mechanics, diffusion, and elementary physiology.

**Introduction to Bio-Medical Engineering**

See Elec Eng 670—Introduction to the engineering aspects of life science, utilizing lectures from engineering, medicine, and life science.

**Analog Simulation**

See Agri Eng 681—Principles of analog and hybrid simulation developed and applied to engineering problems in agricultural systems.

**694 Group Studies in Bio-Medical Engineering U G 1-5**

Provides groups of students opportunities to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**Special Problems: Advanced Dental Materials**

See Dent 700.08—The science of dental materials.

**Radiation Biology**

See Radiolgy 680—Effect of ionizing radiation in biological systems at the molecular, cellular, organ, organism, and community levels with special emphasis on medical implications and radiation safety.

**Design of Bio-Medical Investigations**

See Prev Med 764—Design of studies in biomedical area; formulation of hypotheses; sampling; planning observations and measurements; selection of statistical techniques; testing of hypotheses.

**Biomechanics**

See Eng Mech 770—Discrete mass and continuum mechanics; description of biological materials; biodynamics of limb and gross body motions; various models for injury to head, neck, and torso.

### Instrumentation, Neurophysiology, Clinical Aspects of Electromyography

See Phys Med 770—In-depth study of the instrumentation and correlation of neurophysiology and clinical aspects of electromyography. For PhD candidates only.

### Bio-Medical Instrumentation

See Elec Eng 771—Application of electrical engineering to the instrumentation, monitoring, and signal and data handling in bio-electrical measurements; consideration of implants, heart pacers, electrocardiograms and electroencephalographs, and speech analysis.

### Clinical Bio-Medical Instrumentation

See Elec Eng 772—Classroom and hospital investigation of clinical instrumentation problems such as EEG, EKG, catheter measurements, spectral analysis, pacemakers, electrical safety.

### Rheology of Fluids

See Chem Eng 775—Principles of rheology including the characteristics of non-Newtonian materials, measurements, rheological equations of state, viscometric flows, and applications to the flow of industrial materials.

### Veterinary Physiology

See Vet Phys 790—Comparative electrocardiography.

### Veterinary Physiology

See Vet Phys 791—Comparative hemodynamics and cardiovascular sound.

### Veterinary Physiology

See Vet Phys 792—Advanced comparative cardiovascular physiology with emphasis upon circulatory response to stress of various congenital and acquired cardiovascular defects.

### 793 Individual Studies in Bio-Medical Engineering U G 1-12

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

### Interdepartmental Seminar—Philosophy of Clinical Practice for Bio-Medical Engineers

See Internal Medicine 797B—Introduction to the physicians philosophy and techniques in diagnosing and treating various medical problems.

### Biological System Modeling I

See Elec Eng 870—Consideration of current literature in the area of biological system modeling; cardio-vascular and pulmonary systems; computer implementation of models.

### Biological System Modeling II

See Elec Eng 871—Modeling of such biological systems as thermoregulatory or renal for parameter identification; digital and analog computer laboratory implementation.

### Bio-Medical Systems Modeling of Man-Machines

See Elec Eng 872—Systems theory applied to the engineering aspects of the human eye-hand tracking interface comparing hybrid computer simulation with experimental data.

### Clinical Instrumentation and Signal Processing

See Elec Eng 873—Basic principles of information transfer and signal processing as applied to life science, such as remote diagnosis, ECG analysis, and telemetry.

### 881 Seminar in Bio-Medical Engineering G 1-12

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

### 894 Group Studies in Biomedical Engineering G 1-18

Provides graduate students with an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

### 999 Research in Bio-Medical Engineering G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Biophysics

105 Biological Sciences Building, 484 West 12th Avenue, 292-8772

### Introduction to Sensory Biophysics

See SensBiop 601—Anatomy and function of sensory systems; psychophysical research methods; mathematical descriptions of information transfer; biophysical models.

### Introduction to Quantum Biology

See Micrbiol 641—An introduction to applications of elementary quantum mechanics to problems in biology; conceptual rather than mathematical aspects are stressed.

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

### 702† Advanced Experimental Methods in Biophysics U G 1-3

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

### 793 Individual Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

### 795 Seminar in Biophysics U G 1-2

Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

### 999 Research in Biophysics G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Biostatistics

141 Cockins Hall, 1958 Neil Avenue, 292-2866

### 601 Stochastic Processes in the Biological Sciences U G 3

Introduction to discrete stochastic processes, random walk, Markov Chains, birth and death processes, epidemic process, processes for competing among species, diffusion processes, and applications.

Au Qtr. 3 cl. Prereq: Stat 426 or 520, and at least 10 cr hrs in biological sciences.

### 605†\* Population Dynamics U G 3

Study of birth, death, and growth process, use of rates and ratios, force of mortality, competing risks, and selected epidemiological problems.

Wi Qtr. 3 cl. Prereq: Stat 426 or 521.

### 610†\* Statistical Bioassay U G 3

Direct assays, dose-response relationships, parallel line and slope ratio assay, special statistical designs in assay, Bayesian bioassay; examples.

Sp Qtr. 3 cl. Prereq: Stat 426 or 521, and Pharmacol 600; or permission of instructor.

**615 Design and Analysis of Clinical Trials U G 3**

Design and analysis of clinical trial data within the framework of regulatory considerations; long and short term trials.

Au Qtr. 3 cl. Prereq: Stat 528 and 529, or equivalents.

**805\* Survival Analysis I G 3**

Life table methods; survival models; inference for parametric models; censoring models; non-parametric methods for censored data.

Au Qtr. Prereq: Stat 622 or permission of instructor.

**806\* Survival Analysis II G 3**

Proportional hazards models; accelerated failure time models; theory of competing risks; dose estimation.

Wi Qtr. 3 cl. Prereq: Biostat 805.

**865†\* Analysis of Discrete Data G 3**

Theory of techniques for the analysis of discrete data including: two-way and multidimensional tables; logistic regression; loglinear models; chi-squared tests; and numerical methods.

Sp Qtr. 3 cl. Prereq: Stat 622 and permission of instructor.

**999 Research in Biostatistics G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Black Studies

486 University Hall, 230 North Oval Mall, 292-3700

See also Swahili.

**101 Introduction to Black Studies U 5**

An introduction to the goals, purposes, and basic preparation necessary for other black studies courses.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 1-hr labs. BER/LAC/LAR course.

**130 Africa and the World U 5****130.01 African History**

A general introduction to the history of Africa from prehistoric to recent times.

Au Qtr. 5 cl. SS Admis Cond course.

**154 Introduction to Black Literature U 5**

Black literature in Africa, the United States, and the Caribbean.

Au Qtr. 5 cl. BER/LAC/LAR course.

**161 Black Psychology: New Behavioral Perspectives U 5**

Introduction to black psychology; emphasis on theories, issues, and applications of the discipline.

Sp Qtr. 2 2-hr cl. SS Admis Cond course.

**180 Fundamentals of Black Dance U 5**

Fundamentals and techniques of contemporary black dance.

Au, Wi, Sp Qtrs. 3 2-hr cl. Prereq: Permission of instructor. VPA Admis Cond course.

**Social Problems**

See Sociol 202. Offered in cooperation with Black Studies.

**218 Black Community Development U 5**

Problem solving and field work in the local urban black community.

Au, Wi, Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 10 or hrs.

**222 Economic Problems of Black America U 5**

Economic problems of black Americans including economic history, job opportunities, income, consumer purchases, housing, business enterprises.

Au Qtr. 5 cl. Prereq: 5 cr hrs in econ or permission of instructor. SS Admis Cond course.

**223 History of Afro-Americans in the Age of Slavery U 5**

Origins of modern slavery; its development in the US; the evolution of Afro-American life and culture from 1619 to the end of the Civil War.

5 cl. Not open to students with credit for 345, or History 223 or 260. Cross-listed in History. BER course.

**224 History of Afro-Americans from Emancipation to the Present U 5**

The rise of debt peonage among blacks; the formation of the northern ghetto; the Civil Rights Movement and beyond.

Au Qtr. 5 cl. Not open to students with credit for 238 and 345, or History 224 or 260. Cross-listed in History. BER course.

**230 The Black Woman: Her Role in the Liberation Struggle U 3**

The political role of the black woman in the struggle for black freedom; examination of changing laws and customs affecting the status of black women.

Su Qtr. 3 cl.

**244 Survey of African and African-Derived Music in the Western World U 3**

An introduction to traditional African music and its role in the history and development of Afro-American music with its concomitant socio-political milieu.

Au, Wi Qtrs. 3 cl. Not open to students with credit for Music 244. Cross-listed in Music. BER/LAC course. VPA Admis Cond course.

**247 Africa in the 19th Century U 5**

Emphasis on African societies during the century of the European scramble for colonies.

Wi Qtr. 5 cl. SS Admis Cond course.

**248 Leadership and Mass Movements in Contemporary Africa U 5**

A survey of modern African leaders, their philosophies and methods, and a study of the historical, geographical, economical, and political factors that gave rise to the drive for national independence after 1945.

Wi Qtr. 5 cl. BER course. SS Admis Cond course.

**251 Introduction to African Literature U 5**

An assessment of the oral prose tradition and written prose of African literature; specific emphasis placed on student reading from primary sources.

Su, Au Qtrs. 5 cl. BER/LAC course.

**254 Themes in Afro-American Literature U 5**

A thematic study of selected topics in Afro-American and related literature.

Sp Qtr. 5 cl.

**255 Afro-American Life through Autobiographies U 5**

The experiences of black people in America as revealed in autobiographies of Afro-Americans.

Wi Qtr. 5 cl. Prereq: 101 or permission of instructor.

**261 Black-White Behavior U 5**

A survey of the social significance of important behavioral elements affecting black-white relations.

Wi Qtr. 5 or 2 2-hr cl. SS Admis Cond course.

**270 Basic Musicianship through Black Music U 3**

Designed to prepare students with elementary musical knowledge and skills essential for musical literacy with special emphasis on the musical literature of black people.

Au, Wi Qtrs. 3 cl. VPA Admis Cond course.

**271 Contemporary Black Drama U 5**

A literary analysis and discussion of plays by black playwrights in recent times.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. VPA Admis Cond course.

**272 Theatre Practice in Black Drama U 5**

Local performance of selected black drama.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. VPA Admis Cond course.

**Introduction to Afro-American Literature**

See English 281. Offered in cooperation with Black Studies.

**281 Black Leaders in Search of an Ideology U 5**

A survey of 19th and 20th century black leaders in Africa, America, and the Caribbean and their search for a useful ideological perspective.

Au Qtr. 5 cl. SS Admis Cond course.

**282 Major Themes in African and Afro-American Cultures and Civilizations U 5**

A broad and comprehensive survey of the cultures and heritage of Africans and Afro-Americans.

Sp Qtr. 5 cl. BER/LAC/LAR course. SS Admis Cond course.

**284 Introduction to African and Afro-American Political Thought U 5**

Introduction to the thoughts and views of Africans and Afro-Americans on such topics as colonialism, freedom, justice, equality, order, religion, culture, man, society, and development.

Sp Qtr. 5 cl. BER/LAC/LAR course. SS Admis Cond course.

**290 Workshop in Visual Communication U 5**

The study, analysis, and evaluation of the visual environment of the black community.

Sp Qtr. 2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**294 Group Studies U 1-5**

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**322 Black Consumer Economics U 5**

Economic problems faced by black Americans in their purchases of goods and services.

Wi Qtr. 5 cl. Prereq: 222 and 5 cr hrs of econ; or permission of instructor.

**325 Freedom Versus Equality: Blacks and the Political Order U 5**

A systematic analysis of the impact of the simultaneous quest for equality and freedom by blacks and other minorities upon the social and political order.

5 cl.

**326 Black Americans and the Legal System U 5**

An examination of the role of the legal system in the social and political dynamics of blacks in American society.

Wi Qtr. 5 cl.

**327 Introduction to African Politics U 5**

Examination of dynamics of nation-building in African countries in transition from colonial dependencies to modern nation-states.

Au Qtr. 5 cl.

**338† African Territories as Nation-States: Selected Case Studies U 5**

Case studies of selected African territories gaining independence in the aftermath of the Second World War.

Au Qtr. 5 cl.

**352 Afro-American Cultural and Intellectual Tradition U 5**

Salient themes in the experience of the black man in America including slavery and bondage, emancipation, integration, and revolt.

Sp Qtr. 5 cl.

**361 Psychology of the Black Experience U 5**

An analysis of personality theories commonly applied to black Americans and the black experience.

Wi Qtr. 5 or 2 2-hr cl.

**375 Early African-American Art U 5**

The work of black African-American artists prior to 1920.

Wi Qtr. 2 2-hr cl.

**376 African-American Art U 5**

The work of black African-American artists and art movements, 1920 through 1955.

Au Qtr. 2 2-hr cl. BER/LAC course.

**378 History of Jazz I U 5**

An in-depth study of the periods, trends, major performer/composers, styles and influences of jazz from its beginnings through the Swing era.

Au Qtr. 5 cl.

**379 History of Jazz II U 5**

Continuation of 378 from Bop through current styles.

Wi Qtr. 5 cl. Prereq: Music background recommended.

**American Ethnic Relations**

See Sociol 380. Offered in cooperation with Black Studies.

**391† Historical Geography of Black America U 5**

A study of the spatial effects of migration, segregation, and regionalization in America.

Au Qtr. 5 cl.

**451† Black Experience in Caribbean, African, and Afro-American Literatures U 5**

Exploration of themes, attitudes, and parallels in black literatures of Africa, the United States, and the Caribbean; emphasis on negritude and Pan-Africanism.

Sp Qtr. 5 cl. Prereq: Jr or sr standing.

**Comparative Race Relations**

See Sociol 480. Offered in cooperation with Black Studies.

**Economics of the Ghetto**

See Econ 206. Offered in cooperation with Black Studies.

**504 Black Politics U 5**

Economic, political, and social constraints on the development of black political power; the efforts made by black people in recent times to organize for effective political action.

Au Qtr. 5 cl. Not open to students with credit for Polit Sc 208 or 504. Cross-listed in Political Science.

**527 Pan-Africanism and Nationalism U G 5**

Pan-Africanism and nationalism in the development of Africa.

Sp Qtr. 5 cl.

**530† African Political Systems: A Comparative Analysis U G 5**

A comparative examination of problems of nation-building and national integration faced by selected African nations in the postcolonial period.

Au Qtr. 5 cl.

**537 History of Southern Africa U G 5**

A study of the processes and patterns of social change from early times to the present.

Au Qtr. 5 cl.

**538 West African History U G 5**

An examination of the processes of state formation, trade, and civilization in Africa's Sudanese and Guinean regions.

Wi Qtr. 5 cl.

**549 Historical Evolution of the Black Community U G 5**

The political, social, and economic background of the contemporary American black community.

Su, Sp Qtrs. 5 cl.

**551† Selected Topics in Afro-American and Related Literature U G 5**

Topics selected will relate to specific interests of enrolled students, who will develop an intensive analysis of the topic of their choice.

5 cl. Prereq: 251 or 351.

**552 Contemporary Afro-American Culture U G 5**

Afro-American culture in 20th century America.

Au Qtr. 2 2-hr cl.

**571 Images of Black People in Media Production U G 5**

The historical background of black drama in the media; development of new models for monitoring programming; the writing and production of drama.

Wi Qtr. 2 2-hr. cl. Prereq: 271 or permission of instructor.

**581 Philosophy in Contemporary African Literature U 5**

Discussion of African social and political thought as presented by selected African novelists.

Au Qtr. 5 cl. BER/LAC course.

**630 Black Political Movements and Organizations U G 5**

Analysis of black political movements and organizations from slavery to contemporary times.

Au Qtr.

**633 Black Community Politics: Welfare and Poverty U G 5**

Welfare and poverty as social, economic, and political problems of the black community.

Wi Qtr.

**636 Seminar on Central African History U G 5**

Specific themes in central African history.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

**690 African-American Children and Youth U G 5**

Study of the social-psychological development of African-American children.

Au Qtr. 2 2-hr cl. Prereq: Jr, sr, or grad standing.

**691 Black American Family U G 5**

History of the black American family: origins, myths, and realities.

Au Qtr. 2 2½-hr cl. Prereq: 101 or permission of instructor.

**693 Individual Studies U G 1-5**

Individual reading or research projects by special agreement between instructor and student.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

**712 Development of the Black Community U G 5**

Rural and urban development and their effects on black people in America.

Au Qtr.

**718 Citizen Participation U G 5**

Assessment and application of techniques of organization and action in the black community.

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

**721 Economics of Discrimination U G 5**

The economics of racial discrimination with emphasis on black Americans.

Wi Qtr. Prereq: 10 cr hrs of econ, grad standing, or written permission of instructor.

**725 Political Development of Sub-Saharan Africa U G 5**

The process and problems of political change in Sub-Saharan Africa.

Sp Qtr.

**735 Methods and Materials of Research in Black History U G 5**

Au Qtr. Prereq: Written permission of instructor.

**738 African Protest Movements U G 5**

A socio-historical examination of African armed revolts.

Sp Qtr.

**740 Comparative History of Africa and Black America U G 5**

A study in Afro-American history involving beginnings in Africa and the cultural and historical experience of blacks in America.

Sp Qtr.

**751 Studies in the African Novel U G 5**

Wi Qtr.

**Racial and Ethnic Differentiation**

See Sociol 780. Offered in cooperation with Black Studies.

**752 Readings in African-American History U G 5**

Readings in the evolution of black culture, economics and family life, race relations, and the emergence of class stratification within the black community.

Wi Qtr. 1 2½-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs, including cr hrs in History 752. Cross-listed in History.

**762 Mental Health and the Black Community U G 5**

Theoretical and practical approaches to the problems of mental health in the black community.

Au Qtr. Prereq: 15 cr hrs in social/behavioral sciences or permission of instructor.

**781 Topics in African Political Philosophy U G 5**

Post-colonial African conceptions of power, freedom, alienation, and cultural identity.

Sp Qtr. Prereq: Grad standing or written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**H783 Honors Research U 3-5**

A program of individual study for undergraduate honors students; requires individual conferences, reports, presentations, and oral defense of an honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and a cumulative pt-hr ratio of at least 3.50 in all courses in black st. Open only to candidates for degrees *with distinction* in black st. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**833 Seminar in U.S./African Relations G 5**

A critical analysis of selected theories of American foreign policy, with special emphasis on Africa.

Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**851 Afro-American Literary Movements: Black Revolutionary Aesthetic G 5**

A critical evaluation of black literature since 1960 in relation to the evolution of a black revolutionary aesthetic.

Au Qtr.

**853 Afro-American Literary Movements: The Harlem Renaissance G 5**

Wi Qtr.



**854 Seminar in Major Black Authors G 5**

Sp Qtr. Prereq: Permission of instructor.

**860 Seminar in Black Literature G 5**

Topics in African, Afro-American, and Caribbean literature.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

**865 Black Role Models: Racism and Sexism G 5**

Effects of racism and sexism on the various role models that are prevalent in the black community emphasizing consequences and alternatives.

Wi Qtr. Prereq: 15 cr hrs in social/behavioral sciences or permission of instructor.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s).

Repeatable to a maximum of 15 cr hrs with permission of dept.

**998 Research in Black Studies: Thesis G Arr**

Research for the thesis.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

## Botany

108 Botany and Zoology Building, 1735 Neil Avenue, 292-8952

**112 General Botany U 5**

A survey of the major groups of plants with emphasis on diversity, modes of reproduction, ecology, and economic importance.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 3-hr lab arr. Prereq: Math 075 or 076 or 102, or equiv. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**201 Introduction to Plant Evolution U 5**

An introductory course in plant evolution emphasizing major events and evolutionary changes that have occurred among plants. Taylor.

Wi Qtr. 3 cl, 1 2-hr lab, 2-hr lab project. Prereq: 112 or Biology 114 or equiv with written permission of instructor. BER/LAC/LAR course. NS Admis Cond course.

**202 Plant Development U 5**

An introductory course in plant development at the organismic level, emphasizing physiology, morphology, and anatomy. Raghavan.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 112 or Biology 114. BER/LAC/LAR course. NS Admis Cond course.

**203 Plant Functions in the Environment U 5**

Introduction to physiological ecology, emphasizing photosynthesis as the biological mobilization of solar energy and organic materials for the growth of plants and other organisms. Platt.

Sp Qtr. 1 4½-hr cl (Sat). Prereq: 112 or equiv. BER/LAC/LAR course.

**210 Local Flora U 5**

A lecture, laboratory, and field course in identifying common Ohio plants; emphasis on taxonomic principles, use of keys and manuals, and field recognition of plants. Stuckey and Crawford.

Su, Sp Qtrs. 3 cl, 2 2-hr labs, several Sat field trips. Prereq: 112 or Biology 114 or equiv with written permission of instructor. BER/LAC/LAR course. NS Admis Cond course.

**293 Individual Studies U 1-5**

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Prereq: 112 or Biology 114, and written permission of instructor. Only 5 cr hrs may count towards a botany major. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Group study of topics in botany.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 cr hrs for different topics only.

**313 Introduction to Ecology U 5**

Distribution and abundance of species, population dynamics, the basic energetics of living systems, and evaluation of the ecosystem concept.

Au, Wi Qtrs. 5 cl. Prereq: 112 or Biology 114. Not open to students with credit for 313.01 or 313.02, or Zoology 313 or 313.01 or 313.02. Cross-listed in Zoology. BER/LAC/LAR course. NS Admis Cond course.

**General Plant Pathology**

See Pint Pth 401.

**420 Introduction to Plant Communities U 5**

An introduction to the establishment, development, structure, and function of natural plant communities. Gilbert.

Sp Qtr. 5 cl, 2 required Sat field trips. Prereq: 112, or Biology 114 or H115; and 5 additional cr hrs in biological sciences.

**436 Introductory Plant Physiology U 5**

Topics in plant physiology at the introductory level: diffusion, transpiration, water stress, translocation, enzyme kinetics, photosynthesis, plant growth hormones, tropisms, flowering, fruit development. Cline, Evans, and Hangarter.

Au, Sp Qtrs. 4 cl. Prereq: 112 or Biology 114; 10 cr hrs in chemistry, or equiv with written permission of instructor.

**437 Introductory Plant Physiology Laboratory U 2**

An experimental approach to the topics listed under 436. Cline, Evans, and Hangarter.

Sp Qtr. 2 2-hr labs. Prereq or concur: 436.

**General Genetics**

See Mol Gen 500.

**601 History of Biology U G 5**

Origin and development of important biological approaches, concepts, and theories including those of the contemporary period. Rudolph.

Sp Qtr. 5 cl. Prereq: English 110 or 111 or equiv, and 15 cr hrs in biological sciences. Fulfills in part the ASC advanced English composition requirement.

**610 Field Botany U G 5**

Collection, preservation, field and laboratory identification, and local distribution of plants of the major groups. Stuckey.

Su (1st term) Qtr, given only at Franz Theodore Stone Laboratory. Prereq: 112 or Biology 114, and 15 additional cr hrs in biological sciences or written permission of instructor.

**611 Higher Aquatic Plants U G 5**

Aquatic plants, other than the algae of Great Lakes region; field and laboratory work on their identification and ecological and geographical relations. Stuckey.

Su Qtr, given only at Franz Theodore Stone Laboratory, 3 all-day cl. Au Qtr, given only on Columbus campus, 2 cl, 1 4-hr lab, several Sat field trips. Prereq: 112 and 15 additional cr hrs in biological sciences.

**612 Taxonomy of Vascular Plants U G 5**

A laboratory, field, and discussion course concerning the classification of vascular plants; emphasis on taxonomic principles, systems of classification, family characteristics and relationships. Stuessy.

Sp Qtr. 3 cl, 2 2-hr labs, several Sat field trips. Prereq: 210 or 610, and 10 additional cr hrs in biological sciences or permission of instructor.

**613 Evolutionary Processes in Flowering Plants U G 5**

Origin of variation in plants with emphasis on evolutionary processes unique to the flowering plants. Crawford.

Au Qtr. 5 cl.

**617 Theoretical Ecology I U G 5**

The models, assumptions, and conclusions of the mathematical theory of ecology including stability notions, deterministic and stochastic models, and models for patchy environments.

Wi Qtr. 5 cl. Prereq: 313 or equiv, differential and integral calculus. Not open to students with credit for Zoology 617 or 713. This course is graded S/U. Cross-listed in Zoology.

**620 Community Ecology and Ecosystems U G 5**

A quantitative and descriptive approach to the establishment, development, succession, and dynamics of plant communities and their interrelations with historic, climatic, soil, and biotic factors. Boerner.

Su Qtr, given at Franz Theodore Stone Laboratory, 3 all-day cl. Au Qtr, given only on Columbus campus, 3 cl, 1 4-hr lab, several field trips. Prereq: 313 or 313.01, or Zoology 313 or 313.01 or equiv, and 15 additional cr hrs in biological sciences.

**621\* Plant Population Ecology U G 5**

Quantitative study of plant population processes, community organization, and ecological methods.

Au Qtr. 3 cl, 1 4-hr lab, field trips. Prereq: 313, Math 151, and 15 cr hrs in biological sciences.

**622 Plant Genetics and Molecular Biology U G 5**

An in-depth survey of classical and molecular genetic systems in plants with emphasis on current research topics.

Wi Qtr. 3 cl, 1 2-hr cl. Prereq: Biochem 511 and Mol Gen 500 or 501. Not open to students with credit for Mol Gen 622 or 632. Cross-listed in Molecular Genetics.

**625\* Paleobotany U G 5**

Structure, phylogeny, and stratigraphic distribution of representative fossil plants. Taylor.

Sp Qtr. 3 3-hr lec/lab; field trips. Prereq: Jr standing with at least 25 cr hrs in biological sciences, or sr standing in geological sciences, or equiv with written permission of instructor.

**626\* Palynology U G 5**

Survey of pollen grains and spores including their identification using diagnostic features, distribution through time, and biological importance. Taylor.

Sp Qtr. 2 cl, 1 3-hr lab, 1 2-hr lab-research project arr. Prereq: Jr standing and 15 cr hrs in either biological or geological sciences.

**630 Plant Physiology U G 3**

Advanced study of plant physiology; solutions, diffusion, osmotic quantities, transpiration, absorption and translocation of water, protein metabolism, enzymes, and respiration. Cline, Evans, and Hangarter.

Au Qtr. 3 cl. Prereq: 112 or Biology 114, Chem 242 or 252 or Biochem 511, or written permission of instructor.

**631 Plant Physiology U G 3**

Advanced study of plant physiology; pigments, photosynthesis, carbohydrate and fat metabolism, absorption of mineral salts, translocation of solutes, regulation of plant growth, and development. Cline, Evans, and Hangarter.

Wi Qtr. 3 cl. Prereq: 112 or Biology 114, Chem 252 or Biochem 511, or written permission of instructor.

**Cytological Basis of Genetics**

See Mol Gen 631.

**632\* Physiological Ecology of Plants U G 5**

Physiological relationships between light, water, and mineral nutrients and plant growth including plant-insect and plant-microbe interactions. Boerner.

Sp Qtr. 3 cl, 1 4-hr lab. Prereq: 313 or Zoology 313, and 15 cr hrs in biological sciences.

**634 Plant Physiology Laboratory U G 3**

An experimental approach to the topics listed under 630 and 631. Cline, Evans, and Hangarter.

Wi Qtr. 2 3-hr labs. Prereq: 630 and 631; or 630 and 631 concur with 634; or permission of instructor.

**635 Plant Biochemistry U G 5**

The biochemistry of plants, emphasizing the similarities and differences as compared to other life forms.

Au Qtr. 5 cl. Prereq: Biochem 511 or 614. Not open to students with credit for Biochem 631 prior to Wi Qtr 1988 or for Biochem 635. Cross-listed in Biochemistry.

**638\* Morphology of Vascular Plants U G 5**

Morphology, anatomy, and evolution of vascular plants. Taylor.

Au Qtr. 3 cl, 3 2-hr labs. Prereq: 112 or Biology 114, and 15 additional cr hrs in biological sciences.

**641\* Morphology of Angiosperms U G 3**

A lecture-discussion course on reproductive processes and mechanisms in angiosperms with emphasis on floral morphology, embryology, and formation of fruits and seeds. Raghavan.

Sp Qtr. 4 cl. Prereq: 112 or Biology 114, and 15 additional cr hrs in biological sciences; or permission of instructor.

**643 Plant Anatomy U G 5**

The structure, function, and development of cells, tissues, and organs of vascular plants. Sack.

Wi Qtr. 2 cl, 3 2-hr labs. Prereq: 112 or Biology 114, and 10 cr hrs in biological sciences; or permission of instructor.

**644\* Algae U G 5**

A general course covering identification, growth, reproduction, evolution, distribution, and economic importance of the algae. Floyd.

Au Qtr. 2 3-hr cl and 1 2-hr cl. Prereq: 112 or Biology 114, and 15 additional cr hrs in biological sciences or written permission of instructor.

**647 Plankton U G 5**

Examination of phytoplankton and zooplankton communities, emphasizing population dynamics, seasonality, predation, and productivity; lab emphasis on identification and quantitative methods for collecting and enumerating plankton.

Au Qtr (even yrs). 2 cl, 2 3-hr labs, 1 required weekend field trip to Lake Erie. Prereq: English 110 or 111 or equiv, and 20 cr hrs in biological sciences; Zoology 652 or 655 recommended. Not open to students with credit for Zoology 647. Cross-listed in Zoology. Fulfills in part the ASC advanced English composition requirement. Occasionally offered Su Qtr at Franz Theodore Stone Lab.

**648\* Plant Cell Ultrastructure U G 5**

Plant cell structure, function, and development as elucidated by electron microscopy. Floyd.

Au Qtr. 5 cl. Prereq: Jr standing with at least 20 cr hrs in biological sciences; a course in plant physiology or equiv recommended.

**660 Mycology U G 5**

Survey of major groups of fungi and mycetozoa with emphasis on classification, morphology, ecology, and economic importance. Seymour.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 112 or Biology 114 and 15 cr hrs in biological sciences, or permission of instructor.

**Cytologic Preparations in Electron Microscopy**

See Micrbiol 670.

**693 Individual Studies U G 1-5**

Problems may be selected in the fields of paleobotany, taxonomy, morphology, morphogenesis, anatomy, phycology, physiology, ecology, genetics, cytology, mycology, history, or lichenology.

Su, Au, Wi, Sp Qtrs. Prereq: 112 or Biology 114, and 15 additional cr hrs in biological sciences. Not more than 5 cr hrs may be counted toward an undergrad major in botany. Repeatable to a maximum of 15 cr hrs for undergrad. This course is graded S/U.

**694 Group Studies U G 1-5**

Group study of special topics in botany.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

698.01 Domestic

698.02 Foreign

**714 Theoretical Ecology II U G 5**

Continuation of 617 with emphasis on populations in patchy environments, stochastic models, and nonequilibrium theory.

Wi Qtr. 5 cl. Prereq: 617 or Zoology 617 or permission of instructor. Not open to students with credit for Zoology 714. This course is graded S/U. Cross-listed in Zoology.

**720 Radionuclides in the Biosphere U G 3**

Inputs of natural and artificial radionuclides into the biosphere and aquatic and terrestrial ecosystems, their fate and radiation dose to organisms, including humans. Gilbert.

Wi Qtr. 3 cl. Prereq: 15 hrs in biological or physical sciences, and permission of instructor. This course is graded S/U.

**H783 Honors Research U 3-5**

Problems may be selected in the fields of paleobotany, taxonomy, morphology, morphogenesis, anatomy, phycology, physiology, ecology, mycology, or lichenology.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing, a grade of A in at least half of the botany courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for graduation *with distinction*. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**795 Special Topics in Botany U G 1-3**

Lecture/discussion in a seminar format of publications, current research, or research techniques in botany.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 25 cr hrs in biological sciences at 200 level or above. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**801 Seminar in Systematic and Evolutionary Botany G 2**

Discussion of advanced topics in systematic and evolutionary botany. Crawford, Floyd, Rudolph, Seymour, Stuckey, Stuessy, and Taylor.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**802 Seminar in Environmental Botany G 2**

Discussion of advanced topics in environmental botany. Boerner, Gilbert, Gross, Platt, Rudolph, Schmitt, and Stuckey.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**803 Seminar in Developmental and Regulatory Botany G 1-3**

Discussion of advanced topics in developmental and regulatory botany. Cline, Evans, Hangarter, Jensen, Platt, Raghavan, Sayre, and Sims.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**810\* Experimental Taxonomy G 5**

Biosystematic categories, population analysis of mass collections, individual variations, hybridization, and introgression in relation to the methods and materials of experimental taxonomic research. Stuessy.

Au Qtr. 3 cl, 2 2-hr labs, several Sat field trips. Prereq: Permission of instructor.

**812 Plant Chemosystematics G 5**

Examination of the use of chemical data in studying plant relationships and evolution; independent research. Crawford.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Introductory course in organic chemistry or biochemistry, and 30 cr hrs in biological sciences.

**815\* Botanical Nomenclature G 3**

A discussion of the principles, definitions, practical applications, and limitations of the *International Code of Botanical Nomenclature*. Stuckey.

Sp Qtr. 3 cl. Prereq: 610 and 612, or 810 or equiv with permission of instructor.

**833 Advanced Plant Physiology: Growth G 3**

The physiology of growth; special attention given to the interrelated effects of plant hormones and environmental factors on the growth process in plants. Evans.

Sp Qtr. 3 cl. Prereq: Biochem 511, and 10 additional cr hrs in biological sciences; or permission of instructor.

**834 Advanced Plant Physiology: Energetics of Plant Growth G 3**

Plant bioenergetics; structure and function of the photosynthetic apparatus, mechanisms of energy transduction in photosynthetic, and oxidative phosphorylation, forces driving solute transport plant productivity. Hangarter.

Sp Qtr. 3 cl. Prereq: 630 and 631, Biochem 511, and Physics 113; or permission of instructor.

**835\* Advanced Plant Physiology: Plant Reproduction and Development G 3**

Physiology of flowering, fruit and seed development, vegetative reproduction, dormancy, apical dominance, abscission, and senescence. Cline.

Sp Qtr. 3 cl. Prereq: 631 or equiv and Biochem 511.

**861 Physiology of Fungi G 5**

The physiology of the nutrition, growth, and reproduction of fungi. Garraway.

Wi Qtr. 3 cl. 2 2-hr labs. Prereq: Botany 630, 631, and 660. Not open to students with credit for 861. Cross-listed in Plant Pathology.

**890 Interdepartmental Seminar in Molecular, Cellular, and Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of molecular, cellular, and developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U. Given cooperatively by Botany, Genetics, Microbiology, and Zoology.

**891 Interdepartmental Seminar in Environmental Biology G 2**

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. This course is graded S/U. Given cooperatively by Botany, Entomology, Microbiology, and Zoology.

**892 Interdepartmental Seminar in Plant Physiology G 1**

Students will present seminars on their research or related topics in plant physiology and/or attend seminars by local and visiting researchers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs, including cr hrs earned in Agronomy 892, Biochem 892, Fd Sc&Nu 892, and Hort 892. Cross-listed in Agronomy, Biochemistry, Food Science and Nutrition, and Horticulture. This course is graded S/U.

**896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3**

A seminar on selected topics involving anthropology, biology, climatology, exploration, geology, glaciology, microbiology, and soils.

Sp Qtr. 1-3 hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs. Given cooperatively by the Institute of Polar Institute, the departments of Biological Sciences, Botany, Geography, Geology and Mineralogy, and Zoology.

**998 Research in Botany: Thesis G Arr**

Research for master's thesis only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Botany G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Bulgarian

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101† Elementary Bulgarian I**

Development of oral and written language skills.

FL Admis Cond courses.

**101.01 Classroom Track U 5**

Au Qtr. 5 cl.

**101.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

**102† Elementary Bulgarian II**

Development of oral and written language skills.

Prereq: 101 or 101.01 or 5 cr hrs of 101.51. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Wi Qtr. 5 cl.

**102.51 Individualized Track U 1-5**

Prereq: B— or above in 101 or 101.01, or 5 cr hrs of 101.51, or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103. 51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 101.51 and 102.51 concurrently with permission of instructor.

**103 Intermediate Bulgarian I****103.51 Individualized Track U 1-5**

Prereq: B— or above in 102.01 or 5 cr hrs of 102.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 102.51 and 103.51 concurrently with permission of instructor.

**104 Intermediate Bulgarian II****104.51 Individualized Track U 1-5**

Continuation of 103; development of the four skills.

Su Qtr. Prereq: 5 cr hrs of 103.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 103.51 and 104.51 concurrently with permission of instructor.

**111† Intensive Intermediate Bulgarian U 10**

Readings, oral and written practice, grammar review.

Sp Qtr. 10 cl. Prereq: 102 or equiv. Equiv to the 3rd and 4th courses of the foreign language sequence.

**405 Advanced Bulgarian I****405.51 Individualized Track U 1-5**

Continuation of 104.51; development of the four skills.

Su Qtr. Prereq: 5 cr hrs of 104.51 or 111 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 104.51 and 405.51 concurrently with permission of instructor.

**407 Advanced Bulgarian II****407.51 Individualized Track U 1-5**

Continuation of 405.51; development of the four skills.

Su Qtr. Prereq: 5 cr hrs of 405.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 405.51 and 407.51 concurrently with permission of instructor.

## Business Administration

126 Hagerty Hall, 1775 College Road, 292-4840

**100 College of Business Survey U 1**

Academic requirements and resources; University policies college procedures and resources; student rights and responsibilities; academic areas of specialization; careers in accounting and business administration. Monaco.

Au Qtr. 2 cl. H100 (honors) may be available to students enrolled in an honors program. Prereq: 1st qtr freshman standing in direct enrollment program in BUS. Not open to students with credit for UVC 100. This course is graded S/U.

**H101 Business and Society U 5**

A critical examination of the socioeconomic framework of business; seminar discussion of selected readings. Bobbitt.

Au Qtr. 3-5 cl. Prereq: Fresh or soph standing, and approved application for College of Business Honors Program. SS Admis Cond course.

**493 Individual Studies U 1-10**

Individual study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**494 Group Studies U 1-10**

Group study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**501 Business Career Planning U 1**

Discussion of business careers, employment trends in business, and conducting an effective employment campaign through resumes, cover letters, and interview techniques. Bogenschutz, Decker, and Whitfield.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Jr standing. Not open to students in career interviewing status.

A— Jr or sr status required.

B— Soph status required.

**555 Introduction to International Business U 4**

Basic coverage of world trade and investment problems, and introduction to multinational corporation strategies and the various types of environments in which they do business. Ajami.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Econ 400.

**655 The Japanese Business Environment U G 3**

Study of the relationship between business practices and business environments in the Japanese context; comparative reference to these same relationships in other countries.

Au Qtr. 2 2-hr cl. Prereq: Jr or sr or grad standing.

**656 Doing Business with the Japanese U G 4**

In-depth study of operational and strategic issues involved in interaction with Japanese firms and markets; competitive, vendor-customer, and collaborative relations.

Wi Qtr. 2 2-hr cl. Prereq: Jr or sr or grad standing, 555 or 655 or permission of instructor.

**689 Professional Practice in Business U 0**

Students complete a co-op or internship assignment in private industry or for a government agency; assignment is supervised by the employer and monitored and evaluated by the Professional Practice Program. Whitfield.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of the Director of Professional Practice Program. Repeatable. This course is graded S/U.

**693 Individual Studies U G 1-6**

Individual study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Group study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****750 Resolving Social Conflict G 3**

A multidisciplinary examination of social conflict, its dynamics, and its negotiated and consensual resolution; offers a broad-based framework for diagnosing and managing conflict; applied to legal, environmental, organizational, and geopolitical conflict.

Sp Qtr. 1 3-hr cl. Prereq: Grad standing or permission of instructor. Cross-listed in City and Regional Planning and Natural Resources.

**798 International Business Policy and Strategy U G 4**

Analysis and simulation of major policy decisions in the context of international business; emphasis on consideration of international business.

Wi, Sp Qtrs 2 2-hr cl. Prereq: Approved application for BSBA in international business, Bus Adm 555, Bus-Fin 725, and Bus-Mktg 757; or written permission of instructor.

**799 Business Policy U G 4**

Analysis of major policy decisions in the context of the entire philosophical framework of business; emphasis on consideration of interrelationships of major functions of business. Holscher and staff.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H799 (honors) may be available to students enrolled in an honors program or by permission of college office. Prereq: Bus-Fin 510 or 511; Bus-Fin 620; Bus-Mgt 630; Bus-Mktg 650; Bus-MHR 701; and registration for final qtr of BSBA program prior to graduation; others by permission of instructor or college office.

**856 Introduction to Multinational Business G 4**

Introduction to the environment of international business and to the operations of the multinational firm, including an understanding of the dimensions of international trade and investment and their importance to the US economy and business firms. Ajami.

Wi Qtr. 2 2½-hr cl, arr. field research.

**857 International Business Policy and Strategy G 4**

Comprehensive study of policy and strategy formulation of firms in an international context with simulated cross-cultural negotiations, and the development of an international strategy for a local firm. Ajami.

Sp Qtr. 2 2½-hr cl. Prereq: 555 or 856 or equiv.

**893 Individual Studies G 1-6**

Individual study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-6**

Group study projects in selected interdisciplinary topics in Business Administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**998 Research in Business Interdisciplinary: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Business Interdisciplinary: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Business Administration: Finance

318 Hagerty Hall, 1775 College Road, 292-5026

**220 Personal Finance U 3**

Budgeting, credit, borrowing money, bank relationships, savings, insurance, real estate, stocks and bonds, income taxes, social security, annuities, wills, trusts, estates, and taxes.

Su, Au, Wi, Sp Qtrs. Prereq: 2nd yr standing. Not open to students in the College of Business majoring in either accounting or finance.

**493 Individual Studies U 1-10**

Individual study projects in selected areas in Finance.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**494 Group Studies U 1-10**

Group study projects in selected areas in Finance.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**498 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**498.01 Domestic****498.02 Foreign****510 Legal Environment of Business U 4**

An introduction to American legal institutions and sources of law and an analysis of basic concepts of public and private law related to business decisions.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H510 (honors) may be available to students enrolled in an honors program. Prereq: 3rd yr standing. Not open to students with credit for 511.

**611 Regulatory Environment of the Business Firm U G 3**

Analysis of the legal basis of government regulation, and a survey of the principal federal regulatory and antitrust statutes with emphasis on current application.

Wi Qtr. 3 cl. Prereq: 510 or 511 or equiv.

**612 Legal Aspects of the Distributive Processes U G 4**

Problems arising out of the distribution of consumer goods; obligations of sellers, including product liability; analysis of selected pricing, consumer-protection, and commercial paper statutes.

Au, Wi, Sp Qtrs. Prereq: 510 or 511 or equiv.

**613 Legal Environment of Institutional Management U G 3**

Examination of business associations, emphasizing the legal aspects of the management process and the societal influence and responsibilities of the corporation.

Au, Wi, Sp Qtrs. Prereq: 510 or 511 or equiv.

**620 Business Finance U G 4**

Introduction to financial management of business firms; financial analysis, planning and control; working capital management; capital investment decisions and required rates of return; capital structure decisions and sources of financing.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H620 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 200 and 400, or equivs; and Accting 201 or 212 or equiv. This course is available for EM credit.

**640 Insurance and Risk U G 4**

Principles and practices of insurance and risk management, including personal, business, and social viewpoints in regard to insurance for life, health, property, and liability risks.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Econ 200 and 400, or equivs.

**670 Real Estate and Urban Land Economics U G 4**

Introduction to urban land economics and real estate markets; topics include land use, property taxation, income taxation, and property rights.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Econ 200 and 400, or equivs.

**693 Individual Studies U G 1-6**

Individual study projects in related areas in Finance.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Group study projects in selected areas in Finance.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs.

**720 Corporation Finance U G 4**

A critical study of the field of corporation finance from an economic point of view.

Wi Qtr. 2 2-hr cl. Prereq: Accting 711 or equiv; and Econ 400 or equiv. Open only to students preparing for grad work in business. Not open to students in structured MBA.

**721 Corporate Finance U G 4**

Effects of projects and financial policy on stockholder wealth; capital budgeting, project cost of capital, dividend policy, debt policy, leasing policy, and option pricing.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 620 or equiv.

**722 Investment Management U G 4**

Investment objectives; types of investments and their relative merits; security prices and yields; investment programs; and taxes.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 620 or equiv.

**723 Investment Analysis U G 4**

Methods of investment analysis; analysis of investment data; principles and standards for selection of specific investment; portfolio management.

Sp Qtr. 2 2-hr cl. Prereq: 722 or equiv.

**725 International Finance U G 4**

The international financial environment; management of financial risks inherent with international business; problems of implementing corporate finance principles overseas; financial aspects of parent-subsidiary relationships.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 555 and 620 or equivs.

**726 Management of Financial Institutions U G 4**

Overview of the role of financial institutions; study of asset and liability management in commercial banks and savings institutions; cases and simulation.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 620 and Econ 520 or equivs.

**728 Quantitative Methods in Managerial Finance U G 4**

Application of mathematical and statistical methods in formulating and solving problems of financial management.

2 2-hr cl. Prereq: 721 or equiv. H728 (honors) may be available to students enrolled in an honors program or by written permission of dept.

**729 Cases in Managerial Finance U G 4**

Analysis of qualitative and quantitative financial factors involved in managerial decisions in actual business cases.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 721 or equiv.

**741 Personal Insurance Planning U G 4**

Analysis of personal consumer needs for life, health, property, and liability insurance; development of contracts, legal aspects, rates, and the technique of estate programming.

Au Qtr. 2 2-hr cl. Prereq: 640 or equiv.

**743 Insurance Operations and Regulations U G 4**

Examination of the major functions of insurers of all types; product development, underwriting, rating, reinsurance, marketing systems, loss payment, financial analysis, management, and regulation.

Wi Qtr. 2 2-hr cl. Prereq: 640 or equiv.

**745 Social Insurance U G 4**

Study of social insurance systems including Social Security, Unemployment Compensation, Worker's Compensation, proposed National Health Insurance and their effects on the American economy and society.

Sp Qtr. 2 2-hr cl.

**749 Business Risk Management U G 4**

Development of insurance and risk management programs for business consumers; risk identification, evaluation and treatment; all lines, including group insurance, business life insurance, and pensions.

Sp Qtr. 2 2-hr cl. Prereq: 640 or equiv.

**771 Real Estate Investment Analysis U G 4**

Feasibility and market analysis with consideration of property and income taxation and urban land developments.

Wi Qtr. 2 2-hr cl. Prereq: 620 or equiv.

**772 Real Estate Finance U G 4**

Sources and methods of obtaining funds for real estate investment; financial institutions, legal considerations, the construction industry and cycles, and financing policies, practices, and experiences.

Au Qtr. 2 2-hr cl. Prereq: 620 or equiv.

**773 Real Estate Valuation U G 4**

Professional valuation as a guide to business decisions; valuation theory and procedures; factors influencing real estate values, and the selection and analysis of data.

Wi Qtr. 2 2-hr cl. Prereq: Econ 400 or equiv.

**774 Income Property Valuation U G 4**

The value-creating attributes of investment properties; methodologies of income-property valuation and investment analysis.

Sp Qtr. 2 2-hr cl. Prereq: Econ 400 or equiv.

**775 Real Estate Law U G 4**

Legal aspects of real estate transactions and documents (deeds, mortgages, and leases) and selected elements of the law of real estate brokerage.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 510 or 511 or equiv or permission of instructor.

**821 Seminar in Corporate Financial Analysis G 4**

Conceptual foundations of corporate financial decisions under conditions of certainty and uncertainty; review and evaluation of selected empirical research in financial economics.

Sp Qtr. 2 2-hr cl. Prereq: 720 or MBA 810 or permission of instructor.

**822 Security Markets G 4**

A critical study of the markets for listed and unlisted securities and the factors influencing security prices.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: Permission of instructor.

**823 Special Topics in Investment Management G 4**

In-depth analysis of selected investment topics such as options markets, futures markets, convertible securities, effects of taxes and inflation on interest rates, term structure of interest rates, and modern portfolio theory.

Su, Sp Qtrs. 2 2-hr cl. Prereq: 822 or permission of instructor.

**824 Decision Support Systems for Financial Management G 4**

The application of decision-making models and computer technology to corporate financial problems and decisions.

Wi Qtr. 4 cl. Prereq: MBA 810 or equiv.

**825 International Finance G 4**

The international financial environment, management of financial risks inherent with international business; problems of implementation corporate finance principles overseas; financial aspects of parent-subsidiary relationships.

Sp Qtr. 2 2-hr cl. Prereq: 822 and 823 recommended; permission of instructor for PhD students.

**826 Financial Institutions G 4**

Financial management of commercial banks and savings institutions; review, analysis and evaluation of pertinent literature and research; readings and cases.

Au, Sp Qtrs. 2 2-hr cl. Prereq: MBA 810 and 811 or permission of instructor.

**840† Life and Health Insurance G 4**

Economic analysis of life and health insurance coverages; conceptual views of life insurance; employee benefit programs; review and evaluation of literature on current problems in life and health insurance.

Wi Qtr. 2 2-hr cl.

**841†\* Property and Liability Insurance G 4**

Critical consideration through readings and research from the current literature on the insurance technique, products, and functions as applied in property-liability insurance; including the insurer, consumer, and government viewpoint.

2 2-hr cl. Prereq: Permission of instructor.

**843 Risk Analysis and Administration G 4**

Evaluation of risk management and insurance decisions in controlling and financing of pure or non-speculative risks, for both business and nonprofit organizations.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**845 Problems and Issues in Social Insurance G 4**

Examination of the problem areas, trends, and solutions provided by government insurance programs, including Social Security, for old age, death, poor health, unemployment, and other perils.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**868 Contemporary Employment Practices and the Law G 4**

An examination of individual rights in the workplace; unjust discharge, employee privacy rights, and employer liability for intentional injuries; equal employment opportunity law; emphasis on recent legal developments.

Au Qtr. 2 2-hr cl. Prereq: Bus-MHR 612 or permission of instructor. Not open to students with credit for Bus-Adm 694C or Bus-MHR 868. Cross-listed in Business Administration: Management and Human Resources.

**870 Seminar in Real Estate G 4**

Policy emphasis in housing economics, housing finance and mortgage and financial capital markets.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**871 Real Property Asset Management G 4**

Cases and readings in feasibility and market analyses; deal structuring and current strategies in real estate; corporate real estate management.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**872 Real Estate Finance and Investment G 4**

Introduction to financial mathematics, payment patterns on mortgage loans, financing residential properties, alternative mortgage instruments, secondary mortgage markets, project analysis.

2 2-hr cl. Prereq: 670 or 873 or permission of instructor.

**873 Urban Real Estate Analysis G 3**

Analysis and administration of urban real estate resources, including property valuation, investment analysis, financing, market analysis of local economies, and legal considerations.

2 2-hr cl. Prereq: Permission of instructor.

**893 Individual Studies G 1-6**

Individual study projects in related areas in Finance.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to maximum of 15 or hrs. This course is graded S/U.

**894 Group Studies G 1-6**

Group study projects in selected areas in Finance.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to maximum of 15 or hrs.

**920 Theory of Finance G 5**

Examination of the modern theory of asset pricing and its theoretical foundations.

Au Qtr. 3 2-hr cl. Prereq: Successful completion of Finance Qualifying Exam or permission of instructor.

**921 Specifying and Testing Models of Asset Pricing G 5**

Focuses on applied econometric research on asset pricing; emphasis on understanding the flow of research and methods used in financial research.

Wi Qtr. 3 2-hr cl. Prereq: Successful completion of Finance Qualifying Exam or permission of instructor.

**922 Advanced Theory of Finance G 5**

Modern theory of finance; emphasis on developments in dynamics, game theory, and decision making; use of continuous time models and stochastic processes to analyze financial instruments.

Sp Qtr. 3 2-hr cl. Prereq: Successful completion of Finance Qualifying Exam or permission of instructor.

**923 Research in Finance G 5**

Review and access of the research methodologies of finance, and the development and completion of a research paper.

Au, Wi Qtrs. 3 2-hr cl. Prereq: 920, 921, and 922 or permission of instructor. Repeatable to a maximum of 10 or hrs.

**998 Research in Finance: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Finance: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Business Administration: Management and Human Resources

356 Hagerty Hall, 1775 College Road, 292-5028

## 211 Unionism and Collective Bargaining in the U.S. U 5

A survey of unionism and collective bargaining in the U.S. development, structure, and government of unions; process content and effects of collective bargaining.

Au, Wi, Sp Qtrs. 4 1-hr cl. BER/LAC course. SS Admis Cond course.

## 493 Individual Studies U 1-10

Individual study projects in selected areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

## 494 Group Studies U 1-10

Group study projects in selected areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

## 500 Introduction to Administrative Problems U 3

Introduction to techniques of management and supervision and to the conceptual frameworks and research underlying them; methods of improving individual and organizational efficiency and effectiveness; cases and exercises.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students in BUS.

## 612\* Law of Industrial Relations U G 4

Law and policy in labor-management and union-member relations; unfair labor practices; union internal affairs.

2 1½-hr cl. Prereq: 211 or equiv with written permission of instructor.

## 613\* Trade Union Administration U G 4

An examination and analysis of the structure and government of American worker organizations as an institutional response to social, political, economic, and legal forces.

Wi Qtr. 2 1½-hr cl. Prereq: 211 or equiv with written permission of instructor.

## 614 Public Sector Collective Bargaining U G 4

Legislative, judicial, economic, and social factors in public sector bargaining; survey of practice in federal, state, and local jurisdictions.

2 1½-hr cl. Prereq: 211 or grad standing.

## 651 Human Resource Policy: Conceptual Framework and Issues U G 4

Theories of the labor market as applied to the analysis of human resource policy issues; education, training, unemployment, poverty, and discrimination.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Econ 400 or equiv with written permission of instructor.

## 652 Human Resource Policy: Legislation and Institutions U G 4

Critical review of current or proposed legislation and institutions relating to human resource development, maintenance, and utilization.

Wi Qtr. 2 1½-hr cl. Prereq: 651 or equiv with written permission of instructor.

## 653† Human Resource Planning U G 4

Survey of concepts and techniques of human resource planning, with special emphasis on projections of human resource requirements.

Sp Qtr. 2 1½-hr cl. Prereq: 651 or equiv with written permission of instructor.

## 660 Introduction to Human Resources Management U 4

Principles and practices of recruiting, selecting, developing, compensating, and utilizing effective human resources.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. H660 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or equiv.

## 693 Individual Studies U G 1-6

Individual study projects in related areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 credit hours. This course is graded S/U.

## 694 Group Studies U G 1-6

Group study projects in related areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 credit hours.

## 701 Introduction to Organizational Behavior U 5

Introduction to individual and group behavior in organizations; procedures for supporting and strengthening emergent behavior; examination of organizational interaction with environments.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl.

## 703 Human Resource Training and Development U 4

Introduction to behavioral concepts and organization practices related to training and developing human resources and organization development.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 660 or 860 or permission of instructor.

## 704 Management Applications in Business U G 3

Application of behavioral science knowledge to managing within the context of business organizations; emphasis on such topics as motivation, supervision, groups, and conflict.

Wi Qtr. 2 1¼-hr cl. Prereq: 701 and sr standing in BSBA program.

## 761 Collective Bargaining Administration U 4

Examination of the process of accommodation and rule-making among management, employees, and government relative to their respective goals and strategies, and pertinent legislation and environmental constraints.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: 660 or 701, or permission of instructor.

## 762 Compensation Administration U 4

Managerial aspects of motivation and compensation principles and practices for administrative, operative, research, and professional employees in private and public organizations.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 660 or 701, or permission of instructor.

## 763 Comparative Labor Movements U G 4

A comparison of industrial relations practices, history and laws, in Western Europe, Canada, Japan, and the United States.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: Jr, sr, or grad standing in BUS, ASC, or LAW.

## 764 Worker-Management Cooperation Initiatives U G 4

An examination of critical theories, principles, and concepts upon which initiatives such as QWL, QC, ESOP, etc. in union and nonunion environments.

Sp Qtr. 2 1½-hr cl. Prereq: 612 or 614 or 651 or 761 or 763 or equiv with written permission of instructor.

## 765 Comparative Management Systems and Environments U G 3

A conceptual approach for analyses of cultural norms and values and assessment of their implication for managerial decision-making.

Wi, Sp Qtrs. 3 cl.



**769 Cases in Human Resources Management U G 4**

Problems and case histories are utilized to develop proficiency in applying principles and developing decision-making abilities in regard to human resources management.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 761 or 762 or permission of instructor.

**795 Management of New and Small Enterprise U G 3**

Entrepreneurship, managing the small business, planning, marketing, production, finance, organization, personnel; pragmatic issues in real situations.

Au, Wi Qtrs. 1 3-hr cl. Prereq: Sr standing in BUS or permission of instructor. Repeatable to a maximum of 9 or hrs including or hrs in Bus-Mgt 795.

**800 Introduction to Administrative Behavior G 3**

Introduction to behavioral concepts of concern to management; individual, group and organizational behavior.

Wi Qtr. 2 1¼-hr cl. Not open to students with credit for Bus-MHR 701 or structured MBA.

**801 Laboratory in Management Skills G 4**

Uses behavior modeling techniques to teach students a variety of interpersonal skills needed by generalist managers.

Sp Qtr. 1 4-hr cl.

**803 Organization Theory and Design G 4**

An examination of the theories and practices involved in the design of formal organizations.

Wi Qtr. 2 1½-hr cl. Not open to students in structured MBA.

**804 Organizational Development: Strategies for Changing Organizations G 4**

An analysis of the strategies and techniques that have been developed and employed in changing organizations.

Wi Qtr. 2 1½-hr cl. Prereq: 803 or permission of instructor.

**805 Career Development G 4**

Study of career development within organizations and organizational perspectives.

Au Qtr. 2 2-hr cl. Prereq: 800 or 860 or MBA 820 or permission of instructor.

**806 Management and Individual Behavior G 3**

Theory and application of the manager's role in dealing with individual employee behavior.

Sp Qtr. 2 1½-hr cl.

**851 Introduction to Labor and Human Resources I G 4**

Appraisal of theories, principles, and concepts related to macro and micro labor and human resources.

Wi Qtr. 2 2-hr cl. Prereq: Admis to grad programs in Labor and Human Resources or permission of instructor.

**852 Introduction to Human Resources II G 4**

Examination of macro and micro labor human resources issues and policies.

Sp Qtr. 2 1½-hr cl. Prereq: 851 or permission of instructor.

**853 Seminar in Human Resource Planning G 4**

Selected topics related to methodologies for preparing, executing, and evaluating human resource plans at the firm, community, and national levels.

Sp Qtr. 2 2-hr cl. Prereq: 851, or any of the following: 652, 653 or 654.

**854 Seminar in Human Resource Policy G 4**

Theories of the labor market as applied to the analysis of human resource policy issues, training, unemployment, discrimination, immigration, and poverty.

Sp Qtr. 1 3-hr cl. Prereq: 851, or any of two of the following: 652, 653, or 654.

**855 Development of Human Resources G 4**

Study of the processes of human resource development as development as identified in theory, research policy and application, experiential learning, and adult development in organization.

Sp Qtr. 2 2-hr cl. Prereq: 20 or hrs in related social science courses.

**860 Management of Human Resources G 4**

Analysis of human resources practice and policies, value configurations, leadership, job design, motivation, and reward systems as these relate to individual performance and organizational effectiveness.

Sp, Au, Wi Qtrs. 2 1¼-hr cl. Not open to students enrolled in structured MBA.

**861 Seminar in Union Management Issues G 4**

Examination of such issues as bargaining and conflict resolution processes, grievance handling and arbitration, white-collar unionism, productivity, quality of worklife, safety and health, and flextime.

1 2½-hr cl. Prereq: 860 or equiv, or permission of instructor.

**862 Seminar in Human Resource Management G 4**

Theory and problems involved in selecting, developing, retaining, motivating, utilizing, and allocating human resources within complex organizations.

Au Qtr. 1 2½-hr cl. Prereq: 860 or equiv with permission of instructor.

**864 Labor Dispute Settlement G 4**

Analysis of the functional role of labor conflict in the industrial relations system; evaluation of institutions for dispute resolution in the public and private sectors.

Sp Qtr. 1 2-hr cl. Prereq: 761 or 861.

**865 Compensation Theory G 4**

Selected topics in principles of compensation; behavioral science and economic theory in relation to wage and salary.

Wi Qtr. 1 2-hr cl. Prereq: 762.

**868 Contemporary Employment Practices and the Law G 4**

Title VII of the 1964 Civil Rights Act, The Equal Pay Act, the Age Discrimination in Employment Act, the Civil Rights Act of 1967, and federal affirmative action program are discussed.

Au Qtr. 2 2-hr cl. Prereq: 612 or permission of instructor. Not open to students with credit for Bus-Fin 866. Cross-listed in Business Administration: Finance.

**893 Individual Studies U G 1-6**

Individual study projects in related areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 credit hours. This course is graded S/U.

**894 Group Studies U G 1-6**

Group study projects in related areas in Management and Human Resources.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 credit hours.

**895 Development and Management of New Enterprise G 3**

Lecture, discussion, and case analysis focused on the concept, development, business analysis, financing and acquisition of new enterprises. Sexton.

Au, Wi Qtrs. 2 cl. Prereq: Bus Admin core and permission of instructor.

**911 Introduction to Behavioral Research Methods in Business G 4**

Introduction to research design and methodology as it relates to the study of business and organizational phenomena.

Au Qtr. 1 3-hr cl. Prereq: 613 and 761 or equivs, or permission of instructor.

**912 Advanced Analysis of Organizational Research G 4**

Analysis and comparison of relevant business and organizational theories through an in-depth consideration of research design, methods, and analysis and the development of student-originated research proposals.

Sp Qtr. 1 3-hr cl. Prereq: Bus-Mgt 911 and permission of instructor.

**913 Individual Behavior in Formal Organizations G 4**

Advanced discussions of theory and research on individual behavior, motivation, decision-making, job design, and reward system as they relate to individual and organizational performance.

1 3-hr cl. Prereq: 919 and permission of instructor.

**914 Work Groups in Formal Organizations G 4**

Theory and research on formal and informal structures in work groups and their influence on productivity and management.

1 3-hr cl. Prereq: 919 and permission of instructor.

**915 Advanced Formal Organization Theory G 4**

Theory and research on the structural characteristics of formal organizations with particular emphasis on the management of the organization as a dynamic system.

Wi Qtr. 1 3-hr cl. Prereq: 919 and permission of instructor.

**917 Seminar in Organizational Behavior G 4**

A critical study of current research problems and trends in organizational behavior; builds on the concepts, models, and perspectives developed in 913, 914, and 915.

1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**918 Seminar in Integrative Organizational Behavior Research G 2**

Continuing seminar for integration of organizational behavior concepts.

Au, Wi, Sp Qtrs. Arr. Prereq: Enrollment in the organizational behavior area of the Bus Adm PhD program. This course is graded S/U.

**919 Theoretical Foundations of Organizational Thought G 4**

Seminar in the historical evolution of concepts, models, and perspectives in organizational behavior and the practice of management.

Au Qtr. 1 3-hr cl. Prereq: Permission of instructor.

**920 Seminar in Strategic Management G 4**

An examination of the concepts, models, theories, and research underlying contemporary thinking on strategic management.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor.

**925 Seminar in International Business G 4**

A critical study of current research methodologies and findings in the field of international business.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**950 Advanced Experience in Labor and Human Resources G 1-6**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 12 cr hrs in Bus-MHR.

**950.01 Internship**

Supervised practical experience relating to labor and human resources in public or private establishments, Center for Human Resource Research, Labor Education and Research Service, or under a faculty member.

**950.02 Tutorial**

Preparation of investigative paper relating course work to specific problem in industrial relations or human resource policy.

**952 Advanced Seminar in Unionism and Collective Bargaining G 4**

Selected issues in unionism and collective bargaining.

2 2-hr cl. Prereq: 613 and 761 or equivs, or permission of instructor.

**960 Seminar in Industrial Relations Thought G 4**

A consideration of industrial relations thought in terms of its historical and theoretical evolution in private and public sectors.

1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**961 Seminar in Industrial Relations Research G 4**

A consideration of relevant industrial relations research and methodology, and individual development of research projects in private and public sectors.

Au Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**998 Research in Labor and Human Resources: Thesis G 1-7**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 12 cr hrs in BUS-MHR at 800 level or above. Repeatable to a maximum of 20 hrs. This course is graded S/U.

**999 Research in Labor and Human Resources: Dissertation G 1-15**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable. This course is graded S/U.

## Business Administration: Management Sciences

301 Hagerty Hall, 1775 College Road, 292-1275

**330 Decision Sciences: Statistical Techniques U 5**

Examination of the use of statistical techniques in managerial decision making processes; confidence intervals, hypothesis testing, simple and multiple regression, time series analysis, and decision theory.

Su, Au, Wi, Sp Qtrs. 3 2-hr cl. Prereq: Cptr/Inf 211 and Stat 133 or equiv. Not open to students with credit for 491.

**331 Decision Sciences: Operations Research Techniques U 4**

Examination of the use of operations research techniques in managerial decision making processes; constrained linear optimization, non-linear optimization, network analysis, queuing theory, simulation.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Cptr/Inf 211 and Stat 133 or equiv. Not open to students with credit for 391.

**493 Individual Studies U 1-10**

Individual study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**494 Group Studies U 1-10**

Group study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**601 Business Statistics U G 4**

Applications of statistical techniques to the analysis of business and economic data.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 330 or 491.

**630 Introduction to Production and Operations Management U G 4**

Topics in project scheduling, layout, forecasting, aggregate planning, work measurement, workforce scheduling, job shop scheduling, economic order quantity models, inventory systems, material requirements planning, productivity, and Japanese management.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H630 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Stat 133 or equiv.

**693 Individual Studies U G 1-6**

Individual study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Group study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**702 Special Topics U G 4**

Consideration of special techniques used in the solution of quantitative management problems.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**731 Operations Design U G 4**

Analysis of operations planning, including facility location, facility layout, service and queuing theory, quality control, and machine maintenance.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 330 or 491, 331 or 391, and 630; or permission of instructor.

**732 Materials Management U G 4**

Analysis of operations control including short-term demand forecasting, economic order quantity models, inventory systems, aggregate planning, disaggregation, material and capacity requirements planning and materials purchasing.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 330 or 491, 331 or 391, and 630; or permission of instructor.

**733 Operations Management/Information Systems U G 4**

A study of specific applications of information systems in the strategic and tactical decision making levels of the production and operations management area.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 630 and a course in computer programming, or permission of instructor.

**734 Analysis and Design of Operating Systems U G 4**

Analysis and design of modern operations, including model building and computer simulation.

2 2-hr cl. Prereq: A course in computer programming or permission of instructor.

**735 Purchasing and Materials Management U G 4**

Interrelationships of procurement with the rest of the functional and system areas of the firm.

Au, Wi Qtrs. 2 2-hr cl. Prereq: 630 and Bus-Mktg 650.

**739 Operations Strategy U G 4**

Strategic planning, production operations and automation strategies, economic analysis of productive systems, flow shop automation, job shop control, numerical control, CAD/CAM, group technology, FMS, and Japanese production systems.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 330 or 491, 331 or 391, and 630; or permission of instructor.

**801 Quantitative Methods in Business G 4**

Derivation and application of analytical, mathematical, and statistical techniques to the solution of recurring management problems.

2 1½-hr cl. Prereq: Stat 133 or equiv or permission of instructor.

**801.01 Business Data Modeling I**

Introduction to quantitative management techniques for first year doctoral candidates in business administration.

Au Qtr. Prereq: Math 503 and grad standing in BUS or permission of instructor.

**801.02 Business Data Modeling II**

Continuation of 801.01 with emphasis on stochastic modeling techniques.

Wi Qtr. Prereq: 801.01.

**801.03 Business Data Modeling III**

Emphasis on deterministic modeling techniques for business management problem solving.

Au, Wi Qtrs. Prereq: 801.01. Repeatable to a maximum of 6 cr hrs.

**801.04 Business Data Modeling IV**

Prereq: Mgt Sci 801.02 or permission of instructor.

**801.05 Advanced Business Modeling**

Advanced study of applications of modeling techniques for quantitative management problems.

Prereq: 801.02 and permission of instructor.

**802 Systems Research Organization and Methodology G 3**

Modeling adaptive management systems of complex organizations such as health, business, and education.

1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**830 Management of Service Operations G 4**

Study of the strategic and tactical issues of managing a service organization such as financial health care, hotel/motel, and restaurant service delivery systems.

Wi Qtr. 2 2-hr cl. Prereq: MBA 850, or permission of instructor.

**831 Service Operations Management for Health Care Systems G 4**

Examines operations management topics such as service quality, scheduling, capacity planning, and automation for health care service delivery systems.

Wi Qtr. 2 2-hr cl.

**832 Operations Management Information Systems G 4**

Examination of major issues in planning and scheduling in an information systems context; production database, requirements planning, and scheduling processing; decision support systems in operations management and computerized manufacturing systems.

Sp Qtr. 2 2-hr cl.

**834 Strategic Design of Operations/Logistics Systems G 4**

Focus on the key strategic issues facing operations and logistics managers in the 1980s; covers new-technology management, quality management, strategic purchasing, capacity planning, facility location and layout, productivity management, and maintenance.

Au Qtr. 2 2-hr cl. Prereq: 730 or equiv, 801.01, MBA 850, or permission of instructor.

**835 Operations Planning and Materials Management G 4**

The major responsibilities of materials managers; including aggregate planning and master scheduling, inventory management, and scheduling; major issues and strategies including tactical purchasing methods, techniques for analysis, and Japanese manufacturing philosophies will be discussed.

Wi Qtr. 2 1½-hr cl. Prereq: MBA 850, 871, or permission of instructor.

**893 Individual Studies G 1-6**

Individual study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-6**

Group study projects in selected areas in Management Sciences.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**901 Seminar in Management Science G 4**

Consideration of advanced topics in management science with an emphasis on quantitative analysis.

Au, Wi, Sp Qtrs. varies. 2 2-hr cl. Prereq: Mgt Sci 801.02 and 801.03 and permission of instructor.

**929 Current Research in Operations Management G 2**

A series of weekly lectures and seminar discussions on current research topics in operations management.

Au Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**930 Special Topics in Operations Management G 3**

A critical study of selected topics in operations management focusing on the status of research efforts to date; topics vary.

Wi Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**931 Seminar in Operations Management G 3**

A critical review of the literature in the field of operations management; in odd-numbered years, the review covers the process design, location, and layout areas while the production planning and control topics are covered in even-numbered years.

Sp Qtr. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**998 Research in Management Sciences: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Management Sciences: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Business Administration: Marketing

221 Hagerty Hall, 1775 College Road, 292-8808

**493 Individual Studies U 1-10**

Individual study projects in selected areas in Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**494 Group Studies U 1-10**

Group study projects in selected areas in Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**650 Marketing U G 4**

Critical survey of field of marketing; structure, functions, policies, costs, and problems analyzed from consumer and other viewpoints; emphasis on principles, trends, and quantitative expression.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. H650 (honors) may be available to students enrolled in an honors program or by permission of faculty. Prereq: Econ 400 or equiv.

**680 Principles of Transportation U G 4**

Study of general economic characteristics and government regulation of rail, motor, water, air, and pipeline carriers; consideration of competitive relations between modes of transportation, basic aspects of traffic management.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Econ 400 or equiv.

**693 Individual Studies U G 1-6**

Individual study projects in related areas in Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Group study projects in selected areas in Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

*700-level courses are not available for graduate credit if taught by a graduate instructor. Please check Master Schedule for limitation codes.*

**750 Consumer Behavior U G 4**

A review and synthesis of behavioral sciences applied to understanding consumer decision process; emphasis on the impact of consumer decisions upon the strategies of business, government, and consumer business cases.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

**751 Managerial Marketing U G 4**

Marketing policies and strategy; organization, demand analysis, product planning, pricing, physical distribution, and promotion from a managerial viewpoint.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

**752 Cases in Managerial Marketing U G 4**

Analysis of marketing policies and strategy, with emphasis on actual business cases.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 751.

**753 Retail Management U G 4**

Principles and methods of management as applied to retailing, including location, organization, personnel, buying, inventory control, selling and advertising, services, expenses, and profits.

Su, Au, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

**755 Promotional Strategy U G 4**

Consumer behavior, fundamentals of communication, setting goals and objectives, creative strategy, media strategy, and social and economic issues.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 or equiv.

**756 Industrial Marketing Management U G 4**

Examination of the management of the marketing function in industrial products companies; industrial buyer behavior and personal selling.

2 2-hr cl. Prereq: 650. Recommended: 751, 752, and 758.

**757 International Marketing U G 4**

Theory and practice of marketing across national borders, as well as marketing and market research within different foreign environments, including the development of marketing strategies by the international company.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 650 and Bus-Adm 555.

**758 Marketing Research U G 4**

The role of research in the solution of marketing problems; emphasis on available data analysis and methods of the field of investigation.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 and Bus-Mgt 330.

**759 Sales Management U G 4**

The sales force and its managerial hierarchy.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 650.

**780 Micro-Logistics U G 4**

Management of logistics activities of the firm from the viewpoint of both the provider and user of logistics system components.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 650 and Bus-Mktg 680.

**781 Analysis and Design of Logistics Systems U G 4**

Analysis of internal and environmental factors affecting logistics systems and the effect of such factors on the development and implementation of integrated logistics systems.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 680 and 780.

**782 Logistics Decision Making U G 4**

Analysis of decision making in the current logistics environment and the tools needed for finding solutions to logistics problems such as inventory, transportation, and warehouse management.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 780 and Cptr/Inf 211.

**807 Principles and Techniques of Marketing Research G 4**

Comprehensive study of marketing research process and value of research to managers; design and execution of industry-sponsored project.

Au Qtr. 2 2-hr cl. Prereq: 840.

**852 Seminar in Specialized Areas of Marketing G 1-4**

Prereq: 650 or equiv; and permission of instructor.

**852.06 Channels of Distribution****852.07 Marketing Theory****852.08 Logistics****852.09 Consumer Research**

A—Research Design in Consumer Behavior. Au Qtr.

B—Consumer Behavior Theory. Wi Qtr.

C—Consumer Decision Making. Sp Qtr.

**854 Consumer Behavior G 4**

Development of the consumer decision process and its application to marketing strategy decisions.

Wi Qtr. 2 2-hr cl, lab. Prereq: 850 or MBA 840 or permission of instructor.

**858 Multivariate Analysis in Business Research G 4**

Advanced consideration of correlational data analysis techniques (regression, discriminant analysis, factor analysis, canonical analysis); emphasis on comparison of techniques and underlying theory and assumptions.

Wi Qtr. 2 3-hr cl. Prereq: 801.01, 801.02, and Stat. 625, or permission of instructor.

**880 Physical Distribution Management G 4**

Management of movement services and coordination of demand and supply patterns for optimization of physical systems in terms of cost and customer service.

Au Qtr. 2 2-hr cl. Prereq: 650 and Bus-Mgt 630, or equivs.

**889 Theory of Business Logistics G 3**

Critical examination of various theories of the structure and operation of logistics systems; research methodology for testing logistics theory and the application of logistics theory to contemporary logistics problems.

Wi Qtr. 1 3-hr cl.

**893 Individual Studies G 1-6**

Individual study projects in related areas of Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-6**

Group study projects in selected areas in Marketing.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**950 Seminar in Logistics and Distribution Channels G 3**

Critical examination of the role of logistics and distribution channel systems in micro- and macro-marketing systems.

Wi Qtr. Prereq: 850 or equiv.

**951 Marketing Models G 3**

A study of recent model-based research in the marketing literature; emphasis on the strengths and weaknesses of various modeling approaches in specific problem areas and evaluation of model-based research.

Sp Qtr. Prereq: 959 or permission of instructor.

**955† Seminar in Contemporary Marketing Problems G 3**

Review of current periodical literature and individual investigation by each student of a selected marketing problem of contemporary significance for seminar discussion and written report.

Prereq: 950 or equiv.

**959† Foundations of Marketing Thought G 3**

An analysis and evaluation of the evolution of marketing thought in a mass production/mass consumption context; a consideration of interdisciplinary relationships and contemporary theoretical insights.

1 3-hr cl. Prereq: 850 or equiv.

**998 Research in Marketing: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Marketing: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Chemical Engineering

121 Koffolt Laboratories, 140 West 19th Avenue, 292-6591

**200 Chemical Engineering and Process Calculations U 3**

The application of physico-chemical principles to problems of the chemical industry; emphasis on graphical methods, stoichiometry, heat, and material balances. Chalmers, Davis, Knaebel, W.K. Lee, Ozkan, and Zakin.

Au, Wi Qtrs. 2 cl, 2 comp lab hrs. Prereq: Chem 123 and a minimum cumulative pt-hr ratio of 2.00, and prereq or concur: Math 254 and Physics 131.

**201 Chemical Engineering and Process Calculations U 3**

Continuation of 200.

Wi, Sp Qtrs. 2 cl, 2 comp lab hrs. Prereq: 200 and prereq or concur: Math 255 and Physics 132.

**294 Group Studies U 1-6**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**420 Elements of Chemical Engineering—Transport Phenomena I U 4**

Introduction to momentum, mass, and heat transfer with emphasis on the analogies between them; practical applications of momentum transfer (fluid flow). Brodkey, Chalmers, Fan, Hershey, and Yang.

Au, Sp Qtrs. 3 cl, 2 comp lab hrs. Prereq: 201, Math 255, and Physics 132, or equivs with written permission of instructor.

**442 Petroleum Geophysical and Drilling Methods U 3**

Selected engineering problems associated with drilling oil and gas wells; geophysical exploration concepts; emphasis on drilling mud control and directional drilling analysis. Slider.

Sp Qtr. 3 cl. Prereq: ENG 3rd yr standing or geology 4th yr standing.

**489 Professional Practice in Industry U 2**

Preparation of a comprehensive report based on employment experience in a co-op job in industry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Admission to co-op program in Chem Eng. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**508 Chemical Engineering Thermodynamics I U G 3**

Application of the fundamental concepts and laws of thermodynamics to problems of the chemical industry; stress on computational problem work. Davis, Hershey, and Ozkan.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: 201 and prereq or concur: 420.

**509 Chemical Engineering  
Thermodynamics II U G 3**

Continuation of 508.

Wi Qtr. 2 cl, 2 comp lab hrs. Prereq: 508.

**520 Transport Phenomena U G 3**

Momentum, mass, and heat transfer with emphasis on the analogies between them; practical applications of momentum transfer (fluid flow). Brodkey, Chalmers, Fan, Hershey, and Yang.

Au, Sp Qtrs. 3 cl. Prereq: Math 255. Not open to students with credit for 420.

**521 Elements of Chemical Engineering—  
Transport Phenomena II U G 3**

Continuation of transport theory with emphasis on heat transfer and introduction to radiation; basic principles developed and illustrated with problems from chemical engineering practice. Davis, Ozkan, L.J. Lee, W.K. Lee, and Yang.

Au, Wi Qtrs. 2 cl, 2 comp lab hrs. Prereq: 420 or 520, and En Graph 200.

**522 Elements of Chemical Engineering—  
Transport Phenomena III U G 3**

Continuation of the study of transport theory; emphasis on mass transfer and stage-wise operations with applied computational problems. Fan and Knaebel.

Wi Qtr. 2 cl, 2 comp lab hrs. Prereq: 420 and prereq or concur: 521. Not open to students with credit for 570.

**523 Chemical Engineering Operations U G 4**

The application of transport phenomena such as fluid, heat, and mass transfer to the chemical engineering operations of evaporation, distillation, drying, etc. Fan and Knaebel.

Sp Qtr. 3 cl, 2 comp lab hrs. Prereq: 521, Chem 532, and prereq or concur: 522 or 570.

**610 Chemical Engineering Kinetics U G 3**

Chemical and engineering principles for the design and operation of chemical reactors; kinetics of simple homogeneous systems and introduction to heterogeneous catalysis. Chalmers, Haering, and Ozkan.

Sp Qtr. 2 cl, 2 comp lab hrs. Prereq: 509 or Chem 532, and prereq or concur: 522 or 570.

**624 Chemical Process Dynamics  
and Control I U G 3**

Study of the dynamics and control of chemical processes; mathematical models of simple processes, including feedback control, are derived, analyzed, and simulated. Davis, W. K. Lee, and Yang.

Au Qtr. 3 cl. Prereq: 523, 610, 630 and Math 512. Not open to students with credit for 501.

**626 Digital Control Techniques in  
Chemical Engineering U G 3**

Study of real-time data acquisition and digital control techniques as applied to chemical processes. W. K. Lee.

Wi Qtr. 2 cl, 3 lab hrs. Prereq: 624 and En Graph 200, or permission of instructor.

**630 Chemical Engineering  
Operations Laboratory U G 4-8**

The fundamental laboratory course in the chemical engineering operations; laboratory investigation of the operating characteristics and efficiency of chemical engineering equipment such as distillation, drying, filtration, etc. Haering.

Su Qtr. 5 conf, 7-19 lab hrs. Prereq: 523 or equiv with written permission of instructor.

**640 Determination of Reservoir Parameters  
and Material Balance U G 5**

Determination of petroleum subsurface reservoir thickness, porosity, and saturation from core analysis and logs; the prediction of reservoir behavior by material balances. Slider.

Sp Qtr. 5 cl. Prereq: ENG 3rd yr standing or geol 4th yr standing and permission of instructor.

**643 Flow of Gas and Oil  
in Subsurface Reservoirs U G 5**

Fundamentals of oil and gas flow in porous media under steady state and unsteady state conditions; application of these fundamentals to well problems. Slider.

Sp Qtr. 5 cl. Prereq: ENG 4th yr standing or geol 4th yr standing and permission of instructor.

**663 Coal and Mineral Characterization and  
Preparation U G 3**

Schematic and mathematical description of coal and mineral preparation circuits and the design of preparation units for specific minerals or coal aimed at particular markets. Skidmore.

Au Qtr. 3 cl. Prereq: Math 254 or permission of instructor.

**666 Principles of Biochemical Engineering U G 3**

Fundamental study of transport phenomena and other biochemical engineering principles with applications in processing of biological materials (animal, vegetable, microorganism). Chalmers and Yang.

Sp Qtr. 3 cl. Prereq: ENG or science sr or grad standing.

**693 Individual Studies  
in Chemical Engineering U G 1-8**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies in Chemical  
Engineering U G 1-6**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**712 Catalysis and Catalytic Processes U G 3**

Kinetics of catalytic processes, mass transfer in catalysis, catalyst preparation and characterization, deactivation of catalysts, catalytic reactors, and application of catalytic phenomena in industrial processes. Ozkan.

Sp Qtr. 3 cl. Prereq: 522 and 610.

**726 Chemical Process Dynamics  
and Control II U G 3**

Further development of process dynamics and control topics begun in 624. W. K. Lee.

Sp Qtr. 3 cl. Prereq: 624 or permission of instructor.

**743 Petroleum Production  
Investigations U G 1-10**

Sp Qtr. Library, conf, and lab work. Prereq: 643. Repeatable to a maximum of 10 cr hrs for the course; subdivision repeatable to a maximum of 10 cr hrs.

**743.02 Design or Planning of Petroleum Field  
Development**

Slider.

**750 Profession of Chemical Engineering U 0-1**

The roles in professional activities performed by chemical engineers, code of ethics, professional registration, professional societies, responsibilities to management and to labor and as an administrator. Haering and Zakin.

Au, Sp Qtrs. 1 cl. Prereq: Jr standing. Progress graded Sp Qtr, credit/grade awarded upon completion of Au Qtr.

**760 Chemical Engineering  
Economy and Strategy U G 4**

Economic and strategy considerations in research; development, design, and manufacturing in the chemical process industry; cost estimation and economic optimization of chemical engineering operations and chemical processes. Fan and Skidmore.

Au Qtr. 3 cl, 1 recitation. Prereq: 610 and 630.

**761 Chemical Engineering Processes U G 3**

Integration of fundamentals of chemistry, chemical engineering operations, thermodynamics, reaction kinetics, and economics for optimum design and operation of chemical process plants. Haering.

Au Qtr. 2 cl, 2 comp lab hrs. Prereq: Sr standing in chem eng or chem.

**762 Chemical Engineering Process Development U G 4**

Library, laboratory, and pilot plant research and development of chemical processes of industrial potential justified by preliminary economic studies; preparation of optimum process flow sheets; plant design studies. L. J. Lee and Skidmore.  
Au, Wi Qtrs. 1 cl, 11 lab hrs. Prereq: 610, 630, and prereq or concur: 760.

**763 Special Problems in Process Design U 2**

Analysis of definite problems having theoretical and practical application to the chemical industry; individual effort guided by a chemical engineering staff member. Hershey.  
Wi Qtr. 6 hrs conf and lab. Prereq or concur: 760.

**764 Chemical Engineering Process Design U G 4**

Process design studies on selected chemical processes encompassing a broad spectrum of fundamental engineering principles; optimization studies utilizing economic and technical simulation. Davis.  
Sp Qtr. 2 cl, 2 4-hr labs. Prereq: 762.

**767 Coal Liquefaction Processing U G 3**

Definition of design features for special operations in coal liquefaction; exposition of structure—reactivity relation and description of competing liquefaction technologies including in-situ coal liquefaction. Skidmore.  
Wi Qtr. 3 cl. Prereq: Math 254 or permission of instructor.

**769 Coal Gasification Processing U G 3**

Description, analysis, and design of important units in coal gasification processes. Skidmore.  
Sp Qtr. 3 cl. Prereq: Math 254 or permission of instructor.

**773 Introduction to High Polymer Engineering U G 3**

Engineering of polymerization and polymer forming processes based upon thermodynamics, transport phenomena, and reaction kinetics; relationships of engineering properties of high polymers to molecular characteristics. L. J. Lee.  
Au Qtr. 3 cl. Prereq: 610 and organic chem or permission of instructor.

**775 Rheology of Fluids U G 3**

Principles of rheology including the characteristics of non-Newtonian materials, rheological equations of state, viscometric flows, measurements and applications to the flow of industrial materials. Brodkey and Zakin.  
Wi Qtr. 3 cl. Prereq: 420 or 520 or equiv with written permission of instructor.

**776 Principles of Polymer Conversion Operations U G 3**

Principles of thermodynamics, transport phenomena, polymer chemistry and physics will be related to polymer processing (converting high polymers) through application of mathematical and analytical approaches. L. J. Lee.  
Sp Qtr. 3 cl. Prereq: 773 and 775 or permission of instructor.

**779 Chemical Engineering Experimental Design U G 3**

Industrial and research experiments designed with special emphasis on reducing the number of experiments, interpreting final results, and ensuring against unknown factors. Hershey.  
Au Qtr. 3 cl. Prereq: En Graph 200 or equiv or permission of instructor.

**781 Chemical Engineering Optimization U G 3**

Description, analysis, and comparison of the techniques in use in unimodel optimization; linear programming; geometric programming. Hershey and W. K. Lee.  
Sp Qtr. 3 cl. Prereq: En Graph 200 or equiv or permission of instructor.

**790 Process Modeling and Simulation U G 3**

Application of basic chemical engineering principles to construct mathematical models of industrial processes and the simulation thereof by digital and analog techniques. Fan.  
Au Qtr. 3 cl. Prereq: Permission of instructor.

**791 Advanced Process Modeling and Simulation U G 3**

Continuation of 790 stressing deterministic modeling of chemical and biochemical systems with applications to energy and environmental problems. Fan.  
Wi Qtr. 3 cl. Prereq: 790.

**801 Advanced Special Problems in Chemical Engineering G 1-15**

A minor problems course covering the chemical engineering operation, instrumentation, thermodynamics, kinetics, the transport fields, and chemical technology.

Su, Au, Wi, Sp Qtrs. Conf, library, and/or lab. Prereq: Satisfactory courses in field of problem undertaken and permission of instructor. Repeatable to a maximum of 15 cr hrs.

**808 Advanced Chemical Engineering Thermodynamics I G 3**

Detailed discussion of the thermodynamic properties of pure compounds and mixtures; computational problem work emphasizes the application of thermodynamics in industrial problems. Hershey and Davis.

Sp Qtr. 3 cl. Prereq: 509 or equiv with written permission of instructor.

**809 Advanced Chemical Engineering Thermodynamics II G 3**

Continuation of 808. Hershey and Davis.  
Wi Qtr. 3 cl. Prereq: 808.

**812 Advanced Chemical Engineering Kinetics I G 3**

Chemical engineering kinetics from the viewpoint of industrial chemical processes. Haering.  
Au Qtr. 3 cl. Prereq: 523 and 610; or permission of instructor.

**813 Advanced Chemical Engineering Kinetics II G 3**

Continuation of 812. Haering.  
Wi Qtr. 3 cl. Prereq: 812.

**815 Advanced Chemical Engineering Science and Applications G 3**

Advanced concepts of science and engineering as applied to the chemical engineering field under various topics.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Chem eng grad standing or permission of instructor. Repeatable to a maximum of 45 cr hrs. Subdivisions are not repeatable.

**815.01 Advanced Mass Transfer—I**

Knaebel.

**815.02 Advanced Mass Transfer—II**

Knaebel.

**815.03 Advanced Distillation and Stage Processes**

Knaebel.

**815.05 Advanced Heat Transfer—I**

Conduction, radiation, and convection. Chalmers and L.J. Lee.

**815.08 Advanced Momentum Transfer—I**

Basic theory, laminar flow, and phenomenological turbulence. Brodkey.

**815.09 Advanced Momentum Transfer—II**

Turbulence, mixing, and chemical reaction. Brodkey.

**815.10 Advanced Momentum Transfer—III**

Two-phase phenomena. Brodkey.

**815.15 New or Unusual Chemical Engineering Operations**

Examples: adsorption, atmolysis, dialysis exclusion, sublimation.

**873 Advanced High Polymer Engineering G 3**

Fundamental studies of polymer properties as related to and controlled by polymer structure; engineering of polymerization process to control polymer structure. L.J. Lee.

Sp Qtr. 3 cl. Prereq: 773 or permission of instructor.

**881 Seminar in Chemical Engineering G 2**

Formal reports, lectures, and discussions of fundamentals and new developments in science and technology as related to chemical engineering.

Su, Wi Qtrs. 2 conf hrs. Prereq: Grad standing in chem eng. Repeatable to a maximum of 12 or hrs.

**981 Research Seminar in Chemical Engineering G 2**

Formal reports, lectures, and discussions of research topics in chemical engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in Chem Eng.

**999 Research in Chemical Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Chemical Physics

019 New Chemistry Building, 120 West 18th Avenue,  
292-2569/3679

**998 Research in Chemical Physics: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Chemical Physics: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Chemistry

General Chemistry Office, 115 McPherson Chemical Laboratory, 140 West 18th Avenue, 292-6009; Office, 120 McPherson Chemical Laboratory, 140 West 18th Avenue, 292-2251

**100 Chemistry and Society U 5**

Terminology, methods, and principles of chemistry; examination of the roles of chemistry in our modern technological society.

Au, Sp Qtrs. 5 cl. Prereq: Math 075 or 076 or 102 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 101 or 121 or 204 or chem course having these as prereqs.

**101 Elementary Chemistry U 5**

A course in the principles of chemistry; the chemistry of the more important elements and compounds.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: Eligibility to enroll in Math 116. Not open to students with credit for 121, H201, or 204. Safety glasses must be worn in lab. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**102 Elementary Chemistry U 5**

Continuation of 101; a terminal sequence in chemistry for students requiring only two courses in chemistry; special attention is given to the compounds of carbon.

Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: 101. Not open to students with credit for 122 or H202 or 205. Safety glasses must be worn in lab. BER/LAC/LAR course. NS Admis Cond course.

**121 General Chemistry U 5**

A general course in fundamental chemical principles.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: One unit of high school chem and eligibility to enroll in Math 150. Not open to students with credit for H201 or 204. Safety glasses must be worn in lab. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**122 General Chemistry U 5**

Continuation of 121; the chemistry of the most important non-metals and of chemical reactions in solutions.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 lab hrs. Prereq: 121 or completion of 101 with a grade of A or B and eligibility to enroll in Math 150. Not open to students with credit for H202 or 205. Safety glasses must be worn in lab. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**123 General Chemistry U 5**

Continuation of 122; the chemistry of the metals including introductory quantitative analysis.

Su, Au, Wi, Sp Qtrs. 3 cl, 6 lab hrs. Prereq: 122. Safety glasses must be worn in lab. This course is available for EM credit. BER/LAC/LAR course.

**H201 General Chemistry U 5**

Fundamental chemical principles for selected students.

Au Qtr. 4 cl, 3 lab hrs. Prereq or concur: Math 151 and permission of instructor. Not open to students with credit for 121 or 204. Safety glasses must be worn in lab. BER/LAC/LAR course. NS Admis Cond course.

**H202 General Chemistry U 5**

Continuation of H201; fundamental principles and nonmetal chemistry.

Wi Qtr. 4 cl, 2 lab hrs. Prereq: H201. Safety glasses must be worn in lab. BER/LAC/LAR course. NS Admis Cond course.

**H203 General Chemistry U 5**

Continuation of H202; fundamental principles and chemistry of metals.

Sp Qtr. 3 cl, 6 lab hrs. Prereq: H202. Safety glasses must be worn in lab. BER/LAC/LAR course.

**204 Principles of Chemistry U 4**

Fundamental principles of chemistry for engineering students with at least two quarters of college physics and of college mathematics.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: ENG 1st or 2nd yr standing; 1 unit of high school chem, and prereq or concur Math 153 and Physics 133. Safety glasses must be worn in lab.

**205 Principles of Chemistry U 4**

Continuation of 204.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: 204. Safety glasses must be worn in lab.

**211 Quantitative Analysis U 3**

A general course in quantitative analysis; gravimetric, volumetric, and instrumental analysis; primarily for those students with interest in biological and medical sciences.

Au, Wi Qtrs. 2 cl, 5-8 lab hrs. Prereq: 123 or equiv. Safety glasses must be worn in lab. BER/LAC course.

**221 Quantitative Analysis U 5**

The fundamental course in quantitative chemical analysis for students majoring in chemistry.

Au, Sp Qtrs. 3 cl, 6 lab hrs. H221 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 123 or equiv. Safety glasses must be worn in lab. BER/LAC course.

**231 Introductory Organic Chemistry U 3**

A condensed presentation of organic chemistry organized by functional groups with an emphasis on practical applications rather than theoretical considerations.

Au, Sp Qtrs. 4 cl. Prereq: 122. Not open to students with credit for 102 or 241 or 251.

**243 Organic Chemistry Laboratory U 3**

An introduction of the laboratory techniques of organic chemistry including synthesis, isolation, and purification of organic compounds.

Su, Au, Wi, Sp Qtrs. 1 cl, 8 lab hrs. Prereq or concur: 231 or 251. Not open to students with credit for 245 or 254. Safety glasses must be worn in lab.



**244 Organic Chemistry Laboratory U 3**

Preparation, isolation, and purification of organic compounds such as are studied in 251 and 252.

Su, Au, Wi, Sp Qtrs. 1 cl, 8 lab hrs. Prereq: 243 or 245; prereq or concur 252. Not open to students with credit for 246 or 255. Safety glasses must be worn in lab.

**245 Organic Chemistry Laboratory U 2**

An introduction to the laboratory techniques of organic chemistry including synthesis, isolation, and purification of organic compounds.

Au, Wi, Sp Qtrs. 1 cl, 5 lab hrs. Prereq or concur: 231 or 251. Not open to students with credit for 243 or 254. Safety glasses must be worn in lab.

**246 Organic Chemistry Laboratory U 2**

Preparation, isolation, and purification of organic compounds such as are studied in 251 and 252.

Su, Wi, Sp Qtrs. 1 cl, 5 lab hrs. Prereq: 243 or 245; prereq or concur: 252. Not open to students with credit for 244 or 255. Safety glasses must be worn in lab.

**251 Organic Chemistry U 3**

Structure, nomenclature, physical properties, preparation, and reactions of hydrocarbons, alcohols, and ethers.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 123. Not open to students with credit for 241.

**252 Organic Chemistry U 3**

The chemistry of carbonyl compounds, acids and their derivatives, and amines and aromatic compounds; and spectroscopic methods including infrared and nuclear magnetic resonance.

Su, Wi, Sp Qtrs. 4 cl. Prereq: 251. Not open to students with credit for 242.

**253 Organic Chemistry U 3**

Selected topics in organic chemistry for students majoring in chemistry, chemical engineering, and areas requiring a full year of organic chemistry.

Au, Sp Qtrs. 4 cl. Prereq: 252.

**254 Organic Chemistry Laboratory U 3**

The preparation, purification, characterization, and study of the properties of typical organic compounds.

Wi Qtr. 1 cl, 8 lab hrs. H254 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq or concur: 251. Not open to students with credit for 243-244. Safety glasses must be worn in lab.

**255 Organic Chemistry Laboratory U 3**

Continuation of 254.

Sp Qtr. 1 cl, 8 lab hrs. H255 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 254 or concur 252. Safety glasses must be worn in lab.

**294 Group Studies U 3-5**

Special studies in chemistry.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**520 Physical Chemistry U G 3**

The principles of physical chemistry for students in the biological sciences and for BA students majoring in chemistry.

Wi Qtr. 3 cl. Prereq: 244 or 255 or equiv, Math 132 or 152 or 502, and Physics 113 or 133. Not open to students with credit for 521 or 531.

**521 Physical Chemistry U G 3**

A continuation of 520.

Sp Qtr. 3 cl. Prereq: 520. Not open to students with credit for 532.

**531 Physical Chemistry U G 3**

The fundamental course in physical chemistry.

Au Qtr. 3 cl. Prereq: 212 or 221 or equiv, Physics 113 or 133 and Math 254; prereq or concur Math 255; and concur 541 recommended for chem majors.

**532 Physical Chemistry U G 3**

Continuation of 531.

Wi Qtr. 3 cl. Prereq: 531; concur 542 recommended for chem majors.

**533 Physical Chemistry U G 3**

Continuation of 532.

Sp Qtr. 3 cl. Prereq: 532.

**541 Physical Chemistry Laboratory U G 3**

Quantitative measurements of chemical phenomena and the application of chemical principles to their interpretation.

Au, Wi, Sp Qtrs. 1 cl, 8 lab hrs. Prereq or concur: 520 or 531. Safety glasses must be worn in lab.

**542 Physical Chemistry Laboratory U G 3**

Continuation of 541.

Au, Wi, Sp Qtrs. 8 lab hrs. Prereq: 541; prereq or concur: 521 or 532. Not open to students with credit for 552. Safety glasses must be worn in lab.

**585 Research Principles in Chemistry U 1-5**

Independent chemical investigation under the direction of a faculty member, culminating in written and oral reports.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 15 cr hrs in chem at the 200 level or above and written permission of instructor under whose direction the student will work. Repeatable to a maximum of 20 cr hrs.

**587 Principles of Instrumental Analysis U G 3**

Applications of physico-chemical principles to problems of quantitative analysis.

Sp Qtr. 3 cl. Prereq or concur: 521 or 532, and 541.

**588 Laboratory Practice in Instrumental Analysis U G 2**

Laboratory applications of physico-chemical principles to instrumental analysis.

Sp Qtr. 2 3-hr labs. Prereq or concur: 587 or permission of instructor. Safety glasses must be worn in lab.

**623 Chemical Instrumentation U G 3 or 5**

Background theory and laboratory applications in the use of electrical and electronic instruments in chemical research.

Su Qtr. 2 cl, 9 or 15 lab hrs. Prereq: 533, prereq or concur Physics 133, and Math 255 or equiv. Not open to students with credit for 871.

**632 Physical Methods in Organic Chemistry U G 3**

Selected topics in bonding, molecular orientation, and reactivity of organic compounds and metastable intermediates with emphasis on physical methods of approach.

Sp Qtr. 3 cl. Prereq: 253 and 533; or permission of instructor.

**635\* Chemistry of the Carbohydrates U G 3**

Sp Qtr. 3 cl. Prereq: 242 or 252 or equiv. Repeatable to a maximum of 6 cr hrs with permission of instructor.

A— Monosaccharides. (Given in even-numbered yrs.)  
B— Oligosaccharides and Polysaccharides. (Given in odd-numbered yrs.)

**651 Advanced Inorganic Chemistry I U G 3**

An introduction to the concepts and chemical systems of inorganic chemistry, including atomic structure, the periodic table, molecular structure and bonding, ionic crystals, defect solid state, and electron deficient compounds.

Wi Qtr. 3 cl. Prereq: 521 or 532 or permission of instructor. Not open to students with credit for 751.

**652 Advanced Inorganic Chemistry II U G 3**

The chemistry of the transition elements; coordination compounds, organometallics, noble gases, representative elements, and lower boron hydrides; acid-base theories.

Sp Qtr. 3 cl. Prereq: 651. Not open to students with credit for 752.

**661 Biochemistry U G 3**

A survey of biochemistry for the superior advanced undergrad or the beginning grad student who does not necessarily plan to do grad research in biochemistry.

Prereq: 253 and 521 or 532. Not recommended for students with grades of C or below in prereq courses.

**661.01 Biochemistry**

Au Qtr. 3 cl.

**661.02 Biochemistry**

Wi Qtr. 3 cl.

**671 Nuclear, Radio, and Radiation Chemistry U G 3**

Nuclear properties, nature of radioactivity, radioactive decay and growth, interactions of radiation with matter, applications.

Au Qtr. 3 cl. Prereq: 533 or equiv.

**693 Individual Studies U G 1-15**

A qualified student may conduct a minor investigation in chemistry.

Su, Au, Wi, Sp Qtrs. Conf, library, and lab. Prereq: Satisfactory courses in field of the problem and permission of instructor. Repeatable to a maximum of 60 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Designed for students to pursue advanced special studies in chemistry.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**721 Advanced Analytical Chemistry U G 3**

Chemical and instrumental aspects of modern methods of analysis, emphasizing commonly used contemporary techniques of value to the research chemist.

Au Qtr. 3 cl. Prereq: 587 or equiv or permission of instructor.

**722 Principles of Analytical Processes U G 3**

Speciation and multicomponent equilibria, analog versus digital data acquisition, applications of Fourier transforms, modeling chemical systems.

Wi Qtr. 3 cl. Prereq: 531.

**731 Advanced Organic Chemistry I U G 3**

An advanced course in the fundamental principles of chemistry concerning the aliphatic hydrocarbons and their derivatives.

Au Qtr. 3 cl. Not open to students with credit for 831, 731, 832, and 833 are a sequence.

**733 Chemistry of Bio-Organic Catalysts U G 3**

Structure of organic catalysts and the mechanism of their reactions.

Wi Qtr. 3 cl. Prereq: 253; concur 533.

**751 Advanced Inorganic Chemistry I U G 3**

An intermediate treatment of the concepts and chemical systems of inorganic chemistry, including symmetry, and correlation of spectra and structure with bonding.

Au Qtr. 3 cl. Prereq: Permission of instructor or an undergrad degree with a major in chem. Not open to students with credit for 651.

**752 Advanced Inorganic Chemistry II U G 3**

An intermediate discussion of organometallic compounds and low oxidation state metalloids.

Wi Qtr. 3 cl. Prereq: 751. Not open to students with credit for 652.

**753 Advanced Inorganic Chemistry III U G 3**

Equilibria and mechanisms of inorganic chemical reactions, including substitution, electron transfer, metal ion promoted processes, and applications to homogenous catalysis.

Sp Qtr. 3 cl. Prereq: 652 or 752. Not open to students with credit for 653.

**755 Inorganic Chemistry Laboratory U G 3**

Preparative techniques of inorganic chemistry including the use of liquified gases, aqueous and non-aqueous solution, anhydrous and oxygen-free systems, fusion reactions, etc.

Wi Qtr. 9 lab hrs. Prereq or concur: 533. Safety glasses must be worn in lab. Not open to students with credit for 655.

**761 Advanced Biochemistry: Proteins U G 3**

An advanced treatment of protein biochemistry.

Au Qtr. 3 cl. Prereq: 253, 255, and 521; and Biochem 615; or equivs. Not open to students with credit for Biochem 705 or 761, or Physchem 705 or 761. Cross-listed in Biochemistry and Physiological Chemistry.

**762 Advanced Biochemistry: Enzymes U G 2**

Advanced treatment of enzymology.

Au Qtr. 2 cl. Prereq: 253, 255, and 521; and Biochem 615; or equivs. Not open to students with credit for Biochem 705 or 762, or Physchem 705 or 762. Cross-listed in Biochemistry and Physiological Chemistry.

**763 Advanced Biochemistry: Membranes and Bioenergetics U G 2**

An advanced treatment of membranes and bioenergetics.

Wi Qtr. Prereq: 253, 255, and 521; and Biochem 615; or equivs. Not open to students with credit for Biochem 707 or 763, or Physchem 707 or 763. Cross-listed in Biochemistry and Physiological Chemistry.

**764 Advanced Biochemistry: Integration of Metabolism U G 3**

An advanced treatment of the regulation and integration of mammalian biochemical systems.

Sp Qtr. 3 cl. Prereq: 253, 255, and 521; and Biochem 615; or equivs. Not open to students with credit for Biochem 764 or Physchem 764. Cross-listed in Biochemistry and Physiological Chemistry.

**765 Advanced Biochemistry: Physical Biochemistry U G 2**

Diffusion, electrophoresis, sedimentation; light and X-ray scattering, X-ray and neutron diffraction, fluorescence, polarimetry, mass spectrometry, nuclear magnetic resonance.

Wi Qtr. 2 cl. Prereq: 253, 255, 521; and Biochem 615 or equivs. Not open to students with credit for Biochem 765 or Physchem 765. Cross-listed in Biochemistry and Physiological Chemistry.

**766 Nucleic Acid Chemistry and Structure U G 2**

Reactions, synthesis, and conformations of nucleosides, nucleotides, oligonucleotides, and polynucleotides.

Sp Qtr. 2 cl. Prereq: 253, 255, and 521; and Biochem 615; or equivs. Not open to students with credit for Biochem 766 or Physchem 766. Cross-listed in Biochemistry and Physiological Chemistry.

**H783 Honors Research U 3-5**

Independent investigation in chemistry culminating in a thesis and an oral examination.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the chem courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Satisfactory completion of at least 8 cr hrs is required of candidates for an undergrad degree *with distinction* in chem. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**821 Electroanalytical Chemistry G 3**

Advanced level discussion of electrochemical principles and mass transport processes; discussion of applications to organic and inorganic systems.

Wi Qtr. 3 cl. Prereq: 533 or permission of instructor.

**822 Principles and Practice of Separation Processes G 3**

Principles and applications of equilibrium and kinetic separation processes such as precipitation, solvent extraction, ion exchange, liquid-liquid chromatography, gas-liquid chromatography, and zone refining.

Au Qtr. 3 cl. Prereq: 821 or permission of instructor.

**823 Analytical Spectroscopy G 3**

Advanced course in the principles of measurement of the interaction of electromagnetic radiation with matter.

Sp Qtr. 3 cl. Prereq: 821 or permission of instructor.

**832 Advanced Organic Chemistry II G 3**

An advanced course in the fundamental principles of chemistry covering a survey of heterocyclic, hydroaromatic, and aromatic compounds.

Wi Qtr. 3 cl. Prereq: 731.

**833 Advanced Organic Chemistry III G 3**

An advanced course in the fundamental principles of chemistry covering a survey of heterocyclic compounds, carbohydrates, proteins, and enzymes.

Sp Qtr. 3 cl. Prereq: 832.

**835 Advanced Organic Chemistry Laboratory G 3 or 5**

An advanced course in fundamental reactions and procedures with emphasis on recent advances in technique.

Su Qtr. 9 lab hrs. Prereq: Permission of student's grad adviser. Safety glasses must be worn in lab.

**836 Advanced Organic Chemistry Laboratory G 3 or 5**

Continuation of 835.

Su Qtr. 9 lab hrs. Prereq: Permission of student's grad adviser. Safety glasses must be worn in lab.

**851 Advanced Inorganic Chemistry G 3**

A survey of modern theories of valence and their application to the problems of structural inorganic chemistry.

Au Qtr. 3 cl. Prereq: 533 and 652 or 752 or permission of instructor.

**861 Quantum Chemistry I G 3**

Basic quantum mechanics as a foundation for quantum chemistry; postulates, operators, eigenfunctions, eigenvalues, and Schrodinger wave equations; one-dimensional problems including the harmonic oscillator.

Au Qtr. 3 cl. Prereq: 533, Math 255 or 415 or equiv, and Physics 133.

**862 Quantum Chemistry II G 3**

Angular momentum; matrix elements and representations; the hydrogenic atom; perturbation and variation methods, electron spin, and the helium atom; atomic structure and multiplet theory.

Wi Qtr. 3 cl. Prereq: 861 or equiv.

**863 Quantum Chemistry III G 3**

Electronic structure of molecules; hydrogen molecule and ion, methane, ethylene, benzene, etc.; molecular orbital, valence bond, and self-consistent field methods.

Sp Qtr. 3 cl. Prereq: 862.

**866 Electronic Spectra and Structure of Molecules G 3**

Application of quantum mechanics to the description and interpretation of molecular spectroscopic data with an emphasis on electronic transitions of polyatomic molecules.

Sp Qtr. 3 cl. Prereq: 863 or equiv or permission of instructor.

**875 Chemical Kinetics I G 3**

Fundamentals of chemical kinetics in homogeneous liquid and gaseous systems.

Au Qtr. 3 cl. Prereq: 533.

**876† Chemical Kinetics II G 3**

Continuation of 875; elementary reactions; chain reactions; fast reaction methods; reaction rates in heterogeneous systems.

Wi Qtr. 3 cl. Prereq: 875.

**877 Radiation and Photochemical Kinetics G 3**

The physical and chemical effects of the absorption of radiant energy, with emphasis on kinetics and mechanism.

Wi Qtr. 3 cl. Prereq: 875.

**881 Thermodynamics I G 3**

Introduction to thermodynamics; emphasis on training in the use of thermodynamics as a tool for solving chemical problems.

Wi Qtr. 3 cl. Prereq: 875 or equiv.

**882 Statistical Thermodynamics G 3**

An introduction to statistical thermodynamics, including quantum statistics, entropy and the third law, statistical-spectroscopic calculation of thermodynamic functions of gases, chemical equilibria, and vapor pressure.

Sp Qtr. 3 cl. Prereq: 881.

**885 Colloquium in Chemistry G**

A discussion of current research in chemistry; all divisions.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in chem. Required every qtr of all registered grad students in chem. This course is graded S/U.

**894 Group Studies G 3 or 4**

Provides an opportunity for innovation and experimentation on new problems in chemistry.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 8 cr hrs.

**941 Theoretical Organic Chemistry G 3**

An advanced course in a special topic in organic chemistry; topic to be announced.

Au Qtr. 3 cl. Prereq: 832 and 2nd yr grad standing, or permission of instructor.

**942 Theoretical Organic Chemistry G 3**

An advanced course in a special topic in organic chemistry; topic to be announced.

Wi Qtr. 3 cl. Prereq: 832 and 2nd yr grad standing, or permission of instructor.

**943 Theoretical Organic Chemistry G 3**

An advanced course in a special topic in organic chemistry; topic to be announced.

Sp Qtr. 3 cl. Prereq: 832 and 2nd yr grad standing, or permission of instructor.

**990 Seminar on Topics in Biochemistry G 3**

Advanced topics in the biological aspects of chemistry.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**991 Seminar in Analytical Chemistry G 3**

Topic to be announced.

Au Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**992 Seminar in Organic Chemistry G 3**

Topic to be announced.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 832 and chem 2nd yr grad standing; or equivs and permission of instructor. Repeatable to a maximum of 12 cr hrs.

**995 Seminar in Inorganic Chemistry G 3**

Topic to be announced.

Sp Qtr. 3 cl. Prereq: 752 or equiv and permission of instructor. Repeatable to a maximum of 6 cr hrs.

**996 Seminar in Theoretical Chemistry G 3**

Advanced topics in theoretical chemistry including quantum mechanics of molecular wave functions, energies, rate processes, and quantum and statistical mechanics of condensed phases.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 863 or equiv. Repeatable to a maximum of 9 cr hrs.

**999 Research in Chemistry G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Chinese

276 Cunz Hall, 1841 Millikin Road, 292-5816

## 101 Elementary Modern Chinese I

Basic elements of modern Chinese (Mandarin); the four tones, sentence structure, and Chinese characters (of which 500 will be learned in three qtrs).

Not open to students with credit for 101; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 101.01 Classroom Track U 5

Au Qtr. 5 cl. Students register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 101.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next with a demonstrated proficiency at the level of 80% required for advancement.

## 102 Elementary Modern Chinese II

Continuation of 101.

Prereq: 101 or 101.01 or 5 cr hrs of 101.51. Not open to students with credit for 102; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 102.01 Classroom Track U 5

Wi Qtr. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 102.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with a demonstrated proficiency at the level of 80% required for advancement.

## 103 Elementary Modern Chinese III

Continuation of 102.

Prereq: 102 or 102.01 or 5 cr hrs of 102.51. Not open to students with credit for 103; or to native speakers of this language through regular course enrollment or EM credit.

### 103.01 Classroom Track U 5

Sp Qtr. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 103.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 104.01 or 104.51. Progress is sequential from one cr hr to the next with a demonstrated proficiency of 80% required for advancement to next level.

## 104 Elementary Modern Chinese IV

Four hundred additional characters, further combination of characters in three quarters; complex sentence structure; readings adapted from modern Chinese literature.

Prereq: 103 or 103.01 or 5 cr hrs of 103.51. Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit.

### 104.01 Classroom Track U 5

Au Qtr. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 104.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: 103 or 103.01 or 5 cr hrs of 103.51. Students register for and complete 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 205. Progress is sequential from one cr hr to the next with a demonstrated proficiency of 80% required for advancement to the next level.

## 111 Intensive Intermediate Chinese I: Part One U 5

First course in the sequence of intensive intermediate Chinese courses; attention to the four language skills: listening, speaking, reading, and writing.

Au Qtr. 5 cl. Prereq: 103 or equiv, or permission of instructor; concur: 211. Not open to students with credit for 104 or 205. Students must register for 111 and 211 concurrently.

## 112 Intensive Chinese U 5, 10, 15

Elementary modern Chinese (Mandarin) for students desiring comprehensive knowledge and skills of Chinese in shortest possible time.

Su Qtr. 15 cl. Prereq: Permission of instructor. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in Chinese will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. FL Admis Cond course.

## 114 Elementary Chinese Conversation and Composition U 3

Oral drills and sentence making exercises based upon the vocabulary and sentence patterns acquired in 101 and 102, and concurrently in 103; conducted predominantly in Chinese.

Sp Qtr. 3 cl. Prereq: 102 or written permission of instructor.

## 205 Intermediate Modern Chinese U 5

Continuation of 104.

Wi Qtr. 5 cl. Prereq: 104 or written permission of instructor. Not open to students with credit for 105. This course is available for EM credit.

## 206 Intermediate Modern Chinese U 5

Continuation of 205.

Sp Qtr. 5 cl. Prereq: 205 or written permission of instructor. Not open to students with credit for 106. This course is available for EM credit.

## 211 Intensive Intermediate Chinese I: Part Two U 5

Second course in the sequence of intensive intermediate Chinese courses; attention to the four language skills: listening, speaking, reading, and writing.

Au Qtr. 5 cl. Prereq: 103 or equiv, or permission of instructor; concur: 111. Not open to students with credit for 104 or 205. Students must register for 111 and 211 concurrently.

## 214 Intermediate Chinese Conversation and Composition U 3

Exercises in conversation and composition based upon materials used in 104 and 205, and concurrently in 206; conducted primarily in Chinese.

Wi Qtr. 3 cl. Prereq: 114 and 205, or equivs with written permission of instructor.

## 231 Traditional Chinese Culture U 5

Chinese institutions, philosophical trends, religion, art, and literature prior to the twentieth century.

Au, Wi, Sp Qtrs. 5 cl. Taught in English. BER/LAC/LAR course.

## 232 Modern Chinese Culture U 5

Modern Chinese culture as reflected in family life, language, literature, art, etc.

Su, Sp Qtrs. 5 cl. Taught in English. BER/LAC course.

## 251 Chinese Literature in Translation U 5

Representative masterpieces from 3,000 years of Chinese literature, fiction, drama, prose, and poetry in English translation.

Au Qtr. 5 cl. BER/LAC course.

## 252 Chinese Literature in Translation: Middle and Modern Periods U 5

Masterpieces of late classical poetry and the vernacular novel; representative works of modern fiction, poetry, and drama.

Sp Qtr. 5 cl.

## 283 Chinese Calligraphy U 3

Techniques of writing Chinese characters with a brush; practice in different styles from oracle bone to grass.

Wi Qtr. 3 cl. Knowledge of Chinese not required. VPA Admis Cond course.

**293 Individual Studies U 1-5**

Individual investigation of problems in Chinese culture, language, and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**310 Intensive Intermediate Chinese II: Part One U 5**

Fourth course in the sequence of intensive intermediate Chinese courses; use of authentic materials (selections from newspapers, radio broadcasts, television programs, etc.).

Wi Qtr. 5 cl. Prereq: 111 and 211 or equivalents, or permission of instructor; concur: 311. Students must register for 310 and 311 concurrently.

**311 Intensive Intermediate Chinese II: Part Two U 5**

Fifth course in the sequence of intensive intermediate Chinese courses; use of authentic materials (selections from newspapers, radio broadcasts, television programs, etc.).

Wi Qtr. 5 cl. Prereq: 111 and 211 or equivalents, or permission of instructor; concur: 310. Students must register for 310 and 311 concurrently.

**501 Chinese Poetry in Translation U G 5**

Major genres of Chinese poetry from 600 B.C. to the 13th century A.D.

Au, Wi, Sp Qtrs. 5 cl. Taught in English.

**502 Chinese Fiction in Translation U G 5**

Novels and short stories from the Ming and Qing dynasties.

Au, Wi, Sp Qtrs. 5 cl. Taught in English.

**503 Modern Chinese Literature in Translation U G 5**

Chinese literature from the teens and twenties to the present day.

Au, Wi, Sp Qtrs. 5 cl. Taught in English.

**504 Chinese Drama in Translation U G 5**

The development of Chinese drama from the Yuan dynasty to modern times.

Au, Wi, Sp Qtrs. 5 cl. Taught in English.

**507 Advanced Modern Chinese I U G 5**

Reading of contemporary prose and verse, presentation of oral and written reports, drill in tone and intonation, practice in translation.

Au Qtr. 5 cl. Prereq: 206 or equiv with written permission of instructor. Not open to students with credit for 609.

**508 Advanced Modern Chinese II U G 5**

Continuation of 507.

Wi Qtr. 5 cl. Prereq: 507 or permission of instructor. Not open to students with credit for 610.

**509 Advanced Modern Chinese III U G 5**

Continuation of 508.

Sp Qtr. 5 cl. Prereq: 508 or permission of instructor. Not open to students with credit for 611.

**510 Intensive Intermediate Chinese III: Part One U G 5**

Sixth course in the sequence of intensive intermediate Chinese courses; organized around a set of videotaped lessons (television news, commercials, movies) and a series of game-specific samples of Chinese.

Sp Qtr. 5 cl. Prereq: 310 and 311 or equivalents, or permission of instructor; concur: 511.

**511 Intensive Intermediate Chinese III: Part Two U G 5**

Seventh course in the sequence of intensive intermediate Chinese courses; organized around a set of videotaped lessons (television news, commercials, movies) and a series of game-specific samples of Chinese.

Sp Qtr. 5 cl. Prereq: 310 and 311 or equivalents, or permission of instructor; concur: 510.

**514 Advanced Chinese Conversation and Composition U 3**

Practice in conversation, discussion, oral reports, and short speeches at an advanced level; use of various taped materials; theme-writing exercises; conducted entirely in Chinese.

Au Qtr. 3 cl. Prereq: 214 and 508, or permission of instructor.

**601 Classical Chinese I U G 3**

Selected readings from representative authors of classical times.

Au Qtr. 3 cl. Prereq: 206 or equiv with written permission of instructor. Not open to students with credit for 501.

**602 Classical Chinese II U G 3**

Continuation of 601.

Wi Qtr. 3 cl. Prereq: 601 or equiv with written permission of instructor. Not open to students with credit for 502.

**603 Classical Chinese III U G 3**

Continuation of 602.

Sp Qtr. 3 cl. Prereq: 602 or equiv with written permission of instructor. Not open to students with credit for 503.

**651 History of Chinese Literature I U G 5**

Chinese literature from antiquity to the end of Six Dynasties; various aspects of the classical tradition and new developments in the Age of Disunity.

Wi Qtr. 2 2-hr cl. Prereq: Written permission of instructor. Not open to students with credit for 754 or 755. Taught in English. Partial texts in Chinese optional. Open to nonmajors.

**652 History of Chinese Literature II U G 5**

Chinese literature from *Sui* to the present; literary trends and achievements of the *Sui-T'ang* period; rise of vernacular writings; modern literature under western impact.

Sp Qtr. 2 2-hr cl. Prereq: Written permission of instructor. Not open to students with credit for 755 or 756. Taught in English. Partial texts in Chinese optional. Open to nonmajors.

**674 Chinese Opera U G 5**

An introduction to Chinese (Peking) opera as dramatic literature and performing art; study of selected plays and illustrated discussions of various aspects of the theatre.

Sp Qtr. 5 cl.

**680 Introduction to Chinese Linguistics U G 3**

A general investigation of the history, phonology, morphology, syntax, and lexicon of the Chinese language.

Au Qtr. 3 cl. Prereq: 103 and Linguist 601, or permission of instructor.

**681 History of the Chinese Language U G 3**

An investigation of the relations between modern Chinese and its earlier stages, ancient and archaic Chinese.

Wi Qtr. 3 cl. Prereq: 680 or permission of instructor. Not open to students with credit for 627.

**683 Study of the Chinese Writing System U G 5**

A critical study of the origin, classification, composition, and development of the Chinese writing system, including problems in simplification and alphabetization.

Wi Qtr. 3 cl. Prereq: 103 or permission of instructor. Not open to students with credit for 620 or 684.

**690 Chinese Translation Workshop U G 3**

Investigations of problems and techniques of translating Chinese into English and English into Chinese; practice of translation of selected passages; individual assignments and group discussion.

Sp Qtr. 2 cl. Prereq: 509 and 603, or equivalents with written permission of instructor.

**693 Individual Studies U G 1-5**

Directed study to meet individual research needs of students in area studies and East Asian programs.

Su, Au, Wi, Sp Qtrs. Prereq: 509 or 603, and written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses. This course is graded S/U.

**694 Group Studies U G 1-5**

Investigation of minor problems in Chinese language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**751 Selected Readings in Scholarly Chinese Texts I U G 3**

Academic writings in the humanities and social sciences by modern Chinese scholars in both the wen-yen and pal-hua styles.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

**752 Selected Readings in Scholarly Chinese Texts II U G 3**

Continuation of 751.

Wi Qtr. 3 cl. Prereq: 751 or permission of instructor.

**753 Selected Readings in Scholarly Chinese Texts III U G 3**

Continuation of 752.

Sp Qtr. 3 cl. Prereq: 752 or permission of instructor.

**761\* Modern Chinese Poetry U G 3**

Lectures and readings covering major poets since 1919.

Au Qtr. 3 cl. Prereq: 652 or permission of instructor. Not open to students with credit for 704.

**762\* Modern Chinese Prose U G 3**

Studies of various types of prose literature of the May Fourth Movement and the Communist period.

Sp Qtr. 3 cl. Prereq: 652 or permission of instructor. Not open to students with credit for 705.

**763\* Modern Chinese Fiction U G 3**

Works by major authors before and after 1949.

Wi Qtr. 3 cl. Prereq: 652 or permission of instructor. Not open to students with credit for 706.

**764\* Modern Chinese Drama U G 3**

Lectures on and readings in works by major 20th-century playwrights including Hung Shen and Ts'ao Yü.

Wi Qtr. 3 cl. Prereq: 652 or permission of instructor.

**782\* Chinese Phonology U G 3**

Mandarin phonology and Chinese dialectology.

Sp Qtr. 3 cl. Prereq: 681 or permission of instructor. Not open to students with credit for 624 and 785.

**H783 Honors Research U 3-5**

A program of reading arranged for each student, with individual conferences, reports, and honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of Chinese courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Open only to Chinese majors. This course is graded S/U.

**784\* Chinese Syntax U G 3**

An investigation of the syntactic structure of Mandarin Chinese.

Sp Qtr. 3 cl. Prereq: 680 or 681 or permission of instructor. Not open to students with credit for 626.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**800 Chinese Bibliography and Research Methods G 3**

An introduction to bibliographies and reference works in the Chinese humanities; general and specific problems for research.

Wi Qtr. 3 cl. Prereq: 509 and 603, or equivs with written permission of instructor. Not open to students with credit for 707.

**801 Teaching Chinese at the College Level G 5**

Methods and techniques of teaching college-level Chinese; selection and preparation of teaching, testing, and laboratory materials; observation of a variety of language classes.

Au Qtr. Two wks intensive workshop previous to qtr followed by a 2-hr wkly cl. Prereq: Permission of instructor. For students enrolled in this course, the minimum number of cr hrs required for graduation is increased by 5 hrs.

**804 Advanced Classical Chinese I G 3**

Designed for further study of the syntax and vocabulary of classical Chinese; texts are selected from literature, history, and philosophy.

Au Qtr. 3 cl. Prereq: 603 or equiv with written permission of instructor.

**805 Advanced Classical Chinese II G 3**

Continuation of 804.

Wi Qtr. 3 cl. Prereq: 804.

**806 Advanced Classical Chinese III G 3**

Continuation of 805.

Sp Qtr. 3 cl. Prereq: 805.

**871\* Traditional Chinese Poetry G 5**

Lectures and readings from ancient odes and songs and the later *shih* and *tz'u* poetry.

Au Qtr. 2 2-hr cl. Prereq: 651 and 652, or permission of instructor. Not open to students with credit for 703 or 771.

**872\* Traditional Chinese Prose G 5**

Lectures on and readings in various types of non-fiction prose in *ku-wen* and *yu-lu-t'i* styles of early times.

Sp Qtr. 2 2-hr cl. Prereq: 651 and 652, or written permission of instructor.

**873\* Traditional Chinese Fiction G 5**

Lectures and readings in classical and vernacular fiction.

Au Qtr. 2 2-hr cl. Prereq: 651 and 652, or permission of instructor.

**874\* Traditional Chinese Drama G 5**

A lecture and reading course in Yuan, Ming, and Ch'ing drama.

Sp Qtr. 2 2-hr cl. Prereq: 651 and 652, or permission of instructor.

**875\* Chinese Literary Criticism G 5**

The historical development of critical theories, with concentration on major critics.

Sp Qtr. 2 2-hr cl. Prereq: 3 Chinese literature courses at the 700 level or above, or equiv with written permission of instructor.

**879 Seminar in Chinese Literature G 3-5**

An intensive reading course in Chinese literature with a selected topic for each offering and research projects for individual students; topic to be announced.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**882\* Studies in Chinese Historical Phonology G 5**

Critical study of the rhyming dictionaries, the reconstruction of the phonology of old Chinese and its relations to modern Chinese dialects.

Sp Qtr. 2 2-hr cl. Prereq: 782 or permission of instructor.

**884\* Studies in Chinese Historical Syntax G 3**

Problems of Chinese historical syntax; grammatical structures of classical Chinese; syntactic rules found in selected texts from various ancient writings.

Sp Qtr. 3 cl. Prereq: 784 or permission of instructor.

**889 Seminar in Chinese Linguistics G 3-5**

Topics include the history of Chinese linguistics and related areas, specific studies in Chinese dialects, etc.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**998 Research in Chinese: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Chinese: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Circulation Technology

School of Allied Medical Professions

443 School of Allied Medical Professions Building, 1583 Perry Street, 292-7261

**400 The Aseptic Environment U 5**

An introduction to the aseptic environment with emphasis on the student's function within this environment as a member of the medical-surgical team. Tallman.

Au Qtr. 2 cl, 2 3-hr labs. Prereq: Permission of instructor.

**410 Applied Circulation Technology — Cardiovascular U 5**

The presentation of cardiovascular physiology, pathology, and treatment of cardiovascular disease including the use of extracorporeal devices. Beckley.

Au, Wi Qtrs. 5 cl. Prereq: Written permission of instructor.

**411 Applied Circulation Technology — Renal U 5**

The presentation of renal physiology, pathology, and treatment of renal disease including the use of extracorporeal devices. Tallman.

Wi Qtr. 5 cl. Prereq: Written permission of instructor.

**412 Applied Circulation Technology — In Vitro Lab U 4**

The study of various extracorporeal devices and techniques in a controlled in vitro laboratory environment. Beckley.

Au, Wi Qtrs. 1 6-hr lab, 1 2-hr conf. Prereq: Written permission of instructor.

**413 Applied Circulation Technology — In Vivo Lab U 4**

The study of various extracorporeal devices and techniques in a controlled in vivo laboratory environment. Beckley.

Au, Wi Qtrs. 1 6-hr lab, 1 2-hr conf. Prereq: Written permission of instructor.

**420 Circulatory Technology Instrumentation U 5**

The application of mechanical and electronic principles to the instrumentation unique to circulation technology with emphasis on design and selection of equipment. Davis.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Written permission of instructor.

**550 Research Methodology U 7**

Lectures and demonstrations relating circulation technology to research methodology with emphasis on new developments in this area. Davis and Tallman.

Sp Qtr. 5 2-hr cl. Prereq: 420 or permission of instructor; concur 551.

**551 Research Methodology Laboratory U 8**

Application of circulation technology methods to the solution of research problems. Davis and Tallman.

Sp Qtr. 5 4-hr clinical experiences. Prereq: 420 or permission of instructor; concur: 550.

**555 Life Support Systems U 6**

Presentation of cardiovascular physiology and pathology and topics of current interest in various extracorporeal monitoring and cardiovascular diagnostic procedures to prepare students for clinical experiences.

Su, Au Qtrs. 3 2-hr cl. Prereq or concur: 556 and permission of instructor.

**556 Life Support Systems-Clinical Experience U 7**

Clinical experience in the application of CT methods to monitoring instrumentation, preparation, and use of extracorporeal devices and noninvasive and invasive cardiovascular diagnostic procedures.

Su, Au Qtrs. 24 hrs clinical per wk. Prereq: Permission of instructor and concur 555. This course is graded S/U.

**570 Surgical Support Systems U 7**

Lectures and demonstrations relating circulation technology to the clinical use of extracorporeal circulation devices and monitoring instrumentation in surgery. Beckley.

Wi, Sp Qtrs. 5 2-hr cl. Prereq: 410 and 420, or permission of instructor; concur: 571.

**571 Surgical Support Systems Clinical Experience U 8**

Clinical experience in the preparation and operation of extracorporeal circulation devices and monitoring instrumentation in support of surgery. Beckley.

Wi, Sp Qtrs. 20 hrs clinical experience per wk. Prereq: 410 and 420, or permission of instructor; concur: 570.

**590 Acid Base Physiology U 2**

Review and use of the fundamentals of acid base physiology to understand clinical acid base disturbances. Tallman.

Sp Qtr. 2 cl. Prereq: Physiol 311 and 312 and written permission of instructor.

**593 Individual Studies in Circulation Technology U 1-5**

Clinical, laboratory, or research experiences by individual arrangement for qualified students.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**595 Seminar in Circulation Technology U 1**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 6 cr hrs.

# City and Regional Planning

289 Brown Hall, 190 West 17th Avenue, 292-6046

## **240 New Town Planning in Frontier America: 1565-1848 U 5**

A survey of new town planning from St. Augustine, Florida, (1565) to Salt Lake City (1848).

Au Qtr. 5 cl. Complements 642, 643; History 688; and Comp Std 239.

## **310 Introduction to City and Regional Planning U 4**

Introduction to fundamental concepts, including physical planning, transportation, housing, land use, urban development, and preservation.

Au, Wi, Sp Qtrs. 4 cl.

## **320 Planning for Housing U 4**

An introduction to the American housing system, evolution of housing programs, and selected topics in planning for housing in urban and regional contexts.

Au, Sp Qtrs. 4 cl.

## **330 Planning and Urban Design U 4**

Introduction to the use of concepts related to urban design and to the planning process.

Wi Qtr. 4 cl.

## **340 Planning the Utopian City U 3**

Introduction to utopian city planning; 19th- and 20th-century models and their practical impacts (Ebenezer Howard, Frank Lloyd Wright, Le Corbusier, and others).

Au Qtr. 3 cl. Complements 642, 643; and Comp Std 239.

## **394 Group Studies U 1-5**

Designed to give groups of students an opportunity to pursue special studies in topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

## **425 City Planning in the Contemporary World U 5**

Urban shelter and service delivery in developed/developing and capitalist/socialist regions of the world; role of income, jobs, and planning in housing.

Sp Qtr. 2 2-hr cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152 or 171 and 172, and 5 cr hrs in social and behavioral sciences. LAR course.

## **450 Planning of Human Settlements in an Urbanizing World U 5**

Planning response to priority human settlement problems; emphasis on developing countries; policies and plans aimed at improving balance between rural and urban development; improvement of housing and infrastructure.

Sp Qtr. 5 cl.

## **642 History of City Planning to 1900 A.D. U G 4**

Evolution of concepts of planned urban form and structure from the earliest time to 1900 AD.

Wi Qtr. 3 cl. Complements 643. Not open to students with credit for 301 or 742.

## **643 American City Planning since 1900 A.D. U G 4**

Introduction to current American city planning processes and urban form through historic evolution of urban problems and related urban planning systems since 1900.

Sp Qtr. 2 cl, 1 lab hr. Complements 642. Not open to students with credit for 300 or 743 or 811.

## **694 Group Studies U G 1-5**

Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 10 cr hrs.

## **697 Study at a Foreign Institution U G 1-15**

An opportunity for Ohio State students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

## **701 Introduction to Urban Planning Practice U G 3**

Review of urban planning as practiced by local governments today, including plan-making and plan-implementation phases.

Au Qtr. 3 cl.

## **702 Urban Planning Graphics U G 2**

Rudiments of graphic techniques employed most frequently in practice; basic drafting, printing processes, report preparation, and related subjects.

Wi Qtr. 1 cl, 2 lab hrs. Prereq: Grad standing in c&r plan or permission of instructor.

## **710 Introduction to Urban and Regional Planning for Open Space, Recreation, and Conservation U G 3**

Review of leisure and recreational activities with associated design criteria, definition of the need for open space, and exploration of workable programs for its preservation and development.

Au Qtr. 2 cl.

## **712 Theory of City and Regional Planning U G 4**

Planning processes; the general plan; formulating goals; land development policies and decisions; alternative urban and regional forms; role and scope of planning.

Au Qtr. 4 cl. Not open to students with credit for 812.

## **720 Introduction to Analysis of Energy Factors in City and Regional Planning U G 3**

Covers the resource, technological, environmental, economic, and institutional dimensions related to coal, natural gas, electricity, solar, geothermics, environmental impacts, and energy conservation in cities.

Wi Qtr. 2 cl.

## **721 Seminar on Mathematical Models of Energy Management and Planning U G 3**

Mathematical models in coal, electricity, energy storage and curtailment, solar energy, energy/environment interactions, and comprehensive urban and regional energy planning.

Au Qtr. 2 cl. Prereq: 770.

## **722 Introduction to Analysis and Use of Environmental Factors in City and Regional Planning U G 3**

Introduction to application and utilization of environmental considerations in the formulation of land use policy and development plans.

Au Qtr. 2 cl. Prereq: 745 or permission of instructor.

## **731 Outlines of Urban Design U G 3**

Urban design as an area of specialization in urban planning; theories and processes in urban design; evaluation of criteria.

Sp Qtr. 3 cl.

## **732 Urban Planning and Urban Form: Psychological Functions U G 3**

Urban planning for the organization and character of the physical environment as significant variables in psychological processes basic to effective individual functioning; emphasis on implications for urban design.

Au Qtr. 3 cl.

## **733 Urban Planning and Urban Form: Social Functions U G 3**

Urban planning for the organization and character of the physical environment as significant variables in social processes basic to effective individual functioning; emphasis on implications for urban design.

Wi Qtr. 3 cl.



**734 Research and Analytic Methods  
for Urban Designers U G 3**

Use of research and analytic methods in assisting the urban designer in problem formulation, search, prediction, evaluation, and choice.

Sp Qtr. 2 cl.

**735 Programming Environments  
for Human Use U G 3**

Introduction to user oriented environment programming for planners and designers; application of several methods for specifying the characteristics required of an environmental setting to support user behavior.

Sp Qtr.

**740 Introduction to Planning in Developing  
Countries G 5**

Survey of development issues and their planning response related to population growth and distribution, income and poverty, urbanization and migration, and housing and infrastructure.

Au Qtr. 2 2-hr cl.

**741 Urban Sector and Project Planning in  
Developing Countries G 5**

Issues in urban sector planning with a focus on housing and service delivery, including financial intermediation, municipal finance and cost recovery, local administration, and urban land.

Wi Qtr. 2 2-hr cl. Prereq: 740 or equiv.

**745 Physical Elements  
of Urban Development U G 5**

Physical components of urban areas; residential, commercial, industrial, pedestrian, and vehicular circulation; other community facilities; analysis of design criteria and standards.

Au Qtr. 3 cl, 3 lab hrs. Not open to students with credit for 845.

**746 Managing the Urban Spatial Environment:  
Regulatory Techniques U G 3**

Physical planning, environmental and urban design policy design and implementation in central city and suburban settings; emphasis on innovative regulatory approaches.

Wi Qtr. 2 cl.

**747 Managing the Spatial Environment:  
The Metropolitan Region U G 3**

Physical planning, environmental and urban design policy; design and implementation; effects of key processes on metropolitan regional landscapes; emphasis on U.S. experience.

Sp Qtr. 2 cl.

**749 Studio in Planning for Developing  
Countries G 5**

A studio with group projects on planning issues in developing countries.

Sp Qtr. 4 cl. Prereq: 741.

**750 Resolving Social Conflict G 3**

A multidisciplinary examination of social conflict, its dynamics, and its negotiated and consensual resolution; offers a broad-based framework for diagnosing and managing conflict; applied to legal, environmental, organizational, and geopolitical conflicts.

Sp Qtr. 1 3-hr cl. Prereq: Grad standing or permission of instructor. Cross-listed in Business Administration: Interdisciplinary and Natural Resources.

**752 Urban Planning for Housing U G 3**

Introduction to urban planning issues related to housing with regard to urban structure, markets, reform, suburbanization, new towns, urban renewal, and rehabilitation.

Au Qtr. 3 cl.

**753 Outlines of Regional Planning U G 3**

State, national, and regional planning; components of regional development; regional analysis and design.

Au Qtr. 3 cl. Not open to students with credit for 813.

**755 State Planning of Regional  
Growth and Development U G 3**

Rationale for state intervention in regional economics, growth centers and neoclassical models, development planning in foreign countries; comparison and evaluation of models and evidence.

Wi Qtr. 3 cl. Prereq: 753 or equiv with written permission of instructor. Not open to students with credit for 820.

**761 Land-Use Controls U G 4**

Legal basis of land-use controls in the United States, provisions, procedures and issues in zoning, subdivision regulation, urban renewal, building and housing codes, and acquisition of real property for public use.

Wi Qtr. 3 cl. Not open to students with credit for 861.

**762 Urban Planning Data and Forecasting U G 5**

Sources of information, data handling, forecasting, and basic studies in urban planning.

Sp Qtr. 3 cl, 6 lab hrs. Prereq: 770 or permission of instructor. Not open to students with credit for 832.

**763 Consequence Analysis  
in Urban Planning U G 4**

Urban planning studies using cost-benefit, cost-effectiveness, systems analysis, and PPBS approaches.

Au Qtr. 2 cl, 2 lab hrs. Prereq: 770 or permission of instructor.

**764 City Planning Administration U G 4**

Administration of official urban planning agencies; zoning administration; subdivision review practices; capital improvement programming; budget and work program preparation.

Au Qtr. 4 cl. Not open to students with credit for 862.

**765 Social Policy Law U G 4**

Studies of law and social policy; topics vary.

Sp Qtr. 4 cl. Not open to students with credit for 865.

**766 Environmental Planning Law U G 4**

The interaction between law and environmental planning and protection.

Au Qtr. 4 cl. Prereq: 761 or equiv with written permission of instructor. Not open to students with credit for 866.

**767 Urban Issues and the  
Professional Planner U G 3**

Examination of alternative conceptions of the urban problems of American society; implications of each conception for the urban planning profession.

Sp Qtr. 3 cl. Not open to students with credit for 863.

**770 Introduction to Quantitative Methods  
in Urban Planning U G 4**

Introduction of mathematical models in urban planning; descriptive statistics, probability, decision theory, and use of digital computer.

Au, Wi Qtrs. 4 cl. Prereq: Permission of instructor.

**771 Applications of Quantitative Methods in Urban  
Planning U G 4**

Applications of statistical analysis in urban planning; hypothesis testing and parameter examination methods; computer analysis of urban planning data.

Sp Qtr. 4 cl. Prereq: 770.

**775 Urban Transportation Planning U G 4**

Discussion and examples of urban transportation planning processes, emphasizing quick-response models of locational and travel behavior, development and evaluation of alternatives, policies, and citizen reaction and participation.

Au Qtr. 3 cl. 1 3-hr lab. Prereq: Civil En 670 or equiv with written permission of instructor or grad standing in C&R plan. Not open to students with credit for Civil En 775. Cross-listed in Civil Engineering.

**778 Transportation System Management U G 3**

Description and evaluation of alternate transportation means; how to make better use of existing transportation facilities; consideration of both supply and demand; covers all modes of travel.

Wi Qtr. 2 cl. Prereq: 775 or permission of instructor.

**780 Workshop in Urban and Regional Planning Techniques U G 3-5**

Techniques in the urban and regional planning process: spatial distribution and management of population and economic growth in the city and the region, stressing the applied aspects of the techniques as used in the profession.

Au, Sp Qtrs. Prereq: 770 or permission of instructor.

**781 Spatial Models in Urban Planning U G 4**

Urban planning applications of theories of spatial equilibrium and rent theory; impacts on spatial distribution of zoning, property taxation, and infrastructural investment.

Wi Qtr. 4 cl. Not open to students with credit for 880.

**782 Urban Planning for Public Services and Facilities: Metropolitan Expansions and New Towns U G 3**

Urban planning for population change impacts on public services and facilities; public policy issues of investment in, and the economics of, new towns and municipal expansion.

Au Qtr. 3 cl. Prereq: 781. Not open to students with credit for 881.

**783 Municipal Functions in City and Regional Planning U G 4**

Municipal functions as tools and constraints in city and regional planning efforts during periods of growth and decay.

Au Qtr. Not open to students with credit for 883.

**793 Individual Studies in Urban Planning U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**794 Group Studies in Urban Planning U G 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

**815 Case Studies in Urban Planning for Housing G 4**

Review of empirical studies in urban planning for housing including aspects of density, spatial production, housing services, and price formation.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: 752 or permission of instructor.

**816 Seminar in Urban Planning for Housing G 3**

Presentation and discussion of research related to urban planning for housing, including theoretical studies, modeling, simulation, and statistical testing.

Sp Qtr. 3 cl. Prereq: 752 or permission of instructor.

**821 Regional Planning Studio G 5**

Application of economic and environmental analysis to regional development projects.

Sp Qtr. 2 cl, 3 lab hrs. Prereq: 753 or 755 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**834 Decision Analysis in Urban Planning G 3**

Application of decision theory and analysis to case studies in urban planning.

Sp Qtr. 3 cl. Prereq: 770.

**835 Land Use, Environmental Quality, and Regional Analysis G 4**

Introduction of land use and environmental models as tools in the planning process and as techniques for improving the quality of physical development plans.

Sp Qtr. Prereq: 770 or equiv or permission of instructor.

**851 Urban Precinct Planning G 5**

Preparation of detailed physical development plans for a small section of a city.

Au Qtr. 3 cl, 6 lab hrs. Prereq: 745 or 762 or permission of instructor.

**852 Urban Project and Policy Planning G 5**

Identification of options among planning policies and projects; development of analyses to aid in making choices between options in urban development.

Wi, Sp Qtrs. 2 cl, 9 lab hrs. Prereq: 745 or 762.

**853 The Urban General Plan G 5**

Current practice in preparation of the urban general plan; laboratory exercise in the preparation of a general plan for an urban community.

Wi Qtr. 3 cl, 6 lab hrs. Prereq: 745, 762, and 781; or permission of instructor.

**864 Urban Planning Theory Seminar**

Review of contemporary urban planning programs; analyses of objectives and strategies.

**864.01 Urban Planning Theory Seminar: History of Planning Thought G 5**

Examination of how planning thought evolved in relation to different stages of our civilization.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**864.02 The Political Process of Planning G 5**

Examination of the relationship of planning to the political process and governmental activity.

Wi Qtr. 2 2-hr cl. Prereq: 864.01 or permission of instructor.

**864.03 Planning in Market Oriented Systems G 5**

The role of planning within a system whose primary orientation is to allocate goods and services via markets.

Sp Qtr. 2 2-hr cl. Prereq: 864.01 or permission of instructor.

**867 Land Use Policy G 4**

Law and administration in land use planning programs.

Sp Qtr. Prereq: 761 or permission of instructor.

**870 Research on Quantitative Methods in Urban Planning G 5**

Workshop application of quantitative planning methods to an urban or regional planning problem.

Au, Wi, Sp Qtrs. 1 cl, 3 lab hrs. Prereq: 770 or permission of instructor. Repeatable to a maximum of 9 cr hrs. Not open to students with cr for 870.

**870.01 Static Optimization in Planning**

The use of mathematical programming techniques to solve planning problems.

Au Qtr. 2 2-hr cl, arr. Prereq: Permission of instructor and Math 568 or equiv.

**870.02 Dynamic Optimization in Planning**

Provides advanced graduate students with a sound foundation on a set of quantitative planning techniques in a dynamic context.

Wi Qtr. 2 2-hr cl. Prereq: 870.01 and Math 255 or equiv.

**870.03 Forecasting and Simulation in Planning**

Overview of advanced methods in forecasting and simulation and application to urban and regional planning.

Sp Qtr. 2 2-hr cl. Prereq: 762 and 771, or permission of instructor.

**871 Research Seminar in Environmental Planning G 5**

Processes and concepts for the design planning and management of the natural and built environment.

Au, Wi, Sp Qtrs. 1 2-hr cl, arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**872 Research Seminar in Development Planning G 5**

Research problems associated with urban and regional development including economic development, planning in developing countries, and related issues; topics vary.

Au, Wi, Sp Qtrs. 1 2-hr cl, arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**873 Research Seminar in Regional Science G 5**

Development of theoretical and methodological issues in regional science as they pertain to urban and regional planning.

Au, Wi, Sp Qtrs. 1 2-hr cl. arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**874 Research Seminar in Planning Processes G 5**

Institutional factors which affect the field of planning; topics vary.

Au, Wi, Sp Qtrs. 1 2-hr cl. arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**875 Research Seminar in Mathematical Planning G 5**

Developmental topics in mathematical planning, and its applications to selected planning problems.

Au, Wi, Sp Qtrs. 1 2-hr cl. arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**876 Research Seminar in Energy Planning G 5**

Developmental topics in energy planning and its application to selected energy problems.

Au, Wi, Sp Qtrs. 1 2-hr cl. arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**877 Research Seminar in Transportation Planning G 5**

Survey of current literature, structured around a general theme which varies.

Au, Wi, Sp Qtrs. 1 2-hr cl. arr. Prereq: 864.03 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**878 Research Seminar in Public Services Planning G 5**

In-depth review of selected recent literature in the field; focus varies.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: 870.01, 864.02 and 881, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**879 Seminar in Planning Research G 1-5**

Topics to be announced each quarter.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**881 Foundations of Spatial Modelling in Planning G 5**

Analysis of behavioral foundations of spatial models.

Sp Qtr. 2 2-hr cl. arr. Prereq: 781 recommended.

**882 Urban Planning for Public Services and Facilities G 3**

Criteria and procedures for urban planning investment decisions; application to fire control, health services, transportation, and recreation facilities.

Wi Qtr. 3 cl. Prereq: 781.

**884 Public Services in City and Regional Planning G 4**

Analysis of planning problems in relation to the provision of public services.

Wi Qtr. 2 cl. Prereq: Grad standing in C&R plan or permission of instructor.

**990 Urban Planning Practicum G 1-5**

Supervised field experience in urban planning; analysis and critique of field experience.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in C&R plan. Repeatable to a maximum of 5 cr hrs.

**998 Research in City and Regional Planning—Master's Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**999 Research in City and Regional Planning—Ph.D. Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Ph.D. standing. Repeatable. This course is graded S/U.

## Civil Engineering

470 Hitchcock Hall, 2070 Neil Avenue, 292-2771

**202 Surveying for Civil Engineers U 4**

An introduction to surveying theory for engineering practice.

Au, Sp Qtrs. 3 cl, 1 3-hr lab. Prereq: Math 152, minimum cumulative pt-hr ratio of 2.00, and Civil En major or written permission of dept chairperson.

**405 Observational Analysis U 4**

Theory and application of observational analysis. Moore and Wu.

Wi, Sp Qtrs. 4 cl. Prereq: Math 254 and a minimum cumulative point-hour ratio of 2.00, and standing as a Civil En major or written permission of dept chairperson.

**406 Fundamentals of Civil Engineering Analysis U 4**

Application of numerical methods to problems in civil engineering. Chen and Sandhu.

Au, Sp Qtrs. 4 cl. Prereq: En Graph 141 or 200, Math 254, and a minimum cumulative pt-hr ratio of 2.00, and standing as Civil En major or written permission of dept chairperson.

**410 Environmental Pollution and Control U 3**

Environmental pollution: the causes and control of air, water, and land pollution in relation to their effects on health, aesthetics, economics, and ecology. Rubin.

Wi Qtr. 3 cl. Prereq: Chem 101 or equiv with written permission of instructor. Not open to engineering majors or students with credit for 714.

**413 Fluid Mechanics U 4**

Fluid properties; fluid statics; flow concepts; continuity, energy, and momentum equations; dimensional analysis and dynamic similarity; viscous effects; drag; basic pipe flow; lab demonstrations and experiments. Bedford and Ricca.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Eng Mech 410, a minimum cumulative point-hour ratio of 2.00, and standing as a civil en, agri eng, or mng engr major, or written permission of dept chairperson.

**431 Structural Engineering Principles U 3**

Structural forms, analysis of statically determinate structures, approximate analysis of indeterminate structures, and moving loads.

Au, Wi Qtrs. 3 cl. Prereq: Eng Mech 420, minimum cumulative point-hour ratio of 2.00, and standing as a Civil En major or written permission of dept chairperson.

**451 Civil Engineering Materials U 4**

Composition and structure of civil engineering materials; elastic, plastic, and viscous behavior under various environmental and loading conditions.

Au, Sp Qtrs. 3 cl, 1 3-hr lab. Prereq: Eng Mech 210 or concur Eng Mech 420, minimum cumulative point-hour ratio of 2.00, and standing as a Civil En major or written permission of dept chairperson.

**460 Professional Aspects of Civil Engineering U 1**

Structure of the civil engineering profession; interaction of civil engineers with the education process, their clients, other professions and the public.

Wi, Sp Qtrs. 1 cl. Prereq: Civil En 3rd yr standing. This course is graded S/U.

**489 Professional Practice U 2**

Actual employment in a co-op program job and the preparation of a comprehensive report based on a pre-arranged outline and a pre-assigned topic.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to co-op program in civil en. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**510 Principles of Hydraulics U G 3**

Fluid properties; hydrostatics; flow concepts; continuity, energy, and momentum equations and applications; flow measurements, pipe and channel flow. Ricca.

Au, Sp Qtrs. 3 cl. Prereq: Math 151 and Physics 111 or 131. Not open to students with credit for 413. Majority of course will be conducted using self-paced programmed instruction manual.

**516 Water Resources Engineering U G 4**

Pipe systems, introduction to open channel flow, basic hydrology, demographic studies, water supply, and wastewater flows. Stiefel and Sykes.

Au, Wi Qtrs. 4 cl. Prereq: 413 and En Graph 200.

**519 Applied Hydraulics U G 3**

Experimental and design laboratory for water supply collection, transmission, distribution and measurement systems, sewage and storm water collection, and disposal and measurement systems. Stiefel.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 516.

**520 Design of Treatment Facilities U G 4**

Selection and design of processes for the purification of natural and used waters. Sykes.

Wi, Sp Qtrs. 4 cl. Prereq: 413 and Chem 123 or 205.

**531 Structural Analysis U G 4**

Deflections in trusses, beams, and frames; solution of indeterminate structures by methods of consistent deformations, and moment distribution.

Au Qtr. 4 cl. Prereq: 431.

**532 Structural Steel Design U G 4**

Design of steel structures. Adeli.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 431.

**533 Timber Engineering U G 4**

Basic properties of and design practice for timber when used as a construction material in engineering structures.

Au Qtr. 4 cl. Prereq: 532 or 534 or 535. Not open to students with credit for 732.

**534 Behavior of Structural Elements U G 4**

Mechanics of beams, shear center, unsymmetrical bending, columns, plastic bending, limit loads, properties of structural metals, and proportioning beams for flexure.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 431.

**535 Basic Reinforced Concrete Design U G 5**

Analysis and proportioning of reinforced concrete members. Bishara and Chen.

Wi, Sp Qtrs. 5 cl. Prereq: 431.

**540 Civil Engineering Systems U G 4**

Basic concepts and methods of systems engineering and applications to civil engineering problems in transportation and water resources planning, structural design, and construction management. Whittlatch.

Au, Wi Qtrs. 4 cl. Prereq: 405 and 406.

**552 Construction Materials U G 4**

Composition, properties, and production of portland cement concrete, bituminous materials, and bituminous mixtures. Majidzadeh.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 451.

**554 Geotechnical Engineering U G 4**

Properties of natural soil deposits and subsoil exploration; engineering solutions to problems of slope stability, foundation settlement, and earth pressure.

Au, Sp Qtrs. 4 cl. Prereq: Eng Mech 420 and a minimum cumulative pt-hr ratio of 2.00, and civil en or agri eng major or written permission of dept chairperson.

**570 Transportation Engineering and Analysis U G 4**

Introduction to topics in transportation engineering and analysis; geometric design, traffic flow, freeway capacity, traffic signals, demand-performance equilibrium, pricing, and design under uncertainty.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: En Graph 200 and Eng Mech 410; prereq or concur: Civil En 405. Not open to students with credit for 470.

**576 Civil Engineering Economics and Planning U G 4**

Engineering economics and theories of planning applied to private and public civil works.

Wi, Sp Qtrs. 4 cl. Prereq: 570 or 554 or 516 or 535.

**603 Remote Sensing of Environment U G 4**

The energies of the natural and cultural environment; current remote sensing systems and case histories of applications in measuring the environment.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 405 or Survey 450 or equiv with written permission of instructor. Not open to students with credit for Geod Sci 603. Cross-listed in Geodetic Science.

**604 Terrain Analysis U G 4**

Principles and applications of photo pattern analysis, geologic and geomorphologic patterns, terrain studies, and land use suitability and capability mapping.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 405 or Survey 450 or equiv with written permission of instructor. Not open to students with credit for Geod Sci 604. Cross-listed in Geodetic Science.

**605 Photo-Interpretation for Terrain Analysis U G 5**

The use of photo-interpretation techniques in defining the natural and cultural characteristics of the terrain for site planning.

Au, Sp Qtrs. 3 cl, 2 3-hr labs, one day field trip. Prereq: Geol&Min 101, and 3rd yr standing. Not open to students majoring in civil en.

**606 Quantitative Remote Sensing U G 4**

An introduction to computer processing of digital image data from Landsat satellites; emphasis on concepts, techniques, and statistics important to numerical analysis.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 405 or equiv, 603 or 604 or 605, and En Graph 200 or equiv.

**610 Analysis of Natural and Polluted Waters U G 4**

A laboratory study of the measurement and interpretation of water quality indices and pollution parameters including BOD, COD, alkalinity, nutrients, pH, and heavy metals. Rubin.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Chem 205 and Math 152 or equiv.

**613 Applied Hydrology U G 4**

Hydrologic cycle, meteorology, streamflow, evapotranspiration, hydrographs, runoff relations, runoff hydrographs, groundwater, unit hydrographs, flood routing, frequency and duration studies, and application of hydrologic techniques. Ricca.

Au Qtr. 4 cl. Prereq: 510 or 516.

**618 Environmental Pollution Abatement U G 5**

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to environmental problems in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad major in eng or sci. Not open to students with credit for Agr Eng 714, Chem Eng 714, Civil En 518, 520, and 714, Mech Eng 618 and 714, or Zoology 618 and 714. Cross-listed in Mechanical Engineering and Zoology.

**624 Coastal and Ocean Engineering U G 4**

Linear and nonlinear waves, water level and wave forecasting spectra, forces on fixed structures; beach processes, littoral drift, and transport; shoreline protection. Bedford.

Wi Qtr. 4 cl. Prereq: 516.

**651 Soil Mechanics U G 4**

Stress-strain properties and shear strength of soils; settlement and stability analyses.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 554.

**653 Principles of Rock Mechanics U G 4**

Engineering properties of rock and their measurement; in-situ stresses; analysis of rock slopes, tunnels, underground openings, and foundations.

Sp Qtr. 3 cl, 1 1-hr lab, 1 1-day field trip. Prereq: 554. Not open to students with credit for Mng Engr 653.

**662 Introduction to Mechanics of Composite Structures U G 4**

An introduction to the macromechanical analysis of anisotropic composite structures including governing constituent equations, strength and stiffness advantages, and failure envelopes.

Au, Sp Qtrs. 4 cl. Prereq: Eng Mech 215 and 420. Not open to students with credit for Eng Mech 662 or Mech Eng 662. Cross-listed with Engineering Mechanics and Mechanical Engineering.

**670 Urban Public Transportation U G 4**

Planning, analysis, and operation of urban public transportation systems; description and analysis of novel systems.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 570 or equiv with written permission of instructor.

**672 Traffic Engineering Studies U G 3**

Methods of collecting and analyzing traffic flow data, parking, driver and pedestrian behavior; reduction and evaluation of traffic data for applications in traffic engineering.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 570 or equiv with written permission of instructor.

**673 Highway Location and Design U G 4**

Methods of highway route location; design standards for highways, intersections, freeways, and interchanges; discussion of computer programs for highway design.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 570 or equiv with written permission of instructor.

**674 Airport Design and Operation U G 4**

Airport configuration, design, and capacity; development of the terminal area; operational aspect of air traffic and the terminal area; design and operation of heliports.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 570 or equiv with written permission of instructor.

**677 Noise, Air Pollution, and Safety Aspects of Transportation Systems U G 4**

Operational aspects of surface transportation systems; environmental impact of noise and air pollution; traffic accident analysis.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 570 or equiv with written permission of instructor.

**681 Concrete Construction, Performance, and Quality Control U G 3**

Procedures, testing, and quality control in concrete operations; analysis of formwork and false work performance; advanced methods in the construction of hi-rise buildings, bridges, and other structures.

Au Qtr. 2 cl, 1 3-hr lab and field trip. Prereq: 535

**682 Steel Construction, Performance, and Quality Control U G 3**

Erection of steel structures of different configurations; innovative methods of steel bridge and building construction; analysis of performance in fabrication and erection of steel structures.

Sp Qtr. 2 cl, 1 3-hr lab and field trips. Prereq: 532

**684 Construction Network Analysis U G 4**

Planning, scheduling, and supervision of engineering construction projects; use of Critical Path Method, bar charts, and other techniques.

Wi Qtr. 2 cl, 2 2-hr lab. Prereq: 540.

**685 Deterministic Construction Estimating and Pricing U G 4**

Generally accepted models and methods of estimating and pricing; identification of causes of underestimating and underpricing. Larew.

Au Qtr. 2 2-hr cl. Prereq: 576.

**686 Construction Contracts and Claims U G 4**

Contract documents and specifications; formulation of contracts; offer, acceptance, breach, and damages; responsibilities and liabilities; claims; labor agreements.

Wi Qtr. 2 2-hr cl. Prereq or concur: 576 or equiv with written permission of instructor.

**687 Construction Project Administration U G 4**

Duties of professional construction managers in project administration; CM practices and methods; practical forms for project and office use.

Sp Qtr. 2 2-hr cl. Prereq: 576.

**693 Individual Studies U G 3-5**

Individual conferences, assigned readings, and reports on minor investigations.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies in Civil Engineering U G 3-5**

The student must register for particular topics from fields of civil engineering listed below; the topics, cr hrs, and instructors will be announced in quarter previous to the quarter offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs, not more than 10 of which shall be in any one of the following fields.

- A— Structural Engineering
- B— Geotechnical Engineering
- C— Sanitary Engineering
- D— Highway and Transportation Engineering
- E— Remote Sensing and Environmental Surveys
- F— Construction
- G— Materials
- I— Hydraulics and Hydrology

**711 Biological Processes for Used Water Treatment U G 4**

Principles and design of biological processes for used water treatment.

Wi Qtr. 4 cl. Prereq: 520 or equiv. Not open to students with credit for 811.

**713 Water Quality and Environmental Measurements U G 4**

The application of advanced physical and chemical measurement and calculation techniques to environmental engineering problems. Rubin.

Wi Qtr. 4 cl. Prereq: 610 or permission of instructor.

**715†\* Water Resource Systems: Water Supply U G 5**

Regional and municipal water supply design and management; water use, law, demand, pricing, supply alternatives, and allocation; and optimal system and component design. Whitlatch.

Sp Qtr. 5 cl. Prereq: 516 and 540.

**717 Municipal and Industrial Solid Waste Management U G 5**

Characterization and sources of solid wastes; solid waste management; collection systems; processing; disposal; and recycle.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 518 or 520.

**719 Stream Sanitation U G 4**

A study of stream quality standards; effluent standards; and the assimilative capacity of natural water bodies. Sykes.

Au Qtr. 4 cl. Prereq: 520 or equiv with written permission of instructor.

**721 Design of Hydraulic Structures U G 4**

Basic engineering economic studies, water laws, design concepts, reservoir engineering, river training, spillways, and dissipators; hydromachinery. Ricca.

Wi Qtr. 4 cl. Prereq: 516.

**722 Open Channel Hydraulics U G 4**

Flow classifications, channel properties, energy and momentum principles, critical flow, uniform flow formulas, erodible and nonerodible channel design, and gradually varied flow profile computations. Ricca.

Sp Qtr. 4 cl. Prereq: 516.

**723 Transport Phenomena in Water Resources Engineering U G 4**

Water environment momentum mass energy transport, laminar and turbulent mixing; applications include river and lake pollutant dispersal, heated effluent plumes, eutrophication processes. Bedford.

Au Qtr. 4 cl. Prereq: 516 and Math 255 or 415, or equivs. Not open to students with credit for 614.

**731 Intermediate Reinforced Concrete Design U G 4**

Analysis and design of reinforced concrete systems. Bishara and Chen.

Sp Qtr. 4 cl. Prereq: 535.

**734 Structural Analysis and Design for Dynamic Disturbances U G 5**

Structural dynamics; principles and practice of dynamic design; numerical and graphical methods. Chen.

Au Qtr. 5 cl. Prereq: or concur: 532, Eng Mech 410, and grad standing, or sr standing with permission of instructor. Not open to students with credit for 834.

**735 Matrix Structural Analysis U G 4**

Analysis of skeletal structures by force and displacement methods using matrices. Sandhu.

Wi Qtr. 4 cl. Prereq: 531 or equiv with written permission of instructor.

**736 Bridge Engineering U G 4**

Principles and methods used in design and construction of bridge structures. Bishara.

Sp Qtr. 4 cl. Prereq: 531, 532, and 535; or equivs.

**737 Prestressed and Precast Concrete Structures U G 4**

Structural analysis and proportioning of prestressed concrete members and precast structural concrete systems. Bishara.

Wi Qtr. 4 cl. Prereq: 531 and 535.

**738 Plastic Analysis and Design U G 5**

Structural behavior in the inelastic range; prediction of collapse loads; structural design according to the plastic methods. Adeli.

Wi Qtr. 5 cl. Prereq: 531 and 532.

**750 Seepage in Permeable Materials U G 4**

Analysis of seepage; saturated and partially saturated flow; free surface analysis; introduction to numerical techniques.

Au Qtr. 4 cl. Prereq: 406 and 554.

**751 Principles of Foundation Analysis and Design U G 4**

Subsurface exploration; shallow foundations; piles and caissons; and embankments and excavations.

Wi Qtr. 4 cl. Prereq: 651.

**753 Pavement Design and Materials U G 4**

Properties of paving mixtures, cementing binder and mixtures, and principles of pavement design and performance evaluation. Majidzadeh.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 552.

**754 Mechanical Properties of Engineering Materials U G 4**

Elasticity, plasticity, viscoelasticity, fatigue, and fracture phenomena for civil engineering materials.

Au Qtr. 4 cl. Prereq: 451.

**760\* Planning Civil Engineering Public Investments U G 5**

Water resource planning process, benefit-cost analysis; environmental, economic, and social impacts of civil engineering projects; project selection; and case studies in water resources, transportation, and energy. Whitlatch.

Sp Qtr. 5 cl. Prereq: 516.

**762 Structural Composites U G 3**

An introduction to the analysis and design synthesis of beams, columns, rods, plates, and panels made of structural composites.

Wi Qtr. 3 cl. Prereq: 662 or Eng Mech 662 or Mech Eng 662 or permission of instructor. Not open to students with credit for Mech Eng 762 or Eng Mech 762. Cross-listed in Engineering Mechanics and Mechanical Engineering

**763 Introduction to the Finite Element Method U G 4**

Basic concepts, formulation, and application of finite element techniques for numerical solution of problems in structural and continuum mechanics, geotechnical engineering, and water resources engineering.

Au, Wi Qtrs. 4 cl. Prereq: En Graph 200 and Civil En 406, or Math 568 or equiv. Not open to students with credit for 761 or Eng Mech 761 or 763. Cross-listed in Engineering Mechanics.

**774 Design and Operation of Road Traffic Facilities U G 5**

Traffic laws and ordinances; operational design of streets, intersections, parking, and terminal facilities; design and operation of traffic control devices. Trieterer.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 672.

**775 Urban Transportation Planning U G 4**

Discussion and examples of urban transportation planning processes, emphasizing quick-response models of locational and travel behavior, development and evaluation of alternatives, policies, and citizen reaction and participation.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 576 and 670 or equivs with written permission of instructor or grad standing in c&r plan. Not open to students with credit for C&R Plan 751 or 775. Cross-listed in City and Regional Planning.

**781 Construction Risk and Decision Analyses U G 3**

Risk analysis and quality assurance; decision analysis using utility and fuzzy set concepts; Carlo simulation and regression analyses.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 405 and 681.

**795 Seminar in Civil Engineering U G 1**

Lectures and discussions of current topics related to civil engineering presented by faculty, students, and guest speakers; term paper required.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 3 cr hrs.

- A— Structural Engineering
- B— Geotechnical Engineering
- C— Sanitary Engineering
- D— Highway and Transportation Engineering
- E— Remote Sensing and Environmental Surveys
- F— Construction
- G— Materials
- I— Hydraulics and Hydrology

**796 Interdepartmental Seminar  
Urban Transportation U G 1-5**

Lectures and discussions by faculty and guest speakers on topics related to urban transportation problems, issues, and new approaches to solutions; term paper required. Clark and Nemeth.

Au, Wi, Sp Qtrs. Prereq: Sr standing or permission of instructor. Repeatable to a maximum of 6 cr hrs. Given cooperatively by Civil Engineering and Industrial and System Engineering.

**797 Interdepartmental Seminars U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Sp Qtr. Repeatable by permission.

**798 Current Topics in Environmental Science and Engineering U G 1**

Seminar course which presents current research findings on environmental quality and pollution control.

Sp Qtr. 1 cl. Prereq: Grad standing in engineer, science, nat res, or agr, or permission of instructor. Not available for simultaneous credit for agronomy or nat res. Repeatable to a maximum of 3 cr hrs. Cross-listed in Agronomy and Natural Resources.

**804 Water Resources Engineering  
Applications of Remote Sensing G 5**

Principles and techniques of remote sensing for acquisition of data in water resources engineering projects and water quality investigations.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 719 or 820.

**806 Radiometric Measurements and Modeling G 5**

Theory and models used in remote sensor measurements of spectral radiation.

Au Qtr. 5 cl. Prereq: 603 or Geod Sci 603, and 604 or Geod Sci 604.

**810\* Physical Water and Wastewater  
Treatment Processes G 3**

Principles and design of physical processes for water and wastewater treatment including screening, sedimentation, mixing, flotation, and filtration. Stiefel.

Au Qtr. 3 cl. Prereq: 518 or 520, prereq or concur: 610.

**812 Chemical and Advanced Wastewater  
Treatment Processes G 5**

Principles of physical-chemical treatment processes for water and wastewater, including coagulation, softening, adsorption, nutrient removal, and disinfection. Rubin.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 713 or permission of instructor.

**814†\* Industrial Wastewater Treatment G 3**

Principles of industrial wastewater treatment including wastewater surveys; flow reduction, and segregation and equalization; batch and continuous treatment; instrumentation; and treatment processes. Stiefel.

Sp Qtr. 3 cl. Prereq: 811, prereq or concur: 812.

**815\* Advanced Water Resource Systems:  
Water Quantity G 5**

Advanced topics in the design and management of surface and groundwater systems; use of mathematical programming, simulation, and economic theory; written and oral presentations. Whittlatch.

Sp Qtr. 5 cl. Prereq: 715.

**816†\* Environmental Systems Analysis G 5**

Optimization models for water quality and air quality control, solid waste and hazardous waste management, and environmental and energy facility siting. Whittlatch.

Sp Qtr. 5 cl. Prereq: 540 or Ind Eng 842 or equiv. Not open to students with credit for 720.

**820 Advanced Hydrology G 5**

Advanced analysis of classical concepts; study of new techniques and concepts developing in modern hydrology; written and oral presentations of critical reviews of current literature. Ricca.

Wi Qtr. 5 cr. Prereq: 613 or equiv.

**821†\* Sediment Transport and Engineering G 4**

Sediment properties, fall velocity; entrainment, resuspension, bed features, meanders, channel roughness, suspended, and bed load; measurement; siltation ponds, reservoirs, channel mechanics, bank protection, and stabilization. Bedford.

Sp Qtr. 4 cl. Prereq: 614 or 723.

**823 Numerical Models in Water Resources  
Engineering G 5**

Lake, river, and coastal contaminant or heat numerical transport model formulation; averaging; finite difference, element methods; errors, stability; data requirements, verification procedures. Bedford.

Wi Qtr. 5 cl. Prereq: 614 or 723 or permission of instructor. Not open to students with credit for 885H.

**824\* Advanced Coastal Engineering G 4**

Coastal turbulent transport processes; fluctuation spectra; flood forecasting, storm surge models; harbor oscillations, resonance, and design; erosion processes and protection strategies; topical problems as required. Bedford.

Sp Qtr. 4 cl. Prereq: 624 and 614 or 723.

**830 Earthquake Engineering G 4**

Earthquake phenomena; earthquake motions; design spectra; deterministic and stochastic earthquake analysis of structures; design of structures to minimize earthquake damage; high-rise buildings; seismic risk analysis. Adeli.

Wi Qtr. 4 cl. Prereq: 734.

**831 Advanced Reinforced Concrete G 5**

Concrete structural analysis and design; special structural systems and elements. Bishara.

Au Qtr. 5 cl. Prereq: 731 and 737.

**832 Advanced Behavior and Design of Metal  
Structures G 5**

Design of steel structures; steel bridges; braced and unbraced frames; tall buildings; connections; load and resistance factor design; computer-aided design; stability of metal structures; torsion; and lateral-torsional buckling. Adeli.

Sp Qtr. 5 cl. Prereq: 532 and 738.

**833 Concrete Shell Structures G 5**

Analysis and design of folded plate, cylindrical shell, axisymmetric and doubly curved shell structures including domes, hyperbolic and elliptical paraboloids.

Sp Qtr. 5 cl. Prereq: 735 and Math 512.

**836\* Advanced Matrix Analysis  
of Structures G 5**

General force methods of analysis; formulation of non-linear behavior of trusses and frames; solution of non-linear structures; analysis of surface structure; application of finite element methods in structural analysis.

Sp Qtr. 5 cl. Prereq: 735.

**837 Advanced Structural Dynamics G 5**

Stresses and deflections in structures under dynamic loads; response of large structural systems to earthquake, wind, moving loads; approximate and exact solution techniques. Sandhu.

Sp Qtr. 5 cl. Prereq: 734 or Eng Mech 731.

**838\* Two-Dimensional Problems  
in Linear Solids G 4**

Solution of two-dimensional boundary value and initial boundary value problems for linear solids; geometric nonlinearities; refined theories; variational principles; approximate and exact solution techniques. Sandhu.

Wi Qtr. 4 cl. Prereq: 856 and Eng Mech 740 and 754.

**839 Finite Element Method in Engineering Science G 5**

Approximation of boundary value and initial value problems; variational methods, hybrid and mixed method; convergence and accuracy of finite element approximations; recent developments, advanced applications.

Sp Qtr. 5 cl. Prereq: 763 or Eng Mech 763 and Math 601 or equiv. Not open to students with credit for Eng Mech 839. Cross-listed in Engineering Mechanics.

**850 Advanced Seepage in Permeable Materials G 4**

Analysis of seepage and consolidation in soils by closed form and by numerical methods.

Wi Qtr. 4 cl. Prereq: 750.

**851 Advanced Soil Properties G 5**

Detailed study and analysis of the mechanical properties of soils, with applications to foundation behavior. Wolfe.

Au Qtr. 3 cl, 6 lab hrs. Prereq: 651.

**852 Advanced Civil Engineering Materials G 4**

Analysis and design of materials for pavements and other civil engineering projects; properties considered include fracture, fatigue, and physical-chemical composition. Majidzadeh.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 753 and 754.

**853 Advanced Soil Mechanics G 4**

Stability of slopes and foundations; use of plasticity theory, numerical methods, and probability methods.

Wi Qtr. 4 cl. Prereq: 851.

**854\* Theoretical Soil Mechanics G 3**

Use of mathematical and numerical methods in solution of soil mechanics problems; stress and displacements in soil masses and slopes, earthquake stresses, consolidation and frost penetration.

Wi Qtr. 3 cl. Prereq: 850 and 851.

**855\* Soil-Structure Interaction G 4**

Interactions between soil and various structures, walls, bulkheads, foundations, and piles.

Au Qtr. 4 cl. Prereq: 851.

**856 Viscoelasticity G 4**

Viscoelastic materials and their characteristics, discrete element models, spectral representation, creep and relaxation functions, and dynamics of viscoelastic behavior. Majidzadeh.

Wi Qtr. 4 cl. Prereq: 754 and Math 512.

**858 Soil Dynamics G 4**

Stress waves in soils and vibrations in soil masses; liquefaction, determination of dynamic properties of soils; soil behavior under impact, machine, and seismic loads; seismic response of earth structures; design problems. Wolfe.

Sp Qtr. 4 cl. Prereq: 851 and Eng Mech 731, or permission of instructor.

**862 Advanced Mechanics of Structural Composites G 3**

An introduction to current important topic areas in structural composites; among these topics are fracture mechanisms and models, energy method modeling, dynamic structural response, and numerical modeling schemes.

Sp Qtr. 3 cl. Prereq: 762 or Eng Mech 762 or Mech Eng 762. Not open to students with credit for Eng Mech 862 or Mech Eng 862. Cross-listed in Engineering Mechanics and Mechanical Engineering.

**872 Area Traffic Control G 5**

Design and performance criteria for area traffic control; design of traffic surveillance and monitoring systems; corridor and network control strategies; on-line computer control algorithms.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 774 or equiv.

**873 Urban Transportation Demand Forecasting G 5**

Travel surveys and data needs; applications of statistical methods to develop models of ownership, trip generation, vehicle occupancy and modal choice; disaggregate models.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 775 and Stat 525 or equiv with written permission of instructor.

**874 Urban Transportation Network Analysis G 5**

Network representation methods; minimum-path trees; traffic assignment algorithms and their performance; trip distribution models; new directions.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 775 and Stat 525 or equiv with written permission of instructor. Not open to students with credit for Ind Eng 874. Cross-listed in Industrial and Systems Engineering.

**876 Comparisons of Transport Technologies G 3**

Critical analysis of methods for comparing technological alternatives in urban transportation; development of alternative transportation plans; synthesis of evaluation techniques.

Sp Qtr. 3 cl. Prereq: 670 and 671.

**882 Probabilistic Construction Estimating and Pricing G 5**

New models and methods of estimating and pricing; the examination of data from contracting companies; the utility of percentile distributions, skewness and kurtosis demonstrations. Larew.

Sp Qtr. 3 cl, 6-hrs lab. Prereq: 685, Stat 525, and Bus Adm 801.05 or equivs.

**883\* Design of Construction Operations G 5**

Computer assisted construction operations decisions; traditional approaches; linear optimization and simulation case studies.

Au Qtr. 3 cl, 6-hrs lab. Prereq: 882.

**884\* Construction Forensics G 5**

Construction engineers as expert witnesses and consultants on prevention and resolution of disputes; investigations, pre-trial examination; governmental and private sector case studies.

Au Qtr. (Offered in even-numbered years.) 3 cl, 6-hrs lab. Prereq: 882 and 888.

**885 Advanced Civil Engineering G 3-5**

Opportunity for advanced students to pursue advanced study; work undertaken may be elected in the fields of civil engineering listed below.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 20 cr hrs with not more than 10 in any one of the fields listed below.

- A— Structural Engineering
- B— Geotechnical Engineering
- C— Sanitary Engineering
- D— Highway and Transportation Engineering
- E— Remote Sensing and Environmental Surveys
- F— Construction
- G— Materials
- J— Hydraulics and Hydrology

Specific advanced study areas currently available include:

- I†— Application of Ecological Theory to Sanitary Engineering

**888 Construction Safety and Reliability G 5**

Various stochastic models for construction reliability; logical deductive tree analyses for construction safety; fuzzy set and fuzzy logic concepts.

Sp Qtr. 2 cl, 2 3-hr labs. Prereq: 781.

**894 Group Studies in Civil Engineering G 3-5**

Advanced topics in the various fields of civil engineering; the particular topics, the number of credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs with not more than 10 in any one field of civil engineering.



**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

**990 Civil Engineering Practicum G 1-5**

Supervised field experience in civil engineering; analysis and critique of field experience.

Su, Au, Wi, Sp Qtrs. Prior approval of civil en grad committee required.

**999 Research in Civil Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Classics

414 University Hall, 230 North Oval Mall, 292-2744

See also Greek, Latin, and Medieval and Renaissance Studies.

**101 Masterpieces of Greek Literature in Translation U 5**

Introductory survey of the Greek achievement in literature and its contribution to Western thought; selected readings in English translation in major authors from Homer through the Hellenistic age.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 220. BER/LAC/LAR course.

**102 Masterpieces of Latin Literature in Translation U 5**

Introductory survey of Roman literature and its importance in the Western literary tradition; selected readings in English translation in major authors, such as Plautus, Vergil, and Ovid.

Sp Qtr. 5 cl. Not open to students with credit for 221. BER/LAC/LAR course.

**150 Latin and Greek Elements in English Vocabulary U 3**

Study of the flow of Latin and Greek elements into English vocabulary and of the processes of word formation using these elements.

Wi Qtr. 3 cl.

**210 Classical Background of Scientific Terminology U 3**

Study of technical and scientific terms from Greek and Latin sources; roots, word elements, word formation, analysis; helpful in medical, biological, and kindred studies.

Su, Au, Wi, Sp Qtrs.

**222 Classical Mythology U 5**

Origins and attributes of the Greek and Roman gods and goddesses, their mythology and its influence on Western culture.

Au, Wi, Sp Qtrs. 5 cl. H222 (honors) may be available in Au Qtr to students enrolled in an honors program or by permission of dept. H222 requires English 110 or 111 or equiv. Not open to students with credit for H122. H222 fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**224 Classical Civilization: Greece U 5**

A survey of ancient Greek civilization, concentrating upon important facets of literature, history, art, and archaeology.

Au Qtr. 5 cl. H224 (honors) may be available in Wi Qtr to students enrolled in an honors program or by permission of dept. H224 requires English 110 or 111 or equiv. Not open to students with credit for H124. H224 fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**225 Classical Civilization: Rome U 5**

A survey of the civilization of ancient Rome, concentrating upon important facets of literature, history, art, and archaeology.

Wi Qtr. 5 cl. H225 (honors) may be available in Sp Qtr to students enrolled in an honors program or by permission of dept. H225 requires English 110 or 111 or equiv. Not open to students with credit for H125. H225 fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**294 Group Studies U 1-5**

Topics in classical studies.

H294 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**301† Greek and Roman Epic U 5**

Study of Greek and Roman epic based on extensive readings in English translation.

5 cl. Not open to students with credit for 503. BER/LAC course.

**302 Greek and Roman Drama U 5**

Study of Greek and Roman drama based on extensive readings in English translation.

Au Qtr. 5 cl. Not open to students with credit for 501. BER/LAC course.

**303 Comic Spirit in Antiquity U 5**

Study of the comic literature of the Greco-Roman world based on extensive readings in English translation drawn from epic, drama, satire, and the novel.

Wi Qtr. 5 cl. Not open to students with credit for 502. BER/LAC course.

**322 The Hero in Classical Mythology U 5**

The development and interpretation of the major cycles of classical saga based on extensive readings in Greek and Roman epic and drama.

Sp Qtr. 5 cl. Prereq: 222. Not open to students with credit for 223.

**323† Religion in the Greco-Roman World U 5**

Study of Greek and Roman religious movements including the beginnings of Christianity; readings in English translation of the major primary texts.

5 cl. Not open to students with credit for 504.

**505† Political Thought and Institutions in the Greco-Roman World U G 5**

Selected topics concerning the development of ancient political theory.

2 2-hr cl.

**506† Greek and Roman Science and Technology U G 5**

The origins and achievements of Greek and Roman science and technology.

5 cl.

**508 Women in Greece and Rome U G 5**

Roles of women in ancient society, literature, and art.

Sp Qtr. 5 cl.

**607†\* Roman Law through the Reign of Justinian U G 5**

Studies in the origins and development of Roman Law based on original sources in translation.

5 cl. Not open to students with credit for 507 or Law 720. Cross-listed in Law as 720.

**692 Workshop U G 1-6**

Su Qtr. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**694 Group Studies U G 1-5**

Investigation of particular problems in various areas of classical studies.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**699 Senior Tutorial and Essay U 5**

Individual work leading to the writing of a final paper that will integrate the experience of earlier courses in classics.

Su, Au, Wi, Sp Qtrs. Open only to srs majoring in classics.

**H783 Honors Research U 3-5**

A program of study arranged for each student, with individual conferences, reports, and an honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the classics courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs with permission of dept.

**800 Materials and Methods of Research G 3**

The materials, problems, and methods of classical research.

Au Qtr. 3 cl. Required of all grad students.

**801 Materials and Methods of College Teaching of Classics G 3**

Methods and techniques for teaching Latin, Greek, and courses in classical subjects at the college level.

Au Qtr. Two wks intensive workshop previous to the beginning of qtr. This course is graded S/U.

**810† Linguistic Studies in Greek and Latin G 5**

Topics may include Greek dialects, Italic dialects, or comparative grammar of Greek and Latin.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**811 Studies in Greek or Latin Epigraphy G 5**

Wi Qtr. 2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**812† Studies in Greek or Latin Paleography and Textual Criticism G 5**

A study of Greek or Latin handwriting in ancient documents and later manuscripts and the principles of textual criticism; the subject for 1988-89: Latin paleography and text criticism.

1 3-hr cl. Repeatable to a maximum of 10 cr hrs.

**856† Studies in Greek or Roman Topography G 5**

The topography and archaeology of ancient Athens, Rome, or other sites important to Greco-Roman literature and civilization.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

## Communication

205 Derby Hall, 154 North Oval Mall, 292-3400

See also Speech and Hearing Science.

**105 Communication of Ideas and Attitudes U 5**

Analysis, formulation, organization, development, and delivery of ideas and attitudes for speaking with an audience.

Au, Wi, Sp Qtrs. 5 cl. VPA Admis Cond course.

**110 Small Group Communication U 5**

Designed to help the student develop the skills necessary for effective communication in the small group by providing task related group activities.

Au, Wi, Sp Qtrs. 5 cl. VPA Admis Cond course.

**140 The Telecommunication and Electronic Media Environment: Issues and Ethics U 5**

Processes of electronic media and telecommunication, critical consumption of media, ethical issues and current media problems, and uses and abuses of telecommunication in society.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 115. SS Admis Cond course.

**209 Introduction to Interpersonal and Organizational Communication U 3**

Perspectives on the nature of communication and application of theory to interpersonal relations, persuasion, small groups, and organizations.

Au, Wi, Sp Qtrs. 3 cl. BER/LAC/LAR course.

**213 Rhetoric of Western Thought U 5**

Rhetorical theories as they reflected and affected society from Greece to modern times; relations to logic, ethics, and poetics; the classical tradition versus sophisticated concepts.

Au, Wi, Sp Qtrs. 5 cl. H213 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**240 Overview of Telecommunication and Electronic Media U 3**

Introduction to structure and functions of telecommunication and electronic media industries; audience uses, gratifications of media, and telecommunication; and effects on individuals, groups, societies, and cultures.

Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 220.

**260 Introduction to Communication in Culture and Society U 3**

An introductory examination of the ways in which communication institutions, systems, and practices both hold power relations in place and serve social change.

Au, Wi, Sp Qtrs. 3 cl.

**280 Internship in Communication U 1-5**

On-the-job internships in communication practice or research conducted under supervision of internship coordinator through the department's undergraduate advising office.

Au, Wi, Sp Qtrs. Prereq: Communic major; minimum CPHR of 2.50; and soph standing or above. Repeatable to a maximum of 6 cr hrs including cr hrs earned in 205. This course is graded S/U.

**302 Introduction to Rhetorical Analysis U 5**

Survey of contemporary approaches to rhetorical criticism.

Au, Wi Qtrs. 5 or 2 2½-hr cl. Prereq: Communic major or 15 cr hrs of arts and sciences course work.

**305 Argumentation and Debate U 5**

Principles of reasoned discourse and their application to controversial issues.

Au, Wi, Sp Qtrs. 5 cl. Prereq: English 110 or 111 or equiv and either communic major or 15 cr hrs of arts and sciences course work. Fulfills in part the ASC advanced English composition requirement.

**311 Rhetoric and Social Influence U 5**

Case studies on selected issues in popular discourse in which the rationale of rhetorical language is explored and exemplified.

Au, Wi Qtrs. 5 or 2 2½-hr cl. Prereq: Communic major or 15 cr hrs of arts and sciences course work.

**312 The Communication Process U 4**

A study of communication as a transactional process, with emphasis on an analysis of communication barriers and breakdowns which impede effective communication.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 444.

**313† Public Communication in the Age of Television U 5**

The use of the television medium by political, religious, and occasional advocates with emphasis upon the development of critical standards for viewers.

Sp Qtr. 3 cl, 2 hrs arr. Prereq: Communic major or 15 cr hrs of ASC course work.

**314 Rhetoric of Black Americans U 4**

Examination of the rhetoric of black Americans in connection with such strategies as assimilation, separation, and revolution, to establish a role or identity in American society.

Sp Qtr. 4 cl. Prereq: English 110 or 111 or equiv and either communic major or 15 cr hrs of arts and sciences course work. Fulfills in part the ASC advanced English composition requirement. Not open to students with credit for 330. BER/LAC course.

**316† The Rhetoric of American Issues U 4**

A study of selected political, social, and religious issues and the principal American spokespersons and audiences associated with them from 1787 to the present.

Wi Qtr. 4 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 397.

**317 Communication and Society: Change and Reconstruction U 4**

An examination of the nature of individuals' communication growth, with an emphasis on the relationship between social cognition and effective communication.

Au Qtr. 2 2-hr cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 325.

**324 Interpersonal Communication U 5**

Analysis of dimensions and relationships in interpersonal communication, especially needs, perceptions, orientations, contexts, and barriers; exercises, demonstrations, and applications to students' own experiences.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 315.

**328 Persuasive Communication U 5**

Introduction to methods of audience analysis and the development of written persuasive messages; analysis of persuasion in the media and interpersonal settings.

Au, Wi, Sp Qtrs. 5 cl. H328 (honors) may be available to students enrolled in an honors program or by permission of dept honors committee chairperson. Not open to students with credit for 225. BER/LAC/LAR course.

**331 Communication and the Task-Oriented Group U 5**

The communication processes necessary for small groups to effectively accomplish tasks.

Au, Wi Qtrs. 5 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 530.

**332 Communication and Gender in Interpersonal and Organizational Settings U 5**

An examination of the role of communication in creating and holding into place stereotypical sex differences in interpersonal and organizational communication settings

Sp Qtr. 2 2-hr cl. Prereq: Communic major or 15 cr hrs in social and behavioral sciences course work.

**335 Organizational Communication U 5**

Major organizational communication concepts and theories; application of theories to organizational communication practices through the use of case studies.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work.

**340 Introduction to Telecommunication and Electronic Media Technologies and Industries U 5**

Basics of telecommunication and electronic media technologies; evolution and innovation of technologies; markets for new and existing services; U.S. and international dimensions of systems.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 215.

**341 Introduction to Telecommunications and Electronic Media Theories and Policies U 5**

Theoretic bases for understanding telecommunication and electronic media, mechanisms for the formulation and implementation of policy; social impact of media systems.

Wi, Sp Qtrs. 4 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work. Not open to students with credit for 215.

**350 Introduction to Creating Electronic Messages U 5**

Introduction to basic theory and concepts of video and audio production within a context of critical analysis; technical skill development and aesthetic appreciation.

Au, Wi, Sp Qtrs. 3 cl, 3 labs. Not open to students with credit for 210.

**362 Communication, Gender, and Society U 5**

An examination of the role of communication in creating and holding into place societally accepted gender identities.

Au Qtr. 2 2-hr cl. Prereq: Communic major or 15 cr hrs in social and behavioral sciences course work.

**364 Communication for National Development and Change U 5**

An examination of the role of communication for national development and change, primarily in Third World settings.

Au, Sp Qtrs. 2 2-hr cl. Prereq: Communic major or 15 cr hrs in social and behavioral sciences course work.

**366 Communication and Popular Culture U 5**

An examination from the perspective of communication as a form of popular culture and issues related to the communication of popular culture.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work.

**368 Intercultural Communication U 5**

An examination of the role of communication in the creation and transmission of cultural consciousness, knowledge, tradition, and practices.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: Communic major or 15 cr hrs in social and behavioral sciences course work.

**440 Research Methods for Telecommunication and Electronic Media U 4**

Overview of quantitative and qualitative research methods and applications for studying issues of telecommunication and electronic media, diffusion of new telecommunication technologies, and current research practices.

Au, Wi Qtrs. 4 cl. Prereq: 340 or 341. Not open to students with credit for 626.

**450 Production Processes in Telecommunication U 5**

Intermediate study of the planning, production, and directing processes of creating video and audio messages; and emphasis on the producer's/director's/editor's functions in organizing and executing mediated messages.

Au, Wi, Sp Qtrs. 3 cl, 4 labs. Prereq: 350. Not open to students with credit for 411.

**460 Theories of Communication in Culture and Society U 5**

An examination of communication studies guided by such contemporary theories as psychoanalysis, semiotics, phenomenology, Marxism, and feminism.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 260 and one of 322, 362, 364, 366, or 368.

**494 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

**505 Presentational Speaking in the Modern Organization U G 4**

The theory and practice of planning, preparing, and transmitting formal position statements in settings of organizational decision-making.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Communic major or 15 cr hrs of social and behavioral sciences course work; or grad standing.

**512 Communication, Images, and Action U G 4**

The interplay between interpersonal communication systems and technologies from a current as well as an historical perspective.

Sp Qtr. 2 2-hr cl. Prereq: 312 or 317 or grad standing. Not open to students with credit for 555.

**528 Topics in the Structure and Functions of Conversation U G 4**

The functions and organizing principles of communication in various contexts; implications for competent communication; and experience in analyzing talk.

Wi Qtr. 2 2-hr cl. Prereq: 324 or 328 or grad standing.

**531 Communication and Conflict Management U G 4**

An overview of the communication and conflict literature with emphasis on effective conflict management.

Wi Qtr. 2 2-hr cl. Prereq: 331 or grad standing.

**536 Interviewing: Communication Concepts and Skills U 4**

Communication theory/practice in interviews; research-guided simulated informational, employment, and persuasive interviews.

2 2-hr cl. Prereq: One of 324, 328, or 335. Not open to students with credit for 618.

**550 Advanced Production Processes in Telecommunication U 5**

Planning, producing, and directing video and audio messages; emphasizes the media producer's function of organizing production elements to meet externally-specified (client-defined) program objectives.

Au, Sp Qtrs. 2 cl, 4 lab hrs. Prereq: 450 or 411 and permission of instructor. Not open to students with credit for this topic under 794G.

**Teaching of Speech in Secondary Schools**

See Ed-T&P 556.

**560 Communication in Culture and Society Practicum U G 5**

Study of situation-specific communication issues and processes; research within preselected community groups.

Au, Wi Qtrs. 2 2-hr cl. Prereq: 260; and one of 362, 364, 366, or 368; or grad standing.

**565 Communication and Community U G 5**

A critical examination of media as communication linkages for communities; community media studied: public access television, video, local radio, and alternative media.

Sp Qtr. 2 2-hr cl. Prereq: One of 260, 332, 362, 364, 366, or 368; or 15 cr hrs of social and behavioral sciences course work; or grad standing.

**567 Communication Theories and Media Literacy U G 5**

An examination of competing theories of communication and their implications for planning and implementation of media literacy programs.

Sp Qtr. 2 2-hr cl. Prereq: One of 260, 332, 363, 364, 366, or 368; 15 cr hrs of social and behavioral sciences course work; or grad standing. Not open to students with credit for this topic under 794F.

**569 Communication, Power, and Knowledge U G 5**

An analysis of communication breakdowns within the public sphere, focusing on the concept of distorted communication as it constitutes power and knowledge.

Wi Qtr. 2 2-hr cl. Prereq: One of 260, 332, 362, 364, 366, or 368; or 15 cr hrs of social and behavioral sciences course work; or grad standing. Not open to students with credit for 601.

**602 Humanistic Communication Analysis U G 4**

Examination of a variety of humanistic theoretical models and their application to human communication research.

Sp Qtr. Prereq: 312 or 317 or grad standing. Not open to students with credit for 701.04.

**604 Ethics of Communication U G 4**

Lectures, discussions, assimilations, and case studies focus on the nature, roles, and functions of ethics in communication in response to major topics and questions.

Au, Sp Qtrs. 4 cl. Prereq: 305 and English 110 or 111 or equiv; or permission of instructor. Not open to students with credit for 680. Fulfills in part the ASC advanced English composition requirement.

**605\* Advanced Argumentation U G 4**

Intensive argumentative writing and oral defense; controversial issues and texts provide material for invention and evaluation of ethical, political, legal, medical and other practical arguments.

Au Qtr. 2 2-hr cl. Prereq: 305 and 316, and English 110 or 111 or equiv, or grad standing. Fulfills in part the ASC advanced English composition requirement.

**610 Legal Reasoning U G 4**

A study of rhetorical strategies used for deliberation, justification, and persuasion in a variety of legal contexts.

Wi Qtr. 2 2-hr cl. Prereq: 305 and English 110 or 111 or equiv; or permission of instructor. Fulfills in part the ASC advanced English composition requirement.

**614 Issues and Images in Political Communication U G 5**

Analysis of the roles played by the mass media, public leaders, and accidental circumstances in the development of issues and images in contemporary American political communication.

2 2-hr cl. Prereq: One of 311, 314, 328, or 368; or grad standing. Not open to students with credit for 622.

**617 Rhetoric of Social Intervention U G 5**

Selected historical case studies describing communication strategies for intentional change in business, religious, and political institutions.

Wi Qtr. 2 2-hr cl. Prereq: One of 311, 314, 328, or 368; or grad standing.

**619 Theories of Rhetoric U G 5**

Reading and detailed study of the theories of principal rhetoricians from ancient to modern times.

Au, Sp Qtrs. 5 cl. Prereq: 302 and English 110 or 111 or equiv; or grad standing. Not open to students with credit for 621. Fulfills in part the ASC advanced English composition requirement.

**624 Communication in Personal Relationships U G 4**

Advanced level survey of theory and research concerning the role of communication in the development, maintenance, and decay of interpersonal relationships.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 324, or grad standing. Not open to students with credit for 612

**625 Nonverbal Communication U G 4**

Study of research and theory on the role of nonverbal behavior in interpersonal communication contexts.

Wi Qtr. 2 2-hr cl. Prereq: One of 324, 328, 331, or 335; or grad standing.

**628 Contemporary Persuasion Theory U G 4**

Persuasive campaigns in mass audience settings; persuasion in interpersonal contexts, including organizations, family, and personal relationships.

Sp Qtr. 2 2-hr cl. Prereq: 324 or 328 or grad standing. Not open to students with credit for 803.

**631 Communication in Decision Making U G 4**

Decision-making as a process; comparisons between interpersonal, bargaining-negotiation contexts, and groups and organizations; descriptive and prescriptive models of decision-making in small groups and organizations.

Au Qtr. 4 cl. Prereq: 331 or grad standing. Not open to students with credit for 616.

**635 Organizational Communication: Microperspectives U G 4**

Major organizational communication concepts and theories at individual, dyadic, and group levels of analysis; focus on intraorganizational communication processes.

Au Qtr. 1 3-hr cl. Prereq: 335 or grad standing. Not open to students with credit for 615.

**641 Public Broadcasting U G 5**

History, theory, and criticism of public broadcasting; current trends and issues in programming, funding, audiences, and goals.

Wi Qtr. 4 cl. Prereq: 340 or 341 or grad standing. Not open to students with credit for 821D.

**652 Telecommunication and Electronic Media Policy U G 5**

Survey of telecommunication policy issues; role of the public and industries; FCC, congress, and courts; emphasis on policy issues in broadcasting, cable, satellites, and telephone.

Wi, Sp Qtrs. Prereq: 340 or 341; or grad standing. Not open to students with credit for 715.

**653 International Telecommunication and Electronic Media U G 5**

Socioeconomic and geopolitical contexts of national communication systems; management of communication interfaces and common resources; international organizations, legal regimes, and policy.

Au, Wi Qtrs. 4 cl. Prereq: 220, 340, or 341; or int stds major; or grad standing. Not open to students with credit for 794.

**654 Social Implications of Telecommunication and Electronic Media Structures U 5**

Advanced study of a current topic in telecommunication and electronic media industry structures.

Wi Qtr. 4 cl. Prereq: 652 or 653 or 715.

**657 New Communication Technologies U G 5**

Storage, transmission, and display systems of mediated communication: optical disc, common carriers, telecommunication- computer linkages, and high-definition TV; information industries and society.

Au, Wi Qtrs. 4 cl. Prereq: 340 and 341; or grad standing. Not open to students with credit for 716.

**658 Telecommunication and Electronic Media Services and Programming U G 5**

An examination of the decision-making processes in electronic media organizations employing simulation techniques to illustrate decision-making under uncertainty.

Au Qtr. 4 cl. Prereq: 220 or 340, and 341; or grad standing. Not open to students with credit for 526.

**659 Communication Systems and Society U 5**

Advanced study of a current topic in the relationship between telecommunication and electronic media systems and society.

Wi, Sp Qtrs. 4 cl. Prereq: 657 or 658.

**662 Contemporary Perspectives on Communication and Gender U G 5**

Examination of contemporary communication theory, method, and practice relevant to women's communication.

Au Qtr. 2 2-hr cl. Prereq: 460 or grad standing.

**664 Contemporary Perspectives on Communication and the Third World U G 5**

An examination of recent communication theories and their implications for the role of communication in social change, particularly in Third World settings.

Sp Qtr. 2 2-hr cl. Prereq: 460 or int stds major or grad standing. Not open to students with credit for this topic under 794D or 821L.

**666 Contemporary Perspectives on Communication and Popular Culture U G 5**

Studies of cultural forms and popular communication using advanced communication theories based on semiology, psychoanalysis, phenomenology, Marxist cultural theory, and feminist theory.

Wi Qtr. 2 2-hr cl. Prereq: 460 or grad standing.

**668 Contemporary Perspectives on Intercultural Communication U G 5**

An examination on insights provided by recent communication theories about the challenges and difficulties in communication resulting when people of different cultures interact.

Wi Qtr. 2 2-hr cl. Prereq: 460 or grad standing. Not open to students with credit for 600.

**693 Individual Studies U G 1-5**

Conference, library, and laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698† Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

698.01 Domestic

698.02 Foreign

**701 Research Methodologies in Speech Communication U G 4**

Predominant research methodologies in the field of speech communication.

701.01† Statistical Concepts and Logic

Au Qtr. Prereq: Permission of instructor.

701.02 Measurement of Communication Variables

Wi Qtr. Prereq: 701.01 or equiv.

701.04 Humanistic Communication Analysis

Wi Qtr. Prereq: Permission of instructor.

**701.08† Historical Analysis**

Prereq: 209, 213, and 220; or grad standing; or permission of instructor.

**701.09 Rhetorical Analysis and Criticism**

Au Qtr. Prereq: Permission of instructor.

**H783† Honors Research U 3-15**

A program of independent study for the student with special aptitudes; individual conferences and reports.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the communic courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**794 Group Studies U G 3**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**797† Interdepartmental Seminars U P G 3**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs and by permission.

**800 Introduction to Research in Communication G 4**

Critical review of scholarly method, theory, and research in speech communication, including both qualitative and quantitative studies; analysis of graduate thesis requirements and procedures.

4 cl. Prereq: Grad standing in communic or permission of instructor. Required of all master's-level students; open to PhD students wishing to supplement their background in communic research and methodology.

**802 Communication Theories and Models G 3**

The formal principles of theory and model construction function as criteria for examining the strengths and weaknesses of four classes of interpersonal communication models.

Au Qtr. 1 3-hr cl.

**806 Advanced Studies in Television and Radio G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

- A— Proseminar: Perspectives on Mass Communication
- B— The Process and Effects of Mass Communication.
- C— Mass Media Organizations.
- D— Political Communication.

**811 Seminars in History and Criticism of Public Address G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- A— Rhetoric of Social Movements.
- C— Communication Ethics.
- D— Implicate Order of Change.
- E— Political Communication.

**816 Seminars in Rhetorical Theory G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 25 cr hrs.

- A— Classical Rhetorical Theory
- B— Medieval and Renaissance Rhetorical Theory
- C— Modern and Contemporary Rhetorical Theory
- D— Theories of Argument.
- E— Major Issues in Rhetorical and Communication Theory.
- F— Rhetoric and Rationality.
- G— Rhetoric, Fantasy, and Theories of Play.
- H— Negotiation of Meaning.
- I— Chinese Rhetorical Theory and Practice.

**821 Seminars in Television and Radio G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- A— Media Competition.
- B— Corporations and Communication Industries.
- C— Current Research in Mass Communication
- E— Electronic Meetings.
- F— Radio and Its Ancestors, 1830-1930.

G— Strategic Decision-Making in a Technologically Changing Environment.

H— Issues in Telecommunication Policy.

I— Information Industry Applications of Telecommunication Research.

J— International Telecommunications.

L— Political Economy of Communication.

**826 Seminars in Communication Behavior G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

- A— Organizational Communication Analysis and Change.
- B— Communication and Conflict Management.
- C— Contemporary Phenomenology and Hermeneutics
- D— Topics in Interpersonal Communication Competence
- E— Communication in Families
- F— Issues in Organizational Communication.
- G— Current Perspectives in Communication.
- H— Foundations of Critical/Cultural Studies in Communication.
- I— Popular Culture and Communication.
- J— Feminist Scholarship in Communication.
- K— Third World Communication.
- L— Cross-Cultural Communication.

**893 Individual Studies in Communication G 1-5**

Graduate students may register for individual study in areas not normally covered by courses, or to supplement credits in existing 800-level courses.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in communic, permission of instructor, and completion of permission to enroll form. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**894† Group Studies G 3**

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**899† Interdepartmental Seminar G 3**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

**998 Research in Speech Communication: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Speech Communication: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Comparative Studies in the Humanities

306 Dulles Hall, 230 West 17th Avenue, 292-2559

See also Religious Studies.

**100 Introduction to the Humanities: Western Tradition U 5**

Humanistic achievements of western culture in arts and letters; concepts of human nature and the world as expressed through major works in the humanities; weekly film.

5 cl. Open only to freshmen and sophomores (Rank 1 and 2 students). BER/LAC course.

**101 The Individual and Society in Literature U 5**

Personal integrity versus social conformity in works by Homer, Plato, Camus, Ibsen, and others.

Au, Wi, Sp Qtrs. H101 (honors) may be available to students enrolled in an honors program or by permission of director. Prereq: English 110 or 111 or equiv. 101, 102, and 103 may be taken independently. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**102 Religious Themes in Literature U 5**

The search for God, the nature of divine order; the conflict between faith and skepticism in works from the Bible, Dante, Dostoevsky, Beckett, and others.

Au, Wi, Sp Qtrs. H102 may be available to students enrolled in an honors program or by permission of director. Prereq: English 110 or 111 or equiv. 101, 102, and 103 may be taken independently. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**103 Psychological Themes in Literature U 5**

Analysis of the depiction of psychological conditions, concepts, and processes in works by Sophocles, Shakespeare, Freud, Bronte, and others.

Au, Wi, Sp Qtrs. H103 may be available to students enrolled in an honors program or by permission of director. Prereq: English 110 or 111 or equiv. 101, 102, and 103 may be taken independently. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**205 The Motif of the Quest U 5**

The physical journey as a metaphor for personal transformation and salvation, as undertaken by Gilgamesh, Odysseus, Siddhartha, Lancelot, and others.

5 cl. Prereq: 5 or hrs in literature and English 110 or 111 or equiv. Not open to students with credit for 210. BER/LAC course. Fulfills in part the ASC advanced English composition requirement.

**208 Utopia and Anti-Utopia U 5**

Utopia and critiques of utopian thinking: the conflict between utopian planning and individual freedom in works by such authors as Plato, More, Huxley, and Skinner.

5 cl. H208 (honors) may be available to students enrolled in an honors program. Prereq: 5 or hrs in literature and English 110 or 111 or equiv. Not open to students with credit for 213. BER/LAC course. Fulfills in part the ASC advanced English composition requirement.

**230 American Identity in the World U 5**

American culture viewed from inside and from the perspective of foreign cultures, as seen in literature, film, art, music, journalism, folklore, and popular culture.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**231 Wilderness Travel and the American Mind U 3**

Introduction to American attitudes toward the frontier and wilderness travel as reflected in literature, history, art, and film. Sp Qtr. 3 cl. Concur: Phys Ed 240.

**234 The American Character U 5**

Basic, interdisciplinary methods in American studies; toward a definition of the concept of a national character.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**239 City and Country in America U 5**

Interdisciplinary perspectives on the development, accuracy, and influence of popular images and stereotypes of city and country.

5 cl. Prereq: Soph standing and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**H240 The Nature of Modernity: Key Ideas and Enduring Problems U 5**

Examination of some of the defining ideas of modern thought and how those ideas have problematically affected modern life in both developed and developing countries.

5 cl.

**250 Science, Technology, and Human Values: An Introduction U 5**

Role of science and technology in the modern world; their relationship to human values; sources of concern about their impact; evaluation of selected issues.

5 cl. H250 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**270 Introduction to Comparative Religion U 5**

Introduction to the study of religion; comparison among major traditions (Judaism, Christianity, Islam, Hinduism, Buddhism, Taoism, Confucianism, through readings in their sacred texts in translation.

5 cl. H270 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**293 Individual Studies U 2-5**

Designed to give students an opportunity for personal study with a member of the faculty.

Prereq: Permission of instructor. Repeatable to a maximum of 10 or hrs.

**294 Group Studies U 1-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

H294 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: Written permission of instructor. Repeatable to a maximum of 10 or hrs.

**298 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**298.01 Domestic****298.02 Foreign****301 Concepts of Love in the Western Tradition U 5**

Concepts of love from ancient Greeks to modern feminists; emphasis on mythological and psychological aspects.

Au, Wi, Sp Qtrs. 5 cl. H301 (honors) may be available to students in an honors program. Prereq: 5 or hrs in literature and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**305 Medicine and the Humanities U 5**

Humanistic, scientific, and clinical perspectives on medical issues; literary uses of medical themes; medicine as art and science.

5 cl. Prereq: Soph standing and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**308 Experience of War Interpreted in Classic Examples of Literature U 5**

The Western experience of battle, as seen through the eyes of individual combatants, interpreted in classic examples of the literature of war.

3 cl, 1 3-hr lab. Offered in cooperation with National Security Policy Studies.

**315 Women and Religion U 5**

Modern women writers' search for feminist alternatives to traditional and patriarchal religious beliefs.

5 cl. Prereq: 5 or hrs in literature or wom stds, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**317 Women and Film U 5**

Women as sex objects, starlets, social activists, artists, and militant feminists as perceived in film.

2 2-hr cl. Prereq: Wom Stds 201 recommended.

**102 Religious Themes in Literature U 5**

The search for God, the nature of divine order; the conflict between faith and skepticism in works from the Bible, Dante, Dostoevsky, Beckett, and others.

Au, Wi, Sp Qtrs. H102 may be available to students enrolled in an honors program or by permission of director. Prereq: English 110 or 111 or equiv. 101, 102, and 103 may be taken independently. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**103 Psychological Themes in Literature U 5**

Analysis of the depiction of psychological conditions, concepts, and processes in works by Sophocles, Shakespeare, Freud, Bronte, and others.

Au, Wi, Sp Qtrs. H103 may be available to students enrolled in an honors program or by permission of director. Prereq: English 110 or 111 or equiv. 101, 102, and 103 may be taken independently. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**205 The Motif of the Quest U 5**

The physical journey as a metaphor for personal transformation and salvation, as undertaken by Gilgamesh, Odysseus, Siddhartha, Lancelot, and others.

5 cl. Prereq: 5 cr hrs in literature and English 110 or 111 or equiv. Not open to students with credit for 210. BER/LAC course. Fulfills in part the ASC advanced English composition requirement.

**208 Utopia and Anti-Utopia U 5**

Utopia and critiques of utopian thinking; the conflict between utopian planning and individual freedom in works by such authors as Plato, More, Huxley, and Skinner.

5 cl. H208 (honors) may be available to students enrolled in an honors program. Prereq: 5 cr hrs in literature and English 110 or 111 or equiv. Not open to students with credit for 213. BER/LAC course. Fulfills in part the ASC advanced English composition requirement.

**230 American Identity in the World U 5**

American culture viewed from inside and from the perspective of foreign cultures, as seen in literature, film, art, music, journalism, folklore, and popular culture.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**231 Wilderness Travel and the American Mind U 3**

Introduction to American attitudes toward the frontier and wilderness travel as reflected in literature, history, art, and film. Sp Qtr. 3 cl. Concur: Phys Ed 240.

**234 The American Character U 5**

Basic, interdisciplinary methods in American studies; toward a definition of the concept of a national character.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**239 City and Country in America U 5**

Interdisciplinary perspectives on the development, accuracy, and influence of popular images and stereotypes of city and country.

5 cl. Prereq: Soph standing and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**H240 The Nature of Modernity: Key Ideas and Enduring Problems U 5**

Examination of some of the defining ideas of modern thought and how those ideas have problematically affected modern life in both developed and developing countries.

5 cl.

**250 Science, Technology, and Human Values: An Introduction U 5**

Role of science and technology in the modern world; their relationship to human values; sources of concern about their impact; evaluation of selected issues.

5 cl. H250 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**270 Introduction to Comparative Religion U 5**

Introduction to the study of religion; comparison among major traditions (Judaism, Christianity, Islam, Hinduism, Buddhism, Taoism, Confucianism, through readings in their sacred texts in translation.

5 cl. H270 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**293 Individual Studies U 2-5**

Designed to give students an opportunity for personal study with a member of the faculty.

Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**294 Group Studies U 1-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

H294 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**298 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**298.01 Domestic****298.02 Foreign****301 Concepts of Love in the Western Tradition U 5**

Concepts of love from ancient Greeks to modern feminists; emphasis on mythological and psychological aspects.

Au, Wi, Sp Qtrs. 5 cl. H301 (honors) may be available to students in an honors program. Prereq: 5 cr hrs in literature and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**305 Medicine and the Humanities U 5**

Humanistic, scientific, and clinical perspectives on medical issues; literary uses of medical themes; medicine as art and science.

5 cl. Prereq: Soph standing and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**308 Experience of War Interpreted in Classic Examples of Literature U 5**

The Western experience of battle, as seen through the eyes of individual combatants, interpreted in classic examples of the literature of war.

3 cl, 1 3-hr lab. Offered in cooperation with National Security Policy Studies.

**315 Women and Religion U 5**

Modern women writers' search for feminist alternatives to traditional and patriarchal religious beliefs.

5 cl. Prereq: 5 cr hrs in literature or wom stds, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**317 Women and Film U 5**

Women as sex objects, starlets, social activists, artists, and militant feminists as perceived in film.

2 2-hr cl. Prereq: Wom Stds 201 recommended.



**358 Film and Literature as Narrative Art U 5**

Relationships between film and literature, the emergence of cinematic art, and the impact of film on contemporary literature; emphasis on continental material.

2 2-hr cl. and 1 1-hr cl. Prereq: 5 cr hrs in literature.

**498 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**498.01 Domestic****498.02 Foreign****500 Conceptual Approaches to International Studies U 5**

Exploration of classic and contemporary conceptual approaches to international studies used by anthropologists, economists, geographers, historians, political scientists, and psychologists.

2 2-hr cl. Prereq: 15 cr hrs of course work in one or more relevant disciplines and permission of instructor. Not open to students with credit for Int Stds 500. Cross-listed in International Studies.

**504 The Arthurian Legends U 5**

The medieval tales of King Arthur's court and the Knights of the Round Table in history, myth, literature, art, and music.

5 cl. Prereq: 10 cr hrs in literature. Not open to students with credit for 510.

**541 Myth and Ritual U G 5**

Ritual, myth, and literature: structural and thematic relationships.

5 cl. Prereq: 10 cr hrs in literature or grad standing. Not open to students with credit for 501 or 541.01 or 541.02.

**577 Studies in World Folklore U G 5**

2 2-hr cl. Prereq: English 270 or grad standing. Each decimal subdivision repeatable to a maximum of 10 cr hrs.

**577.01 Genres of Folk Literature**

Study of specific genres of folk literature on an international scale; topic varies: fairy tales and folktales, heroic legends and epics, and jokes.

**577.02 Themes in World Folklore**

Cross-cultural, cross-genre study of patterns and themes in folklore; folk hero, folklore of sex, witchcraft.

**577.03 Folk Custom, Art, and Material Culture**

Study of folk customs, arts, crafts, and material culture in traditional contexts; topic varies: folk belief, folk architecture, and folk medicine.

**577.04 Comparative Folk Groups**

Comparative study of the folklore of ethnic, regional, occupational, age or sex groups: e.g., women, industrial occupations, children.

**660 Modernism: Its Origins and Development in 20th-Century Culture and Politics U G 5**

Origins and development of the modernist sensibility in 20th-century art, literature, social theory, and politics.

5 cl. Prereq: Jr standing or permission of instructor. Not open to students with credit for this topic under 694.

**693 Individual Studies U G 1-10**

Designed to give able students an opportunity to pursue special studies not otherwise offered.

Prereq: Jr standing and permission of director. Not open to freshmen or sophomores. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Special topics.

Prereq: 10 cr hrs in literature. Repeatable to a maximum of 10 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****H783 Honors Research U 5-10**

Senior honors course leading to graduation *with distinction*; independent study for the student with special aptitude.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the comp stds courses taken and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 10 cr hrs. Failure to receive a mark of S in this course is a disqualification for special honors. This course is graded S/U.

**790 Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in English, French, German, Italian, and Spanish.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Arr. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs.

**890 Interdepartmental Studies in Critical Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.) in literary theory.

2 2-hr or 5 cl. Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs. Cross-listed in English, French, German, Spanish, and Women's Studies.

## Computer and Information Science

228 Civil and Aeronautical Engineering Building,  
2036 Neil Avenue Mall, 292-5813

**100 Introduction to Computing Technology U 3**

A course of general interest giving experience with personal computer software, e.g., wordprocessors and spreadsheets; provides fundamental computer literacy; neither teaches nor requires computer programming.

Su, Au, Wi, Sp Qtrs. 3 cl. Students intending to major or minor in computer science should take 221 or 211.

**201 Elementary Computer Programming U 4**

Introduction to programming; lab experience with computers; emphasis on social science applications. PASCAL is taught.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 hrs lab. Not open to students with credit for 211 or 221 or En Graph 200. Not recommended for students who plan to continue in cptr/inf courses.

**211 Computer Programming for Problem Solving U 5**

Introduction to the use of computers in problem solving; programming assignments emphasize management oriented problems; PASCAL and a simple text editor are taught.

Su, Au, Wi, Sp Qtrs. 4 cl, 3 hrs lab. Prereq: Math 116 or 130 or 148. Not open to students with credit for 201 or 221 or En Graph 200.

C—Designates a version intended for BUS information systems majors. Prereq: Math 150 or 151.

**212 Computer Data Processing U 4**

Business data processing principles and programming; topics include external sorting techniques, characteristics of direct access storage devices, concepts of multiple program systems. Cobol is taught.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 211 or 221 or En Graph 200.

**221 Programming and Algorithms: Introduction U 4**

Introduction to algorithms, programming, and problem solving; emphasis on top-down design, structured programming, and pseudocoding; PASCAL is taught.

Su, Au, Wi, Sp Qtrs. (H221: Wi Qtr.) 3 cl, 3 hrs lab. H221 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Math 151 (H221: Math H161 or H190). Not open to students with credit for 201, or 211, or En Graph 200. This course is intended primarily for students in ENG or MPS.

**222 Programming and Algorithms: Elementary Data Structures U 4**

Basic data structures; design, implementation, and use of abstract data types; recursion; introduction to algorithm analysis.

**222.01 Programming and Algorithms: Elementary Data Structures**

Su, Au, Wi, Sp Qtrs. (H222.01: Sp Qtr.) H222.01 (honors) may be available to students enrolled in an honors program or by permission of dept. 3 cl, 1 lab. Prereq: 201, 211 or 221 (H222.01: H221). Not open to students with credit for 222.02. Assumes a knowledge of PASCAL.

**222.02 Programming and Algorithms: Elementary Data Structures**

Su, Au, Wi, Sp Qtrs. 4 cl, 1 lab. Prereq: En Graph 200 or equiv intro programming course. Not open to students with credit for 222.01. PASCAL is taught.

**294 Group Studies U 1-5**

This course is designed to give the student an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**Enrollment Priority**

*Enrollment priority in courses numbered higher than 294 will be given to computer and information science majors and to students who meet the minimum cumulative pt-hr ratio requirement for becoming computer and information science majors.*

**313 Introduction to File Design U 4**

Principles of secondary data organization and file management; sequential file organization; uses COBOL and PASCAL.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 lab hrs. Prereq: 212 and a minimum cumulative pt-hr ratio of 2.00. Not open to students with credit for 321.

**321 Introduction to File Processing U 3**

Sequential file processing; external sorting; programming methodologies; PASCAL is the basic language; COBOL is introduced.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 222 and a minimum cumulative pt-hr ratio of 2.00. Not open to students with credit for 313.

**360 Introduction to Computer Systems U 4**

Introduction to computer architecture at the machine language and assembler language level; assembler language programming and lab.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 lab. Prereq: 212 or 222.01 or 222.02, and a minimum cumulative pt-hr ratio of 2.00.

**459 Programming Languages for Programmers U 1**

Elementary language constructs of various programming languages for students who are well versed in programming.

Su, Au, Wi, Sp Qtrs. 1 3-hr lab. Prereq: 222 or 313. Repeatable to a maximum of 2 cr hrs. This course is intended for experienced programmers who wish to learn an additional language.

**459.01 Programming in FORTRAN****459.11 Programming in PL/1****459.21 Programming in C****459.31 Programming in LISP****489 Professional Practice in Industry U 2**

Preparation and submission of a comprehensive report based on actual employment experience in a co-op job in industry.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to co-op program in cptr/inf. Repeatable to a maximum of 8 cr hrs. Cr hrs to be used as free electives only. This course is graded S/U.

**493 Individual Studies U 1-5**

Planning, conducting, and reporting a special study appropriate to the needs of the student.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**516 Information System Analysis and Design U G 4**

Introduction to information systems development; tools of structured analysis; data flow diagrams, data dictionary, process descriptions; students develop user specifications in a term project.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 3-hr lab. Prereq: 570.

**541 Elementary Numerical Methods U G 3**

Survey of basic numerical methods; number systems and errors of finite representation, solution of a single non-linear equation, interpolation, numerical integration, and solution of linear systems.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 201 or 211 or 221 or En Graph 200, and Math 254.

**548† Computer Science for High School Teachers U G 5**

Introduction to computer history, organization, hardware, and software; laboratory experience using batch processing and time-sharing; applications of computers with emphasis on uses in education and business.

Su Qtr. 5 cl. Prereq: Permission of instructor. Open only to high school teachers. Primarily intended for science, math, or business teachers.

**560 Elements of Computer Systems Programming U G 4**

Software engineering as exemplified by various classical computer systems programs; assemblers, macroprocessors, loaders; group participation in a major software project involving the implementation of various systems programs.

Su, Au, Wi, Sp Qtrs. 3 cl, 3 hrs lab. Prereq: 313 or 321 and 360 or Elec Eng 460.

**570 File Design and Analysis U G 3**

Random access file processing; file organization and access methods; time and space considerations; Cobol is used.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 313 or 321.

**615 Arithmetic Algorithms U G 3**

Design, implementation, analysis, and application of computer algorithms for performing the arithmetic operations used in computer algebra systems; integer arithmetic, rational number arithmetic, and modular arithmetic.

Sp Qtr. 3 cl. Prereq: 680 or equiv and either Math 568 or 573 or equiv; or permission of instructor.

**625 Introduction to Automata and Formal Languages U G 3**

Machine based and formal grammar based models of computation: finite automata; regular languages, context free languages, pushdown automata, and Turing machines; Church-Turing thesis; introduction to the halting problem.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 222 and Math 366.

**630 Survey of Artificial Intelligence I: Basic Techniques U G 3**

A survey of the basic concepts and techniques, problem solving, and knowledge representation, including an introduction to expert systems.

Au, Sp Qtrs. 3 cl. Prereq: 560 and Math 366 or permission of instructor.

**640 Numerical Analysis U G 3**

Analysis of numerical methods for ordinary differential equations, boundary value, and characteristic value problems, splines, non-linear equations, approximation of functions; standard mathematical software libraries.

Wi Qtrs. 3 cl. Prereq: 221 or equiv; Math 255 or 256 or 415; and 541 or grad standing.

**642 Numerical Linear Algebra U G 3**

Iterative methods for the solution of linear systems, computation of eigenvalues and eigenvectors, linear programming-simplex method, use of standard mathematical software libraries.

Au Qtr. 3 cl. Prereq: 541; Math 568 or 571.

**650 Information Storage and Retrieval U G 3**

Fundamental concepts of information storage and retrieval with emphasis on problems associated with textual databases; data representation and manipulation; content analysis and description; query languages and heuristics.

Au Qtr. 3 cl. Prereq: 570; and Stat 427 or equiv. Not open to students with credit for 750.

**655 Introduction to the Principles of Programming Languages U G 4**

Programming language concepts such as grammars and parse trees; interpretation versus compilation, binding, and scope rules; and language constructs for control and data abstraction.

Au, Wi, Sp Qtrs. 3 cl, 3 lab hrs. Prereq: 560.

**660 Introduction to Operating Systems U G 3**

Operating system concepts: memory management, process management, and file management; sample operating systems. Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 560, 570, 675, and Stat 425 or 520 or 525.

**662 Operating Systems Laboratory U G 3**

Construction of operating system components; scheduling, context switching, process management, message passing, memory management, interrupt processing, programming in C. Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 660 or equiv; knowledge of the C programming language. Not open to students with credit for 761.

**670 Introduction to Database Systems U G 3**

Database models; database organization, integrity and security; database systems and their utilization.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 570 or grad standing.

**673 Database and Information Management for Manufacturing U G 3**

File and data management, information flow in manufacturing, handling of geometric data for CAD/CAM/CAE, and communication between different computer systems.

Sp Qtr. Prereq: 221 or permission of instructor. Not open to Cptr/Inf majors. Open to students in Manufacturing Systems and Engineering Program.

**675 Introduction to Computer Architecture U G 3**

Computer system components, instruction set design, hardwired control units, arithmetic algorithms/circuits, floating point operations, introduction to memory, and I/O interface.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 360, and Math 366 or Elec Eng 260.

**676 Microcomputer Systems U G 3**

Bus structure; memory, interrupt, and I/O design; case studies on microprocessors and systems with emphasis on selection, evaluation, and applications based on their architectural features.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 675 or equiv.

**677 Computer Networks U G 3**

Concepts and goals of computer networking; structures of computer networks; network control, analysis, design, and management; case studies.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 675 or equiv.

**680 Data Structures U G 3**

Data abstraction; introduction to algorithm analysis; data structures and file structures, including lists, trees, and graphs; searching and sorting.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 560 and 570; Stat 427 or equiv; and Math 366; or grad standing.

**681 Introduction to Interactive Graphics U G 3**

Introduction to display hardware, interactive techniques, 2D business graphics and presentation graphics, 2D viewing algorithm including transformations, windows, viewports and clipping, and introduction to 3D perspective graphics.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 560 or permission of instructor; Math 568 or 571.

**693 Individual Studies U G 1-5**

Designed to give the student an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Designed to give the student an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

**715 Algebraic Algorithms I U G 3**

Design, implementation, analysis, and application of algorithms for performing algebraic operations; arithmetic operations on polynomials, polynomial greatest common divisors, and resultants; polynomial linear algebra.

Au Qtr. 3 cl. Prereq: 615, Prereq or concur: Math 580, or permission of instructor.

**716 Algebraic Algorithms II U G 3**

Continuation of 715: design, implementation, analysis, and application of algorithms for performing algebraic operations; isolation and refinement of polynomial real zeros; polynomial complete factorization.

Wi Qtr. 3 cl. Prereq: 715. Prereq or concur: Math 581, or permission of instructor.

**717 Algebraic Algorithms III U G 3**

Continuation of 716: design, implementation, analysis, and application of algorithms for performing algebraic operations; calculation with real algebraic numbers; cylindrical algebraic decomposition; and quantifier elimination.

Sp Qtr. 3 cl. Prereq: 716; prereq or concur: Math 582, or permission of instructor.

**725 Computability and Unsolvability U G 3**

Time and space measures; Turing machine variants and RAM's; universal Turing machines; undecidable language problems; development of efficient algorithms.

Wi, Sp Qtrs. 3 cl. Prereq: 625.

**726 Introduction to Automata and Language Theory U G 3**

Finite state automata, regular expressions, context-free languages, pushdown automata, parsing.

Wi Qtr. 3 cl. Prereq: 625 or equiv or permission of instructor.

**727 Computational Complexity U G 3**

Time and space complexity classes and hierarchies; deterministic and nondeterministic log space; polynomial time; polynomial space; complete and provably hard problems; random polynomial time.

Au Qtr. 3 cl. Prereq: 725 and 780.

**730 Survey of Artificial Intelligence II: Advanced Topics U G 3**

A survey of advanced concepts, techniques, and applications of artificial intelligence, including knowledge-based systems, learning, natural language understanding, and vision.

Wi Qtr. 3 cl. Prereq: 630.

**731 Knowledge-Based Systems U G 3**

Theory and practice of expert systems and knowledge-based systems; use of current knowledge-based systems software tools.

Sp Qtr. 3 cl. Prereq: 730.

**732 Computational Linguistics U G 3**

Exploration of the computational processing of natural language; syntactic, semantic, and pragmatic processing techniques are applied to understanding and generating written English.

Au Qtr. 3 cl. Prereq: 730; Linguist 601 or permission of instructor.

**741 Comparative Operating Systems U G 3**

A careful examination of a number of representative computer operating systems.

Su Qtr. 3 cl. Prereq: 660 or equiv.

**752 Techniques for Simulation of Information Systems U G 3**

Introduction to the methodology and techniques of the design of computer simulation of information systems.

Sp Qtr. 3 cl. Prereq: Stat 428 or equiv.

**755 Programming Languages U G 3**

Procedural abstraction, data abstraction, control abstraction (nondeterminism, concurrency, etc.), operational semantics, denotational semantics, specification, and verification of programs.

Wi, Sp Qtrs. 3 cl. Prereq: 655 and Math 366.

**756 Compiler Design and Implementation U G 4**

Syntactic and semantic analysis using formal models, automatic programming, generation of optimal code, synthesis of messages, design of incremental programming environments; students write a simple translator.

Au Qtr. 3 cl, 1 lab. Prereq: 625, 655, and 680.

**757 Software Engineering U G 3**

Principles of design, implementation, validation, and management of computer software; emphasis on reading and discussing papers from relevant journals and proceedings; term project required.

Sp Qtr. 3 cl. Prereq: 560 or equiv and sr or grad standing or permission of instructor.

**760 Operating Systems U G 3**

Advanced operating system concepts: process synchronization, process deadlock, security and access control, distributed operating system principles and prototypes.

Au, Wi Qtrs. 3 cl. Prereq: 660 or equiv.

**762 Advanced Operating System Laboratory U G 3**

Construction of advanced operating system components: internet, client-server, remote file server, distributed namespace, user interface software; lab assignments are programmed in C.

Au Qtr. 2 cl, 3 lab hrs. Prereq: 662.

**765† Management Information Systems U G 3**

Theory and practice of management information systems from the viewpoint of computer and information science; systems approach to management and organization; significance of information.

Wi Qtr. 3 cl. Prereq: Grad standing in cptr/inf or permission of instructor.

**770 Database Systems U G 3**

Fundamental design considerations, system principles and machine organizations of database systems; performance analysis of design alternatives, system configurations and hardware organizations; impact of applications and technology on database systems.

Wi Qtr. 3 cl. Prereq: 660 and 670.

**775 Computer Architecture U G 3**

Microprogramming, bit-slice logic, reduced instruction set computer architecture, advanced memory organizations, introduction to parallel computer architectures, and performance models/evaluation.

Au, Sp Qtrs. 3 cl. Prereq: 660 and 675.

**778 Computer-Aided Design and Testing of VLSI Circuits U G 3**

VLSI design methodologies; specification of VLSI circuits at various levels of abstraction; computer simulation of designs on UNIX; VLSI algorithms; construction of design tools.

Sp Qtr. 3 cl. Prereq: 680; and 675 or Elec Eng 760; or permission of instructor.

**780 Analysis of Algorithms U G 3**

Algorithm design paradigms; mathematical analysis of algorithms; NP-completeness.

Au, Sp Qtrs. 3 cl. Prereq: 680 or grad standing and equiv of 680.

**781 Introduction to 3D Image Generation U G 3**

3D viewing algorithm including transformations, perspective and clipping, basics of rendering shaded images of polyhedra including polygon scan-conversion, a survey of display algorithms, simple illumination models, anti-aliasing, and transparency and shadows.

Au, Sp Qtrs. 3 cl. Prereq: 675; 681 or permission of instructor; Math 568 or 571.

**782 Advanced 3D Image Generation U G 3**

Advanced topics in rendering 3D realistic imagery including texture mapping, anti-aliasing and reflectance mapping techniques, ray tracing rendering algorithms, radiosity, color theory, data generation techniques, and issues in frame buffer design.

Wi Qtr. 3 cl. Prereq: 781.

**783 Geometric Modeling U G 3**

Survey techniques and algorithms used to create, manipulate, represent, and display geometric models in computer graphics.

Sp Qtr. 3 cl. Prereq: 781, 541; or grad standing and permission of instructor.

**788 Intermediate Studies in Computer and Information Science U G 1-5**

Intermediate work in one of the specialized areas of computer and information science is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 30 cr hrs; subdivisions repeatable.

**788.01 Computational Complexity**

**788.03 Theory of Automata**

**788.04 Artificial Intelligence**

**788.06 Computer Systems Programming**

**788.07 Programming Languages**

**788.09 Numerical Analysis**

**788.10 Man-Machine Interaction**

**788.11 Concurrent Computing**

**788.12 Software Engineering**

**788.14 Computer Graphics**

**793 Individual Studies U G 1-5**

Designed to give the individual student an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 12 cr hrs for undergrad and 24 cr hrs for grad students. This course is graded S/U.

**794 Group Studies U G 1-5**

Designed to give students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**797 Interdepartmental Seminar U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Repeatable by permission.

**875 Advanced Computer Architecture G 3**

Advanced topics and case studies in computer architecture, parallel computers, array and pipeline computers, stack machines, high-level language machines, associative processors, and microprogrammable computers.

Wi Qtr. 3 cl. Prereq: 775 or equiv.

**885 Seminar on Research Topics in Computer and Information Science G 1**

Lectures on current research by each graduate faculty member in the department.

Wi Qtr. 2 cl. Prereq: 1st yr grad student in cptr/inf. This course is graded S/U.

**886 Introduction to Doctoral Studies G 4**

Educational resources and facilities of Department of Computer and Information Science; computer systems, programming languages, text processing, and communication facilities; active research areas; computer science problem solving skills.

Au Qtr. 3 cl, 3 hrs lab. Prereq: Grad standing in dept.

**888 Advanced Studies in Computer and Information Science G 1-5**

Advanced work in one of the specialized areas of computer and information science.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 30 cr hrs; subdivisions repeatable. These courses are graded S/U.

**888.01 Computational Complexity****888.02 Information Systems and Database Systems****888.03 Theory of Automata****888.04 Artificial Intelligence****888.06 Computer Systems Programming****888.07 Programming Languages****888.08 Computer Organization****888.11 Concurrent Computing****888.12 Software Engineering****888.13 Biomedical Information Systems****888.14 Computer Graphics****889 Advanced Seminar in Computer and Information Science G 2**

Selected topics of particular current interest in both the research and applications of computer and information science are considered.

Au, Sp Qtrs. 1 2-hr cl. Prereq: 2nd qtr grad standing in cptr/inf or permission of instructor. This course is graded S/U.

**899 Interdepartmental Seminar G 1-5****999 Research G 1-18 Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Criminology and Criminal Justice

300 Bricker Hall, 190 North Oval Mall, 292-6681

See Sociology.

## Czech

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101†\* Elementary Czech I**

Development of oral and written language skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

Au Qtr. 5 cl.

**101.51 Individualized Track U 1-5**

Su Qtr. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

**102†\* Elementary Czech II**

Development of oral and written language skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Wi Qtr. 5 cl. Prereq: 101 or 101.01 or 5 cr hrs. of 101.51 or permission of instructor.

**102.51 Individualized Track U 1-5**

Prereq: Grade of B- or above in 101 or 101.01, or 5 cr hrs of 101.51, or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 101.51 and 102.51 concurrently with permission of instructor.

**103 Intermediate Czech I****103.51 Individualized Track U 1-5**

Prereq: Grade of B- or above in 102 or 102.01, or 5 cr hrs of 102.51, or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 102.51 and 103.51 concurrently with permission of instructor.

**104 Intermediate Czech II****104.51 Individualized Track U 1-5**

Continuation of 103; development of the four skills.

Su Qtr. Prereq: 5 cr hrs of 103.51 or permission of instructor. Not open to students with credit for 111 or to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1-5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 103.51 and 104.51 concurrently with permission of instructor.

**111† Intensive Intermediate Czech U 10**

Readings, oral and written practice, grammar review.

Sp Qtr. 10 cl. Prereq: 102.01 or 5 cr hrs of 102.51 or equiv. Equiv to the 3rd and 4th courses of the foreign language sequence.

**405 Advanced Czech I****405.51 Individualized Track U 1-5**

Continuation of 104.51; development of the four skills.

Su, Au, Wi, Sp Qtrs. Prereq: 5 cr hrs of 104.51 or 111 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 104.51 and 405.51 concurrently with permission of instructor.

**407 Advanced Czech II****407.51 Individualized Track U 1-5**

Su Qtr. Prereq: 5 cr hrs of 405.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register 405.51 and 407.51 concurrently with permission of instructor.

**580 Reading Czech I****580.51 Individualized Track U G 1-5**

Development of reading skills based on selections from 20th century writers, mostly contemporary writers, and from the contemporary press.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 407.51 or permission of instructor. Students register for and complete one to five cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 407.51 and 580.51 concurrently with permission of instructor.

**581 Reading Czech II****581.51 Individualized Track U G 1-5**

Continuation of 580.51; further development of reading skills.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 580.51 or permission of instructor. Students register for and complete one to five cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 580.51 and 581.51 concurrently with permission of instructor.

## Dairy Science

116 Plumb Hall, 2027 Coffey Road, 292-6851

**Domestic Animals in the Service of Man**

See Animl Sc 100. Offered in cooperation with Dairy Science and Poultry Science.

**089 Dairy Industry Employment Experience U 0**

Equivalent of 10 weeks employment.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 10 cr hrs in Dairy Sc and written permission of instructor or adviser before employment.

**General Prerequisites for Courses Numbered 200**

*Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.*

**201 Fundamentals of Dairy Science U 5**

The production phases of the dairy industry and the physiological systems of dairy animals. Schmidt and Spike.

Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Biology 110. This course is available for EM credit.

**207 Dairy Cattle Type Evaluation U 3**

Dairy breed type standards and their application to herd improvement. Spike.

Sp Qtr. 1 2-hr lab, 1 3-hr lab, 1 2-day field trip. Prereq: 201 and 15 cr hrs in biological sciences.

**General Prerequisites for Courses Numbered 300 and 400**

*Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.*

**312 Application of Reproductive Management to Livestock U 4**

A practical introduction to the various tools and techniques available to improve the reproductive performance of livestock. Pope.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 201 or Animl Sc 200 or Pltry Sc 200. Cross-listed in Animal Science.

**340 Dairy Herd Management U 5**

Problems and practices concerned with efficient production of milk and successful operation of a dairy herd. Schmidt.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 201 and 430.

**359 Seminar U 1**

Wi Qtr. 1 cl. Prereq: Soph standing with at least 10 cr hrs in dairy sc. Repeatable to a maximum of 2 cr hrs. Zartman.

**359.01\* Current Topics in Dairy Science**

Reading and interpreting current scientific and popular literature in this field.

**359.02†\* Dairy Science Careers**

Job requirements and occupational opportunities; discussion conducted by outside speakers from agribusiness.

**420 Principles of Animal Improvement U 5**

An introduction to the methods available for bringing about genetic change in farm animals. Davis, Fechheimer, and Irvin.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Animl Sc 100, Math 148 or equiv, and Genetics 140. Not open to students with credit for Animl Sc 420 or Pltry Sc 420. Cross-listed in Animal Science and Poultry Science.

**Marketing Dairy Products**

See Agr Econ 426. Offered in cooperation with Agricultural Economics and Rural Sociology.

**430 Principles of Animal Nutrition U 5**

A study of fundamental principles of nutrition in mammals and birds. Tyznik.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122, and Math 148 or equiv. Not open to students with credit for Animl Sc 430 or Pltry Sc 430. Cross-listed in Animal Science and Poultry Science.

**General Prerequisites for Courses Numbered 500**

*Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.*

**520 Genetic Improvement of Dairy Cattle U G 3**

Selection and mating methods specific for dairy cattle; view of improvement as an integration of genetical, environmental, and management alternatives. Allaire.

Wi Qtr. 2 1-hr cl, 1 2-hr lab. Prereq: 420 or Animl Sc 420 or Pltry Sc 420.

**593 Individual Studies U 3-5**

Special assignments and elementary research; students elect problems after conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs. H593 (honors) may be available to students enrolled in an honors program or eligible for enrollment. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**General Prerequisites for Courses Numbered 600**

*Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.*

**610 Physiology of Lactation. U G 3**

The physiological, endocrine, nutritional, and environmental factors influencing the synthesis and ejection of milk. Schmidt. Au Qtr. 2 1-hr cl, 1 2-hr lab. Prereq: Vet Phys 411 and 20 or hrs in animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Animl Sc 610. Cross-listed in Animal Science.

**612 Physiology of Reproduction U G 5**

Physiology and endocrinology of the reproductive system; factors influencing reproductive performance. Ottobre and Pate.

Au, Sp Qtrs. 3 cl, 1 hr recitation, 1 2-hr lab. Prereq: Vet Phys 411 and 20 or hrs of animl sc, dairy sc, or vertebrate biology. Not open to students with credit for Animl Sc 612. Cross-listed in Animal Science.

**631 Nutrition and Feeding of Ruminant Animals U G 5**

The nutrition of dairy cattle, beef cattle, and sheep; principles and practices. Firkins, Loerch, and Tyznik.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Animl Sc 631. Cross-listed in Animal Science.

**635 Nutrition Applied to Farm Animals U G 3**

Application of nutrient requirements, feed formulation, and feed technology to providing adequate nutrition for farm animals. Lilburn and Weiss.

Sp Qtr. Prereq: 631 or Animl Sci 630 or 631 or 632 or Poultry Sc 630. Not open to students with credit for 735, or Animl Sc 635 or 735, or Poultry Sc 635 or 735. Cross-listed in Animal Science and Poultry Science.

**640 Evaluation and Integration of Research for Dairy Operations U G 5**

The integration of scientific principles to maximize efficiency in dairy operations. Spike.

Sp Qtr. 5 cl. Prereq: 201, 340, 420, 430, Agr Econ 310.01 or 310.02, and 5 cr hrs physiol.

**651 Analysis and Interpretation of Biological Data II U G 5**

Methods used in analyzing data classified in two or more ways: Latin-square, split-plot and factorial designs, analysis of covariance, data transformations, multiple regression, and least-squares.

Sp Qtr. 5 cl. Prereq: Genetics 650 or equiv. Not open to students with credit for Biology 651 or Genetics 651.

**694 Group Studies U G 3-5**

Special assignments and advanced research for groups; problems assigned after consultation with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 or hrs.

**General Prerequisites for Courses Numbered 700**

*Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified courses numbered 600 or higher.*

**710\* Advanced Reproductive Physiology U G 3 or 5**

Recent advances in research in mammalian reproduction; optional individual research experience in reproductive problems with small and large mammals for additional credit. Ottobre.

Wi Qtr. 2 2-hr cl. Prereq: 612 and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Animl Sc 710. Cross-listed in Animal Science.

**721 Genetics of Animal Populations I U G 3**

Parameters of static populations, genetic arrays, and equilibria and statistical measures; partitioning the phenotypic variance mutation, migration, selection, and chance. Irvin.

Wi Qtr. 3 cl. Prereq: 420 or Genetics 500 and Genetics 650 or equiv. Not open to students with credit for Animl Sc or Poultry Sc 721. Cross-listed in Animal Science and Poultry Science.

**722 Genetics of Animal Populations II U G 3**

Selection for polygenic characters, mating systems, and development of breeding plans. Irvin.

Sp Qtr. 3 cl. Prereq: 721 or Animl Sc 721 or Poultry Sc 721 or equiv. Not open to students with credit for Animl Sc or Poultry Sc 722. Cross-listed in Animal Science and Poultry Science.

**733 Nutrition in the Support of Growth U G 5**

A functional approach to the study of nutrition for support of growth and maintenance in animals and humans. Ramsey and White.

Au Qtr. 5 cl. Prereq: 631; or Animl Sc 630 or 631 or 632; or Humn Ntr 610; or Poultry Sc 630; prereq or concur: Biochem 511 or Physchem 611; and permission of instructor. Not open to students with credit for Animl Sc 733 or Fd Sc&Nu 733 or Poultry Sc 733. Cross-listed in Animal Science, Food Science and Nutrition, and Poultry Science.

**734 Nutrition in the Support of Reproduction U G 3**

A functional approach to the study of nutrition for support of reproduction in animals and humans. Day and Latshaw.

Wi Qtr. 3 cl. Prereq: 631; Animl Sc 630 or 631 or 632; or Poultry Sc 630; prereq or concur: Biochem 511 or Physchem 611. Not open to students with credit for Animl Sc 734 and Poultry Sc 734. Cross-listed in Animal Science, Food Science and Nutrition, and Poultry Science.

**General Prerequisites for Courses Numbered 800 and 900**

*Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.*

**800 Seminar G 1**

Discussion of current dairy science or related areas.

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 15 cr hrs. This course graded S/U.

**810 Advances in Physiology of Domestic Animals G 3**

Au, Wi, Sp Qtrs. 4-hr cl. Prereq: Written permission of instructor and acceptable courses in physiol, anatomy, and biochem. Not open to students with credit for Animl Sc 810 or Poultry Sc 810. Cross-listed in Animal Science and Poultry Science.

**810.01\* Anterior Pituitary Function**

Bacon.

Au Qtr.

**810.02†\* Endocrinology of Reproduction**

Pate.

Wi Qtr.

**810.03 Immunology and Immunogenetics**

Hines.

Sp Qtr.

**810.05\* Mammalian Germ Cells**

Pope.

Wi Qtr.

**820 Current Topics in Animal Genetics**

Prereq: Acceptable courses in animal genetics, math, and statistics. Repeatable to a maximum of 12 cr hrs. Not open to students with credit for Animl Sc 820 or Poultry Sc 820. Cross-listed in Animal Science and Poultry Science.

**820.01\* Selection Index Theory G 1-3**

Allaire.

Au Qtr.

**820.02†\* Non-additive Genetic Variance G 1-3**

Wi Qtr.

**820.04†\* Modeling of Breeding Systems G 1-3**

Allaire and Davis.

Sp Qtr.

**820.05\* Cytogenetics of Animal Populations G 1-3**

Fechheimer.

Wi Qtr.

**820.07 Seminar in Animal Genetics Research G 1**

Review of literature related to genetics improvement of agricultural animal populations. Allaire.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Acceptable courses in animal genetics, math, and statistics. Not open to students with credit for Animl Sc 820 or Pltry Sc 820. Repeatable to a maximum of 12 credit hrs. This course is graded S/U. Cross-listed with Animal Science and Poultry Science.

**830 Advanced Studies in Nutrition G 3**

Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 631 or Animl Sc 630 or Pltry Sc 630 or Humn Ntr 610; Fd Sc&Nu 761 and 762; and 10 grad cr hrs in physiol. Not open to students with credit for Animl Sc 830, Humn Nutr 830, or Pltry Sc 830. Cross-listed in Animal Science, Food Science and Nutrition, Human Nutrition and Food Management, and Poultry Science.

**830.01\* Energy**

Latshaw, Palmquist, and Snook.

Wi Qtr.

**830.02†\* Minerals**

Mahan.

Wi Qtr.

**830.03\* Proteins and Amino Acids**

Sp Qtr.

**830.04†\* Vitamins**

Sp Qtr.

**830.05†\* Lipids**

Palmquist.

Au Qtr.

**830.07†\* Rumen Microbiology**

Dehority.

Su Qtr. This course is not available in Human Nutrition and Food Management or Poultry Science.

**830.08\* Carbohydrates**

Roehrig.

Au Qtr.

**832 Mathematical Genetics G 5**

The construction of mathematical models, use of path coefficients, generation matrices, least-squares, and maximum likelihood methods for estimating genetic parameters and breeding values in quantitative genetics.

Wi Qtr. 5 cl. Prereq: 30 cr hrs in genetics, math, and stat.

**840 Advanced Studies in Molecular Endocrinology G 5**

Combined lecture/laboratory course on the molecular and cellular basis of hormone action and state-of-the-art methodologies in molecular endocrinology. Simmens.

Su Qtr. Prereq: Biochem 511 or equiv and permission of instructor. Cross-listed in Animal Science and Poultry Science.

**850 Molecular Biology Techniques G 4**

Combined lecture/laboratory in the techniques of nucleic acid isolation, analysis, hybridization, sequencing, cloning, expression, and associated biotechnologies. Hodgson.

Su Qtr. 10 2-hr cl, 10 4-hr lab. Prereq: Biochem 521 or 613 or equiv. Not open to students with credit for Animal Science or Poultry Science 850. Cross-listed in Animal Science and Poultry Science.

**885†\* Research Principles and Methods G 5**

Survey and analysis of research in dairy and animal science, literature reviews, collection of data, preparation of bibliographies, and presentation of reports. Fechheimer.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Genetics 650, 8 cr hrs in math, and 2 qtrs grad study.

**894 Group Studies G 1-5**

Students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor.

**898 Interdepartmental Seminar in Nutrition G 1**

A seminar in nutrition and in related fields of food technology.

Sp Qtr. Given cooperatively by Animal Science, Dairy Science, and Food Science and Nutrition. This course is graded S/U.

**993 Individual Studies G 3 or 5**

Exploratory research and advanced assignments; students elect problems after conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Dance

132 Sullivant Hall, 1813 North High Street, 292-7977

**111 Techniques and Materials of Dance I U 1-6**

Open only to dance majors. Each decimal subdivision repeatable to a maximum of 6 cr hrs.

**111.01 Improvisation**

Au Qtr. Arr. Prereq: Qualifying audition.

**111.02 Dance Fundamentals**

Wi, Sp Qtrs. Arr. Prereq: 111.01 or qualifying audition.

**111.03 Introduction to Dance Composition**

Sp Qtr. Arr. Prereq: 111.02 or qualifying audition.

**111.04 Modern Dance Technique, Part 1**

Au Qtr. Arr. Prereq: Qualifying audition.

**111.05 Ballet Technique, Part 1**

Au Qtr. Arr. Prereq: Qualifying audition.

**111.06 Modern Dance Technique, Part 2**

Wi Qtr. Arr. Prereq: 111.04 or qualifying audition.

**111.07 Ballet Technique, Part 2**

Wi Qtr. Arr. Prereq: 111.05 or qualifying audition.

**111.08 Modern Dance Technique, Part 3**

Sp Qtr. Arr. Prereq: 111.06 or qualifying audition.

**111.09 Ballet Technique, Part 3**

Sp Qtr. Arr. Prereq: 111.07 or qualifying audition.

**190 Ethnic Dance Forms U 1-5**

Folk forms as practiced by ethnic groups in selected cultures.

Au Qtr. Arr. Prereq: Qualifying audition. Each decimal subdivision repeatable to a maximum of 5 cr hrs.

**190.01 Dance Forms of the African Diaspora****190.02 International Dance Survey****190.03 Other****198 Dance Production U 1-5**

Production activities.

Au, Wi Qtrs. Arr. Open only to dance majors. Repeatable to a maximum of 15 cr hrs.

**200 The Development of Western and Classical Dance U 5**

Development of dance as a performing art in Europe and the United States from 1581 to the present; a survey of major stylistic trends, principal artists and their works.

Wi, Sp Qtrs. 3 1½-hr cl. This course is available for EM credit. BER/LAC/LAR course. VPA Admis Cond course.

**201 Introduction to Dance I U 1-5**

An introductory course in dance for non-majors.

Su, Au, Wi, Sp Qtrs. Arr. Not open to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs. VPA Admis Cond course.

**201.01 Modern Technique****201.02 Ballet Technique****201.03 Jazz****201.04 Other**



**202 Introduction to Dance II U 1-5**

Continuation of 201.

Su, Au, Wi, Sp Qtrs. Not open to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**202.01 Modern Technique**

Prereq: 201.01 or permission of instructor.

**202.02 Ballet Technique**

Prereq: 201.02 or permission of instructor.

**202.03 Jazz**

Prereq: 201.03 or permission of instructor.

**203 Introduction to Dance III U 1-5**

Continuation of 201 and 202.

Su, Au, Wi, Sp Qtrs. Not open to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**203.01 Modern Technique**

Prereq: 202.01 or permission of instructor.

**203.02 Ballet Technique**

Prereq: 202.02 or permission of instructor.

**203.03 Jazz**

Prereq: 202.03 or permission of instructor.

**214 Dance Techniques II U 1-6**

Technique: modern dance and ballet, level II.

Open only to dance majors. Each decimal subdivision repeatable to a maximum of 9 cr hrs.

**214.04 Modern, Part 1**

Au Qtr. Arr. Prereq: Juried examination with the completion of 111.08 or qualifying audition.

**214.05 Ballet, Part 1**

Au Qtr. Arr. Prereq: 111.09 or qualifying audition.

**214.06 Modern, Part 2**

Wi Qtr. Arr. Prereq: 214.04 or qualifying audition.

**214.07 Ballet, Part 2**

Wi Qtr. Arr. Prereq: 214.05 or qualifying audition.

**214.08 Modern, Part 3**

Sp Qtr. Arr. Prereq: 214.06 or qualifying audition.

**214.09 Ballet, Part 3**

Sp Qtr. Arr. Prereq: 214.07 or qualifying audition.

**257 Modern Dance Overview U 3**

An introduction to the history and aesthetic principles of modern dance from the turn of the 20th century to present.

Wi Qtr. 2 1½-hr cl. Prereq: Admission to dance major program.

**289 Field Experience in Dance U 1-5**

Foundations in dance education.

Open only to dance majors.

**289.01 Introduction to Dance Education**

Survey of dance in public education: theoretical foundations and field-based experiences.

Sp Qtr. Arr. Prereq: 111.04 or permission of dance ed coordinator.

**289.02 Dance Education in Diverse Settings**

Survey of dance in diverse community settings: theoretical foundations and field-based experiences.

Wi Qtr. Arr. Prereq: 289.01 or permission of dance ed coordinator.

**289.03 Other: Field Experience in Dance**

Directed field experience emphasizing appropriate teaching strategies for different educational and community settings.

Su, Au, Wi, Sp Qtrs. Arr. for each cr hr 2 hrs/week in field placement. Prereq: 111.06 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**293 Individual Studies U 1-5**

Individual studies of specified problems in the field of dance.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Prereq: Permission of chairperson. Repeatable to a maximum of 25 cr hrs.

**299 Dance Performance U 1-5**

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal wkly. Prereq: Permission of chairperson. Open only to dance majors; others by special permission of chairperson. Each decimal subdivision repeatable to a maximum of 24 cr hrs.

**299.04 Student Choreographic Projects****299.06 Workshops****489† Dance in Education U 2**

The role, status, and theoretical foundations of dance in American education within a historical framework.

Sp Qtr. 3 1½-hr cl. Prereq: 289.01 and 289.02, or permission of instructor.

**534 Dance Techniques III U G 1-6**

Technique: modern dance and ballet, level III.

Open only to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**534.04 Modern, Part 1**

Au Qtr. Arr. Prereq: 214.08 or qualifying audition.

**534.05 Ballet, Part 1**

Au Qtr. Arr. Prereq: 214.09 or qualifying audition.

**534.06 Modern, Part 2**

Wi Qtr. Arr. Prereq: 534.04 or qualifying audition.

**534.07 Ballet, Part 2**

Wi Qtr. Arr. Prereq: 534.05 or qualifying audition.

**534.08 Modern, Part 3**

Sp Qtr. Arr. Prereq: 534.06 or qualifying audition.

**534.09 Ballet, Part 3**

Sp Qtr. Arr. Prereq: 534.07 or qualifying audition.

**579 University Dance Company U G 1-5**

Su, Au, Wi, Sp Qtrs. 2 or more hrs of rehearsal wkly. Open only to dance majors; others by special permission.

Repeatable to a maximum of 45 cr hrs. Not open to students with 45 cr hrs of 699.01.

**586 Student Teaching in Dance in Elementary Schools U 3-15**

Observation, participation, and teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: EDU 4th yr standing. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**587 Student Teaching in Dance in Secondary Schools U 3-15**

Observation, participation, and teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: EDU 4th yr standing. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**601 Supplemental Studies in Dance U G 1-5**

Foundations in dance.

Su, Au, Wi, Sp Qtrs. 2 or more lab hrs. Prereq: Permission of chairperson. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**601.01 Modern Technique****601.02 Ballet Technique****601.03 Dance Technique for Men****601.04 Tap Dance****601.05 Historical Dance****601.06 Jazz Dance****601.07 Alexander Technique**

This course is graded S/U.

**601.08 Other****605† Introduction to Effort U G 3**

Study of the dancer's dynamic energy.

Wi Qtr. 2 1½-hr cl. Prereq: 645 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**606 Introduction to Space Harmony U G 3**

The study of spatial forms in dance.

Wi Qtr. 2 1½-hr cl. Prereq: 620 or permission of instructor.  
Repeatable to a maximum of 6 cr hrs.

**620 Dance Notation I U G 3**

Basic principles of Labanotation; work in theory, readings, and writing using motif descriptions.

Au Qtr. Arr. Prereq: 1 yr as dance major or permission of instructor.

**621 Dance Notation II U G 3**

Continuation of 620; emphasis on Labanotation.

Wi Qtr. Arr. Prereq: 620 or permission of instructor.

**622 Dance Notation III U G 3**

Continuation of 621; emphasis on reading dance.

Sp Qtr. Arr. Prereq: 621 or permission of instructor.

**623 Advanced Notation U G 3**

Advanced Labanotation.

Au, Wi, Sp Qtrs. Arr. Prereq: 622 or equiv with written permission of instructor. Repeatable to a maximum of 9 cr hrs.

**633 Lighting for Dance U G 3 or 5**

A study of stage lighting for dance; lectures, readings, and discussions.

Wi, Sp Qtrs. Arr. Prereq: 198 or equiv.

**635† Intermediate Effort U G 3**

Intermediate study of the dancer's dynamic energy; continuation of 605.

Au Qtr. 2 1½-hr cl. Prereq: 605 or permission of instructor.  
Repeatable to a maximum of 6 cr hrs.

**636 Intermediate Space Harmony U G 3**

Study of spatial forms in dance; continuation of 606.

Wi Qtr. 2 1½-hr cl. Prereq: 606 or permission of instructor.  
Repeatable to a maximum of 6 cr hrs.

**637 Dance Technique IV U G 1-6**

Technique: modern and ballet, level IV.

Open only to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**637.04 Modern, Part 1**

Au Qtr. Arr. Prereq: 534.08 or qualifying audition.

**637.05 Ballet, Part 1**

Au Qtr. Arr. Prereq: Permission of instructor.

**637.06 Modern, Part 2**

Wi Qtr. Arr. Prereq: 637.04.

**637.07 Ballet, Part 2**

Wi Qtr. Arr. Prereq: Permission of instructor.

**637.08 Modern, Part 3**

Sp Qtr. Arr. Prereq: 637.06.

**637.09 Ballet, Part 3**

Sp Qtr. Arr. Prereq: Permission of instructor.

**645 Foundations in Dance Composition I U G 1-5**

Au Qtr. Arr. Prereq: 111.08 or equiv. Open only to dance majors. Repeatable to a maximum of 12 cr hrs.

**646 Foundations in Dance Composition II U G 1-5**

Wi Qtr. Arr. Prereq: 645. Open only to dance majors.  
Repeatable to a maximum of 12 cr hrs.

**647 Foundations in Dance Composition III U G 1-5**

Sp Qtr. Arr. Prereq: 646. Open only to dance majors.  
Repeatable to a maximum of 12 cr hrs.

**648 Music and Choreography U G 3**

Study of music suitable for choreographic purposes and the various approaches to the use of music in dance composition.

Sp Qtr. Arr. Prereq: 647 or equiv, and Music 141.

**649 Intermediate Dance Composition U G 3**

Dance studies for small groups.

Au Qtr. Arr. Prereq: 647.

**650 Advanced Dance Composition U G 1-5**

Choreographing and producing a dance in a performance setting.

Au, Wi, Sp Qtrs. Arr. Prereq: 649 or equiv. Repeatable to a maximum of 13 cr hrs.

**651 Repertory U G 1-5**

Experience in learning a dance.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 214.08 or permission of instructor. Open only to dance majors. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**651.01 Existing Work****651.02 New Work****657 History of Dance I U G 3**

Survey of dance as a communal activity, functioning as ritual, art, and play, with particular emphasis on dance in tribal cultures and in the Greek theatre.

Au Qtr. Arr. This course is available for EM credit.

**658† History of Dance II U G 3**

Survey of dance from medieval times to the late 18th century, with particular emphasis on dance styles of the 15th through the 18th centuries.

Wi Qtr. Arr. This course is available for EM credit.

**659 History of Dance III U G 3**

Survey of dance in Europe and the United States from the end of the 18th century to the present with emphasis on ballet and modern dance.

Sp Qtr. 4 cl. This course is available for EM credit.

**670 Dance Fundamentals II U G 1-4**

An investigation of movement awareness principles and learning techniques (Alexander and Bartenieff in particular) and their practical application to dance material.

Sp Qtr. Arr. Prereq: Jr standing and permission of instructor.  
Repeatable to a maximum of 4 cr hrs.

**687 Dance for Children U G 3-5**

Foundation for teaching dance to children.

Au Qtr. Arr. Prereq: 214.08 or permission of instructor.

**688 Theory and Practice of Modern Dance U G 3-5**

Foundations for teaching; laboratory problems, lectures, readings, and discussions.

Au Qtr. Arr. Prereq: 214.08 or permission of instructor.

**689 Directed Teaching Experience in Dance U G 1-5**

Designed to aid prospective teachers of dance in their development of essential teaching skills in a variety of settings.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
Repeatable to a maximum of 10 cr hrs.

**691 Dance Practicum I U G 1-5**

Special applied projects for upper level dance majors.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson.  
Repeatable to a maximum of 30 cr hrs.

**692 Workshop in Dance U G 1-15**

Concentrated study of dance and related areas; nature of workshop depends upon selected emphasis.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of workshop director. Repeatable to a maximum of 15 cr hrs.

**693 Individual Studies in Dance U G 1-5**

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs in any combination of decimal subdivisions for undergrad cr and to a maximum of 30 cr hrs in any combination of decimal subdivisions for grad cr. These courses are graded S/U.

**693.01 Choreography**

Prereq: 648. Open only to dance majors.

**693.02 Notation**

Prereq: Written permission of dance adviser or chairperson.

**693.03 Research**

Prereq: Written permission of dance adviser or chairperson.  
Open only to dance majors.

**693.04 Production**

Prereq: Written permission of dance adviser or chairperson.  
Open only to dance majors.

**693.05 Other**

Prereq: Permission of chairperson.

**694 Group Studies U G 1-5**

Prereq: Permission of chairperson. Repeatable to a maximum of 25 cr hrs.

**699 Dance Performance U G 1-5**

Au, Wi, Sp Qtrs. 2 or more hrs of rehearsal wkly. Prereq: Permission of chairperson. Open only to dance majors; others by special permission of chairperson. Each decimal subdivision repeatable to a maximum of 24 cr hrs.

**699.04 Student Choreographic Projects****699.06 Workshops****H783 Honors Research U 3-5**

A program of research and/or dance investigation for each student with individual conferences resulting in an honors thesis or honors project.

Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a pt-hr ratio of 3.50 in dance, permission of the instructor under whose supervision the work is to be completed, and the Honors Committee of either the College of the Arts or the College of Education. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**786 Student Teaching in Dance in Elementary Education U G 3-15**

Observation, participation, and teaching in a public school; seminars and individual conferences.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 689 and permission of dance educ coordinator. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**787 Student Teaching in Dance in Secondary Education U G 3-15**

Observation, participation, and teaching in a public school; seminars and individual conferences.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 689 and permission of dance educ coordinator. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**801 Seminar in Dance G 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**802 Choreographic Projects G 1-5**

Advanced choreographic projects.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 25 cr hrs.

**803 Elements of Dance I G 2**

Wi Qtr.

**804 Elements of Dance II G 2**

Sp Qtr.

**805 Advanced Effort G 3**

Continuation of 605 and 635.

Au, Sp Qtr. 2 1½-hr cl. Prereq: 605 or 635 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**806 Advanced Space Harmony G 3**

Continuation of 606 and 636.

Sp Qtr. 2 1½-hr cl. Prereq: 606 or 636 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**807 Foundations of Labanalsysis G 2**

An examination of the spatial structure and dynamic rhythm of bodily movement in dance through the Laban framework.

Au Qtr. 1 2-hr cl. Prereq: 804.

**820 Labanotation I G 4**

Five-week study of Motif Writing/Description and five-week elementary course in Labanotation.

Au Qtr. 3 1½-hr cl.

**821 Labanotation II G 4**

Continuation of 820.

Wi Qtr. 3 1½-hr cl. Prereq: 820 or permission of instructor.

**822 Labanotation III G 4**

Continuation of 821.

Sp Qtr. 3 1½-hr cl. Prereq: 821 or permission of instructor.

**823 Labanotation IV G 3-5**

Reading, analysis, and writing of complex movement ideas.

Su, Au, Wi, Sp Qtrs. 3 1½-hr cl. Prereq: 822 or equiv.

Repeatable to a maximum of 20 cr hrs.

**824 Directing from Score G 1-5**

Teaching and coaching a dance learned from a Labanotated score.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: One qtr of 823. Repeatable to a maximum of 15 cr hrs.

**845 Issues of Choreography I G 3**

Investigation of the choreographic process; emphasis on the dynamics of movement.

Au Qtr. 2 1½-hr cl. Prereq: Admission to grad program in dance or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**846 Issues of Choreography II G 3**

Continued investigation of the choreographic process; emphasis on structure.

Wi Qtr. 2 1½-hr cl. Prereq: 845 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**847 Issues of Choreography III G 3**

Continued investigation of the choreographic process; emphasis on choreographic invention, structure, and context.

Sp Qtr. 2 1½-hr cl. Prereq: 846 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**879 University Dance Company G 1-5**

The University Dance Company functions as a professional training ground for selected students; students assume major roles and responsibilities.

Su, Au, Wi, Sp Qtrs. Arr daily; rehearsal hrs 4:30-10:00 pm. Admission by audition. Repeatable to a maximum of 45 cr hrs.

**893 Individual Studies in Dance G 1-5**

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.

Repeatable to a maximum of 30 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

**893.01 Choreography****893.02 Notation****893.03 Research****893.04 Production****893.05 Other****894 Group Studies G 1-5**

Advanced problems in dance; individual or group participation. Repeatable to a maximum of 30 cr hrs.

**970 Master's Project G 1-30**

Research and practical investigation of selected topics for purposes of the Plan B master's project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Evidence of substantial work in proposed area and grad standing in dance. Repeatable to a maximum of 30 cr hrs. These courses are graded S/U.

**970.01 Choreography and/or Performance****970.02 Reconstruction****970.03 Teaching****970.04 Production****970.05 Other**

**999 Research in Dance G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Dental Hygiene

3070 Postle Hall, 305 West 12th Avenue, 292-2228

**201 Dental Anatomy U 5**

The morphology and physiology of human teeth and surrounding structures. Longenecker.

Au Qtr. 2 cl, 9 lab hrs. Prereq: Dent hyg 1st yr standing.

**223 Perio I**

Wi Qtr. Prereq: 201

**223.01 Lecture U 3**

Understanding of the periodontium in relation to the etiology or periodontal disease, the formation of deposits on teeth and the recognition, classification, and prevention of periodontal disease. Uldricks and Brumfield.

3 cl.

**223.02 Laboratory U 4**

Demonstration of the application of technical procedures for the removal of hard and soft deposits from the surfaces of the teeth, and function as a co-therapist in the prevention, recognition, and treatment of periodontal disease. Shearer and Uldricks.

12 lab hrs.

**224 Perio II**

Sp Qtr. Prereq: Basic psychology, communications and concur 224.02.

**224.01 Lecture U 2**

A study of patient management in the practice of dental hygiene to promote the achievement of personal and professional growth as an integral member of the dental health team. DeVore and Nordstrom.

2 cl. Prereq: Basic psych and communic.

**224.02 Clinic U 2 or 3**

Clinical application of the principles and technical procedures taught in 223. DeVore and Nordstrom.

6 or 9 cl hrs. Prereq: 223, 233, and 263.

**233 Oral Histology and Embryology U 2**

A study of the microscopic anatomy of the teeth and surrounding structures; the development of the teeth, oral cavity, and face. Melfi and Nordstrom.

Wi Qtr. 2 cl. Prereq: Dent hyg 1st yr standing and basic biology; and concur: anatomy.

**236 Chemistry for Dental Hygienists I U 3**

A survey of general chemical principles and an introduction to fundamental physiological applications of organic chemistry for dental hygiene students. Foreman.

Au Qtr. 3 cl. Prereq: Chem 101 or 121, and dent hyg 1st yr standing. Not open to students with credit for 335.

**237 Pediatric Dentistry I U 1**

Introduction to techniques and procedures through demonstration and application to prepare the dental hygienist to provide care for children. Donnelly.

Sp Qtr. Prereq: 236 or Chem 102 and 223.01.

**240 Introduction to General Pathology U 2**

An introduction to the basic principles of pathology and mechanisms of disease; the pathophysiology of common problems involving the various organ systems with emphasis on clinical manifestations. Shuler.

Sp Qtr. 2 1-hr cl. Prereq: 233 and prereq or concur: Zoology 232. Not open to students with credit for 341 prior to Sp Qtr 1981.

**263 Oral Radiography U 3**

The theory and technical procedures of oral radiography. Haring and VanDis.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 201 and soph standing.

**273 Dental Materials U 4**

A study of the composition, chemical and physical properties, manipulation, and uses of various materials employed in the practice of dentistry. Johnston and Longnecker.

Sp Qtr. 2 cl, 6 lab hrs. Prereq: Dent hyg 1st yr standing, and 236 or Chem 102. Not open to students with credit for 372.

**295 Survey of Dental Hygiene U 1**

The historical, professional, legal, ethical, and preventive aspects of dental hygiene. Body.

Au Qtr. 1 cl. Prereq: Dent hyg 1st yr standing.

**301 Pain Control U 1**

The role of the dental hygienist as an assistant in anesthesia; premedication; physiological responses to and pharmacological actions of anesthetic agents; emergency treatment. Offenburger.

Wi Qtr. 1 cl or 3 lab hrs. Prereq: 321 and 331, and Anatomy 199 or Zoology 235.

**303 Office Practices and Economics U 2**

The role of the dental hygienist in dental practice and the economics involved. Hicks.

Au Qtr. 2 cl. Prereq: Dent hyg 2nd yr standing.

**313 Dental Hygiene Practice U 1**

A study of the actual practice in the dental office and of the responsibilities inherent in dental hygiene to the profession and the community. Cox.

Wi Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

**320 Oral Radiography and Interpretation U 1**

Interpretation of radiographic normal anatomic structures and pathologic entities; radiation hygiene. Haring.

Au Qtr. 1 cl. Prereq: 263, dent hyg 2nd yr standing, and permission of instructor.

**321 Perio III**

Au Qtr. Prereq: 224.01, 224.02, 237, 240, and 273.

**321.01 Lecture U 2**

Philosophy and techniques of prevention of periodontal disease. Nordstrom.

Au Qtr. 2 cl. Prereq: 224.01, 224.02, 237, 240, and 273.

**321.02 Clinic U 4**

Clinical application of principles taught in 223.

Au Qtr. 12 hrs. clinical. Prereq: 224.01, 224.02, 237, 240, and 273.

**322 Perio IV**

Wi Qtr. Prereq: 321, 331, and 341; and Nursing 303.

**322.01 Lecture U 1**

A continuation of 321.01; prepares students to provide appropriate preventive and therapeutic services necessary for the prevention of periodontal diseases within the concept of periodontal maintenance therapy. Hicks.

1 cl.

**322.02 Clinic U 3 or 4**

A continuation of 321.02

9 or 12 hrs. clinic.

**323 Perio V**

Sp Qtr. 9-15 clinic hrs. Prereq: 322 and dent hyg 2nd yr standing.

**323.01 Lecture U 1**

A continuation of 322.01; expands content and experience in periodontology and promotes analytical skills in assessment and in dental hygiene treatment planning for patients. Hicks and Nordstrom.

1 cl.

**323.02 Clinic U 3**

A continuation of 322.02.

**331 Pharmacology U 3**

A study of pharmacology including the biochemical basis of drugs used in dentistry which have implications for dental patients and the application of pharmacological agents for specific usage. Shanfeld.

Au Qtr. 3 cl. Prereq: 223.01, 240, and Zoology 232.

**338 Pediatric Dentistry II U 2**

A continuation of 237 with expanded function procedures as applied to the care of children. Griffen.

Au Qtr. 1 cl, 2 lab hrs. Prereq: 237.

**341 Introduction to Oral Diagnosis and Oral Pathology U 2**

Introduction to the diagnostic process; pathogenesis, and symptomatology and treatment of oral disease. Van Dis.

Au Qtr. 3 cl. Prereq: 221 and 240.

**350 Restorative Dentistry II U 2**

The theory and technical procedures for the restoration of compound cavity preparations with amalgam alloy and filled resins. Scheid.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Successful completion of 250.

**351 Restorative Dentistry III U 3**

An overall view of the procedures utilized by advanced qualified personnel in basic and advanced restorative dentistry; theory and technical procedures. Scheid.

Wi Qtr. 2 cl, 3 lab hrs. Prereq: Successful completion of 350.

**352 Expanded Functions Clinic I U 2**

Clinical application of expanded function duties permitted by law. Soller.

Sp Qtr. 6 clinic hrs. Prereq: 351.

**381 Community Dental Health I U 1**

An introduction to community dental health and the planning and initiation of community dental health projects. Uldricks.

Au Qtr. 1 cl. Prereq: 223, 237, 283, 295; and Humn Ntr 310.

**382 Oral Hygiene in the Schools U 1**

The principles involved in effective dental health education of the general public, especially school children. Longenecker.

**382.01 Dental Health Education I**

Current educational concepts, methods, and resources as applied to the teaching of oral health in the schools.

Wi Qtr. 1 cl. Not open to students with credit for 382.

**382.02 Dental Hygiene Education II**

Continuation of 382.01.

Sp Qtr. 1 cl. Prereq: 382.01. Not open to students with credit for 382.

**383 Community Dental Health II U 1**

A continuation of 381; an application of the basic skills and concepts of community health research methods and the continuation and evaluation of community dental health projects. Body.

Wi Qtr. 1 cl. Prereq: Dent hyg 2nd yr standing.

**384 Dental Hygiene Care for the Mentally Retarded and Developmentally Disabled U 1-5**

Various handicapping conditions and any oral manifestations; management techniques and practice in a clinical setting; comprehensive on-going follow-up in the group home setting. Bauchmoyer.

Au, Wi, Sp Qtrs. 1 cl and arr. Prereq: 223, dent hyg 2nd yr standing, and permission of instructor.

**410 Occlusion U 2**

A study of the growth and development of the teeth, the mandible and maxilla, and their interrelation. Scheid.

Au Qtr. 1 cl, 3 lab hrs. Prereq: 3rd yr standing in BSDH program.

**411 Perio VI**

Au Qtr.

**411.01 Lecture U 2**

A continuation of 323.01; includes the evaluation of results of dental hygiene therapy and a review of the literature. DeVore.

3-hr cl. Prereq: 323 and enrollment in dent hyg program.

**411.02 Clinic U 3**

A continuation of 323.02 for dental hygiene students.

9 hrs clinical. Prereq: 323 and enrollment in dent hyg program.

**412 Perio VII**

Wi, Sp Qtrs.

**412.01 Lecture U 1**

a continuation of 411.01 and addition of planning, implementing, and evaluating a research project. Body.

1 cl. Prereq: 411 and enrollment in dent hyg/edu program or special permission.

**412.02 Clinic U 3**

A continuation of 411.02

9 hr clinic. Prereq: 411 and enrollment in dent hyg edu or special permission.

**450 Expanded Functions Clinic II U 2**

A continuation of 352. Soller.

Au Qtr. 6 clinic hrs. Prereq: 352.

**451 Expanded Functions Clinic III U 2**

A continuation of 450. Soller.

Wi Qtr. 6 clinic hrs. Prereq: 450.

**452 Expanded Functions Seminar U 2**

Seminar on current expanded functions practice management techniques and current law in Ohio including practical experiences in preparation for Ohio Expanded Functions Qualifying Examination. Scheid.

Sp Qtr. 1 2-hr cl. Prereq: 451.

**485 Current Concepts in the Practice of Dental Hygiene U 2**

Seminar designed to assist students with legal, ethical, and philosophical concerns of the dental hygienist as a contemporary health care professional. Cox.

Sp Qtr. 2 hrs lecture. Prereq: 3rd yr standing in BSDH program.

**486 Practicum in Dental Hygiene U 2-6**

Supervised practice outside the traditional clinic in a setting similar to the one in which the dental hygiene student may practice, teach, or conduct research upon graduation.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Sr standing in Dental Hygiene. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**488 Case Studies Interpretation for Dental Hygienists U 1**

A review of dental topics in a case study format. Nordstrom.

Wi Qtr. 1 cl. Prereq: Graduating sr standing.

**521 Advanced Dental Hygiene Periodontics U 2**

Advanced periodontics; affords students the opportunity to become involved in data collection for longitudinal research studies in clinical periodontics. DeVore.

Au Qtr. Arr. Prereq: 323 and 3rd yr standing in dent hyg or RDH grad level. Enrollment by permission: selection will be based on student's clinical and didactic performance. This course is graded S/U.

**588 Student Teaching in Dental Hygiene Education U 3-15**

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars. Longenecker.

Au, Wi, Sp Qtrs. Arr. Prereq: Dent hyg edu 4th yr standing. A minimum of 15 cr hrs is required.

### 693 Individual Studies in Dental Hygiene U G 1-15

Advanced studies in any relevant area of dental hygiene. Staff.  
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission.  
Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 694 Group Studies in Dental Hygiene U G 1-5

Group studies in special dental hygiene areas. Staff.  
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission.  
Repeatable to a maximum of 15 cr hrs.

## Dentistry

1159 Postle Hall, 305 West 12th Avenue, 292-2401

The P mark is used in a designated series or sequence of clinical courses where the mark A-B-C-D or E is not recorded until the final course of the series or sequence is completed. The P mark indicates that the total sequence has not been completed and authorizes the student to progress into the next consecutive course of that particular series or sequence. This mark of itself indicates neither satisfactory performance or unsatisfactory performance. When a final mark is submitted by the instructor, all previous P marks shall assume and be recorded with the value of the final mark. Until such time as a final mark is recorded, the mark of P shall be given and the credit shall be counted as hours only, and shall not be considered in determining a student's point-hour ratio.

### 417 Oral Anatomy P 3

Anatomy of the oral region, dental morphology with laboratory experience.

Au Qtr. 2 cl, 3 lab hrs. Prereq: Dent fresh standing.

### 420 Orientation and History of Dentistry P 1

The evaluation of dentistry from the ancient period through the medieval, colonial, early American, and modern periods.

Au Qtr. 1 cl. Prereq: Dent fresh standing.

### 421 Community Dentistry P 1

Newer concepts of dental care which are the result of changes in environment, legislation, and dental delivery systems.

Au Qtr. 1 cl. Prereq: Dent fresh standing.

### 422 Community Dentistry P 2

Basic concepts in disease control, principles of epidemiology, dental indices of disease, and biostatistics; preventive dentistry, ramifications of the etiological factors of dental disease, and patient education in private practice.

Sp Qtr. 2 cl. Prereq: Dent fresh standing.

### 431 Restorative Dentistry P 1

Structure, interaction, biological considerations, and other properties of dental materials.

Au Qtr. 1 cl. Prereq: Dent fresh standing.

### 432 Restorative Dentistry P 3

Principles and techniques for inlay, onlay, inlay/onlay, and complete veneer crown preparation.

Wi Qtr. 1 cl, 6 lab hrs. Prereq: Dent fresh standing.

### 433 Restorative Dentistry P 2

Introduction to occlusion emphasizing form and function; the occlusal role of posterior teeth is stressed, includes waxing exercises.

Wi Qtr. 1 cl, 3 lab hrs. Prereq: Dent fresh standing.

### 434 Restorative Dentistry P 3

Principles and techniques for inlay, onlay, inlay/onlay, and complete veneer crown restorations.

Sp Qtr. 1 cl, 6 lab hrs. Prereq: Dent fresh standing.

### 435 Restorative Dentistry P 2

Principles and techniques for the fabrication of mandibular posterior all-metal fixed partial dentures; mandibular pontic design is stressed.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Dent fresh standing.

### 461 Periodontology P 2

Preventive periodontics including periodontal morphology, incidence of periodontal disease, clinical gingival health and disease, and etiology and prevention of disease.

Au Qtr. 2 cl or 2 lab hrs. Prereq: Dent fresh standing.

### 481 Removable Complete Prosthodontics P 1

Prereq: Dent soph standing.

#### 481.01 Lecture

The elemental principles of impressions and jaw relations.

Au Qtr. 1 cl.

#### 481.02 Laboratory

Au Qtr. 4 lab hrs.

### 482 Removable Complete Prosthodontics P 1

Prereq: Dent soph standing.

#### 482.01 Lecture

The principles and practices of arranging artificial teeth and processing and finishing complete dentures.

Wi Qtr.

#### 482.02 Laboratory

Wi Qtr. 4 lab hrs.

### 489 Removable Partial Prosthodontics P 1

Prereq: Dent fresh standing.

#### 489.01 Lecture

An introduction to the principles of design and construction of removable partial dentures.

Wi Qtr. 1 cl.

#### 489.02 Laboratory

Wi Qtr. 4 lab hrs.

### 505 Fundamental Principles of Oral Surgery P 2

The basic principles of oral surgery, theory and technique of patient evaluation, exodontia, preprosthetic, biopsy, and post-operative management.

Su Qtr. 1 cl. Prereq: Dent jr standing.

### 514 Oral Biology P G 4

Oral embryology and histology of teeth and surrounding structures and their correlation to the practice of dentistry.

Au Qtr. 2 cl, 4 lab hrs. Prereq: Dent soph standing, Anat 603.

### 521 Behavioral Factors in Dentistry P 1

Examination of the principles and dynamics of human behavior with emphasis on the psychosocial components of dentist-patient relationships and their consequences for dental practice.

Au Qtr. 1 cl. Prereq: Dent fresh standing.

### 531 Restorative Dentistry P 2

Principles and techniques for the fabrication of maxillary posterior fixed partial dentures.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

### 532 Restorative Dentistry P 2

Functional and cosmetic aspects of anterior teeth, and an introduction to mandibular dysfunction.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

### 533 Restorative Dentistry P 2

An introduction to the theory, principles, and techniques for simple intra-coronal posterior amalgam preparations and restoration.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

### 534 Restorative Dentistry P 2

Theory, principles, and techniques for Class III and V amalgam restorations and simple composite resin restorations.

Wi Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

### 535 Restorative Dentistry P 3

Theory, principles, and techniques for aesthetic crowns and anterior fixed partial dentures.

Wi Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing.

**536 Restorative Dentistry P 3**

Theory and techniques for fabricating correctly contoured provisional restorations; cast posts/cores; and porcelain application.

Sp Qtr. 1 cl, 6 lab hrs. Prereq: Dent soph standing.

**537 Restorative Dentistry P 2**

Fabrication of restorations under crowns using pins; composite veneers and Class IV restorations; and intro-coronal castings.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

**542 Diagnostic Sciences III P 2**

The study of the clinical and radiographic features of oral and paraoral disease, with emphasis on mucocutaneous and infectious diseases, and medial interactions.

Su Qtr. 2 cl. Prereq: Dent jr standing.

**543 Diagnostic Sciences IV P G 2**

The histopathologic and clinical study of oral disease and paraoral disease.

Au Qtr. 2 cl. Prereq: 514, Path 655, and dent jr standing.

**544 Physical Evaluation P 2**

The principles and methods of diagnosis, with emphasis on the medical history of the patient as it pertains to dental treatment.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

**546 Oral and Physical Evaluation P 2**

Introduction to the diagnostic process and the techniques of evaluating a patient; the common diseases detected during the evaluation process.

Sp Qtr. 2 cl. Prereq: Dent soph standing.

**547 Oral Radiology P 2**

The theory and operation of radiographic equipment; darkroom procedures; discussion of anatomical landmarks as seen radiographically; introduction of intraoral radiographic technics.

Wi Qtr. 2 cl. Prereq: Dent soph standing.

**549 Oral Radiology P 1**

Interpretation of radiographic evidence of pathosis; hazards of ionizing radiation.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

**551 Pediatric Dentistry P 1**

Introduction to pediatric dentistry, growth, and development and dental diagnostic procedures for children.

Su Qtr. 1 cl. Prereq: Dent jr standing.

**552 Pediatric Dentistry Laboratory P 1**

Orientation in pediatric dentistry preparatory for clinical assignments: selected preventive and restorative techniques.

Su Qtr. 3 lab hrs. Prereq: Dent jr standing. Meets formally but also includes a self-instructional unit. This course is graded S/U.

**556 Orthodontics P 1**

An introduction to craniofacial growth and development with applications toward orthodontic care.

Wi Qtr. 1 cl. Prereq: Dent fr standing.

**560 Periodontology: Examination, Diagnosis, and Instrumentation of Tissues P 1**

Basics of instrumentation including calculus detection, instrument types, and deposit removal; examination including periodontal findings, diagnosis, and treatment planning.

Au Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.

**561 Periodontology P 1****561.01 Periodontology**

Periodontal pathology and clinical diagnosis including the microscopic, radiographic, and clinical evaluation of the periodontal tissues in health and disease.

Wi Qtr. 1 cl or 3 lab hrs.

**561.02 Periodontology**

Periodontal pathology and clinical diagnosis including the micro-biological, immunologic, and host defense responses in the clinical study and management of the periodontal tissues in health and disease.

Sp Qtr. 1 cl or 3 lab hrs.

**562 Periodontology P 1**

Basics of periodontal therapy including an introduction to treatment modalities available to the general practitioner for use in management of patients with periodontal disease.

Su Qtr. 1 cl. Prereq: Dent jr standing.

**563 Periodontology P 1**

Advanced periodontal therapy including treatment planning and an introduction to advanced treatment modalities with which the general practitioner should be familiar.

Au Qtr. 1 cl. Prereq: Dent jr standing.

**567 Endodontics P 1**

Basic techniques and procedures used in the treatment of pulpless teeth.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

**568 Endodontics P 1**

Laboratory experience in endodontics.

Su Qtr. 2 lab hrs for 5 wks. Prereq: Dent jr standing.

**569\* Endodontics P 1**

The rationale and prognosis of endodontic procedures; application of treatment techniques peculiar to endodontics, including radiography, intracanal preparations, and root fillings.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

**571 Pharmacology P 1**

Introductory pharmacology including pharmacodynamics, pharmacokinetics, pharmacotherapeutics, neuromuscular blocking drugs, anti-diabetic agents, hormones, local anesthetics, drug regulations, prescription writing, and drug abuse.

Au Qtr. 1 cl. Prereq: Dent soph standing.

**572 Pharmacology P 1**

Autonomic pharmacology including cholinergics, anti-cholinergics, adrenergics, anti-adrenergics, and respiratory drugs; anti-inflammatory drugs, narcotic, and non-narcotic analgesics.

Wi Qtr. 1 cl. Prereq: Dent soph standing.

**579 Local Anesthesiology P 1**

The theory, chemistry, and technics of local anesthesia for dental procedures.

Sp Qtr. 1 cl. Prereq: Dent soph standing.

**582 Removable Complete Prosthodontics P 1**

Prereq: Dent fresh standing.

**582.01 Lecture**

Introduction to the nomenclature equipment, and materials of removable prosthodontics.

Au Qtr. 1 cl.

**582.02 Laboratory**

Au Qtr. 4 lab hrs.

**583 Removable Complete Prosthodontics P 1**

The clinical implications of complete denture construction.

Su Qtr. 1 cl. Prereq: Dent jr standing.

**587 Removable Partial Prosthodontics P 1**

Prereq: Dent fresh standing.

**587.01 Lecture**

The relation of the diagnostic aspects of removable partial dentures to their design and construction.

Sp Qtr. 1 cl.

**587.02 Laboratory**

Sp Qtr. 4 lab hrs.

**589 Removable Partial Prosthodontics P 1**

The advanced principles and design of removable partial dentures and their clinical applications.

Su Qtr. 1 cl. Prereq: Dent jr standing.

**593 Individual Studies P 1-6**

Individual studies in any of the recognized fields of dentistry.

Su, Au, Wi, Sp Qtrs. Prereq: Dent fresh or soph standing. Repeatable. This course is graded S/U.

**601 Clinical Oral Surgery and Pain Control P 2**

Sp Qtr. 4 clinic hrs. Prereq: Dent jr standing.

**614 Advanced Topics in Oral Biology P 2**

A critical examination of research reports to emphasize the scientific basis of oral health practice; attempts to unite the scientific foundation of dentistry to its clinical practice.

Wi Qtr. Prereq: Dent jr standing.

**620 Orientation to Clinical Dentistry P 1-10**

Interdisciplinary orientation and direct guidance to clinical practice including clinical policies; procedures; time, patient, and treatment management through individual conferences, group seminars, and clinical practice.

Su, Au, Wi, Sp Qtrs. Prereq: Dent jr standing. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**621 Dental Ethics P 1**

Advanced study and critical analysis of the ethical issues associated with the day to day practice of the profession.

Au, Wi, Sp Qtrs. 3 3-hr cl. Prereq: Dent jr standing.

**623 Community Dentistry P 1**

An introduction to, philosophy of, equipment for, and problems encountered in the treatment of dental needs of the handicapped homebound patient.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

**624 Clinical Preventive Dentistry P 1**

Clinical application of prevention techniques aimed at patient education; including aspects of plaque control, diet and nutrition, and therapeutics.

Sp Qtr. 3 cl. Prereq: Dent jr standing.

**630 Restorative Dentistry P 2**

Clinical techniques for recording and evaluating the dental arches to each other, to the temporomandibular joints, and to the cranium.

Su Qtr. 1 cl, 3 lab/clinic hrs. Prereq: Dent jr standing.

**631 Restorative Dentistry P 1**

Presentation of clinical restorative requirements and procedures; rubber dam application; pulpal responses to clinical procedures; pulpal protection and medicaments; tooth colored restorative materials.

Su Qtr. 1 cl. Prereq: Dent jr standing.

**632 Restorative Dentistry P 1**

Presentation of clinical procedures for diagnostic wax-up for treatment planning; provisional restoration and soft tissue management, including electrosurgery.

Au Qtr. 1 cl. Prereq: Dent jr standing.

**633 Restorative Dentistry P 1**

Presentation of materials and clinical procedures for varnishes, bases, amalgam, and single castings.

Wi Qtr. 1 cl. Prereq: Dent jr standing.

**634 Restorative Dentistry P 1**

Presentation of criteria for tooth restorability; indications for fixed partial dentures; pontic form considerations; and restorations under existing removable partial dentures.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

**635 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Au Qtr. 12 hrs clinical. Prereq: Dent jr standing. This course is offered in a series with 636 and 637. A 'P' mark as defined by the College of Dentistry may be used.

**636 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Wi qtr. 12 hrs clinical. Prereq: Dent jr standing. This course is offered in a series with 635 and 637. A 'P' mark as defined by the College of Dentistry may be used.

**637 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Sp Qtr. 12 hrs clinical. Prereq: Dent jr standing. This course is offered in a series with 635 and 636. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**651 Pediatric Dentistry****651.01 Lecture P 2**

Orientation in pediatric dentistry for clinical assignment: behavior management, prevention, restorative, procedures, pulp therapy, and developmental disabilities.

Au Qtr. 2 cl. Prereq: Dent jr standing, and 551.

**651.02 Clinical P 1**

Clinic.

Au Qtr. 2 clinic hrs. This course is offered in a series with 652.02 and 653. A 'P' mark as defined by the College of Dentistry may be used.

**652 Pediatric Dentistry****652.01 Pediatric Dentistry P 1**

Miscellaneous topics relating to pediatric dentistry such as: trauma, sedation, and space maintenance.

Wi Qtr. 1 cl. Prereq: 651.01.

**652.02 Clinical Pediatric Dentistry P 1**

Wi Qtr. 2 clinic hrs. Prereq: 651.02. This course is offered in a series with 651.02 and 653. A 'P' mark as defined by the College of Dentistry may be used.

**653 Clinical Pediatric Dentistry P 1**

Clinic.

Sp Qtr. 2 clinic hrs. Prereq: 651.02 and 652.02. May include clinical rotations at Coshocton Children's Clinic and Columbus City Health Dental Clinic. This course is offered in a series with 651.02 and 652.02. This is the final course in the series. A 'P' mark as defined by the College of Dentistry may be used.

**654 Orthodontics P 1**

Orthodontic diagnosis and treatment planning as it applies toward limited tooth movement.

Sp Qtr. 1 cl. Prereq: Dent fr standing.

**655 Orthodontics P 1**

Etiology, classification, and treatment of mild dental irregularities with emphasis upon limited tooth movement.

Au Qtr. 1 cl. Prereq: Dent soph standing.

**656 Orthodontics P 1**

Introduction to comprehensive orthodontic care including craniofacial orthopedics and orthognathic surgery.

Wi Qtr. 1 cl. Prereq: Dent soph standing.

**657 Orthodontic Technique P 2**

Laboratory/clinical technique involving diagnostic, treatment planning, and biomechanical aspects of orthodontic care.

Sp Qtr. 1 cl, 3 lab hrs. Prereq: Dent soph standing.



**658 Clinical Orthodontics I P 3**

Clinical orthodontic course entailing the provision of limited tooth movement.

Sp Qtr. Prereq: Dent jr standing. This course is graded S/U.

**659 Orthodontic Case Presentation P 1**

Students present completed treatment orthodontic cases in a seminar setting.

Prereq: Dent sr standing.

**659.01 Orthodontic Case Presentation**

Su Qtr. 1 cl. This course is offered in a sequence with 659.02. A 'P' mark as defined by the College of Dentistry may be used.

**659.02 Orthodontic Case Presentation**

A continuation of 659.01

Au Qtr. 1 cl. Offered in a sequence with 659.01, this is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**661 Clinical Periodontology I P 1**

Clinic.

Au Qtr. 3 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 662 and 663. A 'P' mark as defined by the College of Dentistry may be used.

**662 Clinical Periodontology II P 1**

A continuation of 661.

Wi Qtr. 3 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 661 and 663. A 'P' mark as defined by the College of Dentistry may be used.

**663 Clinical Periodontology III P 1**

A continuation of 661 and 662.

Sp Qtr. 3 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 661 and 663. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**668 Clinical Endodontics I P 1**

Clinic.

Wi Qtr. 2 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 669. A 'P' mark as defined by the College of Dentistry may be used.

**669 Clinical Endodontics II P 2**

A continuation of 668.

Sp Qtr. 4 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 668. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**672 Pharmacology P 1**

Review of autonomic pharmacology, psychopharmacology including antipsychotics and antidepressants, anti-Parkinson's therapy, and the principles, mechanisms, classifications, uses of antibiotic, and chemotherapeutic agents.

Au Qtr. 1 cl. Prereq: Dent jr standing.

**681 Clinical Removable Prosthodontics I P 2**

Clinic.

Au Qtr. 4 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 682 and 683. A 'P' mark as defined by the College of Dentistry may be used.

**682 Clinical Removable Prosthodontics II P 3**

A continuation of 681.

Wi Qtr. 6 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 681 and 683. A 'P' mark as defined by the College of Dentistry may be used.

**683 Clinical Removable Prosthodontics III P 3**

A continuation of 681 and 682.

Sp Qtr. 6 clinic hrs. Prereq: Dent jr standing. This course is offered in a series with 681 and 682. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**693 Individual Studies in Dentistry P G 1-6**

Advanced studies in any of the recognized fields of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dent jr standing. Repeatable. This course is graded S/U.

**700 Special Problems P G 1-15**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dent postgrad or grad standing. Repeatable.

**700.01 Advanced Oral Surgery and Anesthesia**

Diagnosis and treatment of surgical conditions of the teeth and contiguous structures; advanced techniques in surgery and local and general anesthesia.

**700.02 Advanced Orthodontics**

Applied osteology and myology in cephalometric roentgenographic interpretations; review of cephalic growth and development factors in normal occlusion; correction of malocclusions and dento-facial malformations. Williams and Wade.

**700.03 Advanced Periodontics**

Diagnosis and treatment of periodontal disease; correlation between the disease of the periodontium and probable systemic diseases, and management of diseases of a purely dental origin.

**700.04 Advanced Prosthodontics**

The diagnosis, treatment, and replacement of missing or lost teeth and parts of the mouth by prosthetic appliances; complete removable partial or fixed restorations.

**700.05 Advanced Oral Pathology and Diagnosis**

The interrelationships of gross microscopic and clinical pathology; current advances in the field of oral pathology and diagnosis.

**700.06 Advanced Endodontics**

The diagnosis of pulp and periapical diseases and their treatment by surgical and non-surgical techniques.

**700.07 Advanced Pedodontics**

Lectures, seminars, and clinical practice encompassing all phases of pedodontics and interceptive orthodontics.

**700.08 Advanced Dental Materials**

The science of dental materials.

**700.09 Advanced Oral Histology and Embryology**

The principles of histology and embryology applied to the structures in the oral region— their development, morphology, functions, and clinical relationships.

**700.10 Advanced Operative Dentistry**

Clinical problems in operative dentistry and their correlation with problems in related fields of dentistry; special emphasis on preventive dentistry.

**701 Advanced Clinical Oral Maxillofacial Surgery P 4**

Clinical experience in removal of teeth, biopsy, minor preprosthetic, and post operative patient care.

Su, Au, Wi Qtrs. 1 cl, 4 clinic hrs. Prereq: Dent sr standing.

**704 Advanced Oral and Maxillofacial Surgery P 2**

Diagnosis and management of infections, cysts, tumors, deformities, and fractures of the jaws and associated structures.

Au Qtr. 2 cl. Prereq: Dent sr standing.

**708 Hospital Dentistry**

Define the role of the hospital in the treatment of dental patients and provide experience in the hospital so the dentist can contribute to total patient care.

Su, Au, Wi, Sp Qtrs. 1 week. Prereq: Dent jr standing.

**708.01\* Lecture P G 1**

Hospital dental practice, hospital staff organization, privileges, medical records, patient evaluation, operating room, emergency room protocol, in-patient orders and care.

Au Qtr. 1 cl. Prereq: Dent jr standing.

**708.02 Clinic: University Hospital P 1**

In-patient and out-patient general anesthesia, operating room, emergency room, out-patient dentistry, clinics, hospital pathology service, medicine and surgery conferences, ward rounds, laboratory services, oral surgery rounds.

Su, Au, Wi, Sp Qtrs. 1 4-hr clinic. Prereq: 708.01.

**708.03 Clinic: Children's Hospital P 1**

Operating room, emergency room, out-patient dentistry, out-patient clinics, observation in general anesthesia, medical and surgical conferences, ward rounds, laboratory services.

Su, Au, Wi, Sp Qtrs. 1 4-hr clinic. Prereq: 708.01.

**720 Advanced Clinical Dentistry P 1-12**

Provides interdisciplinary orientation and direct guidance to clinical practice including clinical policies; procedures; time, patient, and treatment management through individual conferences, group meetings, and clinical practice.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Dent sr standing. Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**721 Community Dentistry P 1**

Dental practice administration: dental jurisprudence; ethics and legal aspects of the practice of dentistry.

Sp Qtr. 1 cl. Prereq: Dent jr standing.

**722 Community Dentistry P 1**

Dental practice administration: dental economics, records, and tax liability.

Su Qtr. 1 cl. Prereq: Dent sr standing.

**723 Community Dentistry P 1**

Dental practice administration: the social aspects of the practice of dentistry.

Au Qtr. 1 cl. Prereq: Dent sr standing.

**724 Clinical Preventive Dentistry P 1**

A continuation of 624.

Wi Qtr. 3 cl. Prereq: Dent sr standing.

**730 Restorative Dentistry P 1**

Special topics in Restorative Dentistry; changes in clinical procedures occurring very recently due to acquisition of new knowledge.

Su Qtr. 1 cl. Prereq: Dent sr standing.

**731 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Su Qtr. 12 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 732 and 733. A 'P' mark as defined by the College of Dentistry may be used.

**732 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Au Qtr. 6 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 731 and 733. A 'P' mark as defined by the College of Dentistry may be used.

**733 Clinical Restorative Dentistry P 4**

Clinical experience in single tooth and fixed partial denture therapy including diagnosis, prognosis, treatment planning, hard and soft tissue management, restoration, and recall procedures.

Wi Qtr. 12 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 731 and 732. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**734\* Clinical Restorative Dentistry P 2**

Clinical competency examinations; examinations of senior students' ability to perform efficient, high quality routine dentistry in an unsupervised environment.

Wi Qtr. 2 hrs clinical. Prereq: Dent sr standing.

**742 Oral Oncology P G 1**

Advanced study of the pathophysiology of neoplasia; and the detection, diagnosis and management of oral cancer.

Au Qtr. 1 cl. Prereq: Dent sr standing.

**744 Practical Approach to Oral Disease P 2**

The clinical evaluation and management of patients with common oral lesions.

Su Qtr. 1 2-hr cl. Prereq: dent jr standing.

**745 Clinical Oral and Physical Evaluation I P 1**

Wi Qtr. 2 clinic hrs. Prereq: Dent jr standing.

**746 Clinical Oral and Physical Evaluation II P 1**

A continuation of 745.

Su Qtr. 2 clinic hrs. Prereq: Dent sr standing.

**747 Clinical Oral Radiology I P 1**

Wi Qtr. 2 clinic hrs. Prereq: Dent jr standing.

**748 Clinical Oral Radiology II P 1**

A continuation of 747.

Sp Qtr. 2 clinic hrs. Prereq: Dent jr standing.

**749 Clinical Oral Radiology III P 1**

A continuation of 748.

Su Qtr. 2 clinic hrs. Prereq: Dent sr standing.

**751 Clinical Pediatric Dentistry P 1**

Clinic.

Su Qtr. 2 hrs clinic. Prereq: Dent sr standing. May include clinical rotations at Coshocton Children's Clinic and Columbus City Health Dental Clinic. This course is offered in a series with 752 and 753. A 'P' mark as defined by the College of Dentistry may be used.

**752 Clinical Pediatric Dentistry P 1**

Clinic.

Au Qtr. 2 hrs clinic. Prereq: 751. May include clinical rotations at Coshocton Children's Clinic and Columbus City Health Dental Clinic. This course is offered in a series with 751 and 753. A 'P' mark as defined by the College of Dentistry may be used.

**753 Clinical Pediatric Dentistry P 1**

Clinic.

Wi Qtr. 2 hrs clinical. Prereq: 751 and 752. Includes clinical rotation at Coshocton Children's Dental Clinic and Columbus City Health Dental Clinic. This course is offered in series with 751 and 752. This is the final course in the series. A 'P' mark as defined in the College may be given.

**758 Clinical Orthodontics II P 3**

Clinical orthodontic course entailing the provision of limited tooth movement.

Wi Qtr. Prereq: Dent sr standing.

**761 Clinical Periodontology IV P 1**

Clinic.

Su Qtr. 2 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 762 and 763. A 'P' mark as defined by the College of Dentistry may be used.

**762 Clinical Periodontology V P 1**

A continuation of 761.

Au Qtr. 2 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 761 and 763. A 'P' mark as defined by the College of Dentistry may be used.

**763 Clinical Periodontology VI P 1**

A continuation of 761 and 762.

Wi Qtr. 2 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 761 and 762. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**768 Clinical Endodontics III P 2**

Clinic.

Au Qtr. 4 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 769. A 'P' mark as defined by the College of Dentistry may be used.

**769 Clinical Endodontics IV P 1**

A continuation of 768.

Wi Qtr. 2 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 768. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**771 Pharmacology P 1**

Pharmacology of drugs used primarily for medical conditions including cardiac glycosides, anti-arrhythmics, calcium channel blockers, anti-anginals, anti-hypertensives, anti-coagulants, anti-neoplastics, and gastrointestinal medications.

Su Qtr. 1 cl. Prereq: Dent sr standing.

**778 Anxiety and Pain Control P 2**

Principles of anxiety control by sedative techniques with nitrous oxide-oxygen conscious sedation and with oral I.M. or I.V. light conscious sedation; methods of pre-operative assessment, monitoring, and management of complications; a review of light sedation, deep sedation, and general anesthesia.

Wi Qtr. 2 cl. Prereq: Dent jr standing.

**781 Clinical Removable Prosthodontics IV P 3**

Clinic.

Su Qtr. 6 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 782 and 783. A 'P' mark as defined by the College of Dentistry may be used.

**782 Clinical Removable Prosthodontics V P 2**

A continuation of 781.

Au Qtr. 4 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 781 and 783. A 'P' mark as defined by the College of Dentistry may be used.

**783 Clinical Removable Prosthodontic VI P 2**

A continuation of 781 and 782.

Wi Qtr. 4 clinic hrs. Prereq: Dent sr standing. This course is offered in a series with 781 and 782. This is the final course of the series. A 'P' mark as defined by the College of Dentistry may be used.

**789 Experiential Education in Dentistry P 0**

Advanced clinical patient care.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Graduating sr or other dental student with special permission. Repeatable. This course is graded S/U.

**790 Advanced Dental Topics  
or Problems P 1-6**

Lectures and discussions of current topics, laboratory or clinical participation in problems or investigation related to dentistry. Presented by faculty, guest lecturers or clinicians.

Au, Wi, Sp Qtrs. Arr. Prereq: Open only to dent students who meet college stated prereqs and who have permission of the college office and instructor. Maximum number of cr hrs course may be repeated varies with student's standing and according to criteria established by college. These courses are graded S/U.

- 790.01 Community Dentistry
- 790.02 Community Dentistry
- 790.03 Community Dentistry
- 790.04 Community Dentistry
- 790.05 Community Dentistry
- 790.06 Community Dentistry
- 790.07 Community Dentistry
- 790.08 Fixed Prosthodontics
- 790.09 Fixed Prosthodontics
- 790.10 Fixed Prosthodontics
- 790.11 Fixed Prosthodontics
- 790.12 Fixed Prosthodontics
- 790.13 Fixed Prosthodontics
- 790.14 Fixed Prosthodontics
- 790.15 Endodontics
- 790.16 Endodontics
- 790.17 Endodontics
- 790.18 Endodontics

- 790.19 Endodontics
- 790.20 Endodontics
- 790.21 Endodontics
- 790.22 Operative Dentistry
- 790.23 Operative Dentistry
- 790.24 Operative Dentistry
- 790.25 Operative Dentistry
- 790.26 Operative Dentistry
- 790.27 Operative Dentistry
- 790.28 Operative Dentistry
- 790.29 Oral Biology
- 790.30 Oral Biology
- 790.31 Oral Biology
- 790.32 Oral Biology
- 790.33 Oral Biology
- 790.34 Oral Biology
- 790.35 Oral Biology
- 790.36 Oral Diagnosis and Medicine
- 790.37 Oral Diagnosis and Medicine
- 790.38 Oral Diagnosis and Medicine
- 790.39 Oral Diagnosis and Medicine
- 790.40 Oral Diagnosis and Medicine
- 790.41 Oral Diagnosis and Medicine
- 790.42 Oral Diagnosis and Medicine
- 790.43 Oral Surgery
- 790.44 Oral Surgery
- 790.45 Oral Surgery
- 790.46 Oral Surgery
- 790.47 Oral Surgery
- 790.48 Oral Surgery
- 790.49 Oral Surgery
- 790.50 Pediatric Dentistry
- 790.51 Pediatric Dentistry
- 790.52 Pediatric Dentistry
- 790.53 Pediatric Dentistry
- 790.54 Pediatric Dentistry
- 790.55 Pediatric Dentistry
- 790.56 Pediatric Dentistry
- 790.57 Periodontics
- 790.58 Periodontics
- 790.59 Periodontics
- 790.60 Periodontics
- 790.61 Periodontics
- 790.62 Periodontics
- 790.63 Periodontics
- 790.64 Removable Prosthodontics
- 790.65 Removable Prosthodontics
- 790.66 Removable Prosthodontics
- 790.67 Removable Prosthodontics
- 790.68 Removable Prosthodontics
- 790.69 Removable Prosthodontics
- 790.70 Removable Prosthodontics
- 790.71 Oral Radiology
- 790.72 Oral Radiology
- 790.73 Oral Radiology
- 790.74 Oral Radiology
- 790.75 Oral Radiology
- 790.76 Oral Radiology
- 790.77 Oral Radiology
- 790.78 Oral Pathology
- 790.79 Oral Pathology
- 790.80 Oral Pathology
- 790.81 Oral Pathology
- 790.82 Oral Pathology
- 790.83 Oral Pathology
- 790.84 Oral Pathology

790.85 Orthodontics  
 790.86 Orthodontics  
 790.87 Orthodontics  
 790.88 Orthodontics  
 790.89 Orthodontics  
 790.90 Orthodontics  
 790.91 Orthodontics  
 790.92 Allied Topics  
 790.93 Allied Topics  
 790.94 Allied Topics  
 790.95 Allied Topics  
 790.96 Allied Topics  
 790.97 Allied Topics  
 790.98 Allied Topics  
 790.99 Research

## 792 Special Lectures in Dentistry P G 1-5

Lectures in special phases in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
 Repeatable.

### 792.01 Oral Pathology

General principles and concepts of pathology associated with the oral cavity.

### 792.02 Oral Pathology

Local disturbances of the oral cavity.

### 792.03 Oral Pathology

Systemic disturbances and their oral manifestations.

### 792.04 Dental Radiology

Radiologic methods and diagnosis.

### 792.05 Oral Diagnosis

Examination and diagnosis of oral disease.

### 792.06 Dental Therapeutics

Principles of pharmacology in relation to patient care.

### 792.07 Physical Diagnosis

Physical evaluation of the dental patient and its correlation with the required treatment.

### 792.08 Dental Epidemiology

The principles of epidemiology in relation to dental health and disease.

### 792.12 Errors in Measurement

Discussion of distribution functions as applied to random errors and the propagation of error.

Su Qtr. 1 cl. Prereq: College algebra or equiv. Designed to acquaint MS candidates in dentistry with errors in physical research.

### 792.13 Oral Microbiology

Discussion of oral and systemic diseases with oral manifestation of bacterial, viral, and immunologic etiology.

Sp Qtr. 2 cl.

### 792.14 Behavioral Sciences in Dentistry

A study of the psychological aspects of dental treatment involving the dentist, patients, and dental office staff.

Repeatable to a maximum of 5 cr hrs.

### 792.15 Introduction to the Research Process

Familiarization with scientific activity and statistics, examination of literature, library searches, and completion of a research outline.

Su, Au, Wi Qtrs. Arr. Prereq: Dentists with grad standing or permission of course director.

### 792.16 Principles of Mechanics for Orthodontists P G 4

Study of basic mechanical principles including forces, moments, couples, displacements, rotations, equilibrium, stress-strain, and properties of orthodontic wires.

Wi Qtr. 2 4-hr cl, 2 hr lab. Prereq: Enrollment in grad orthodontics program. Open only to grad students in orthodontics.

## 793 Individual Studies P G 1-5

Individual assignments in each specialty of dentistry; students will elect to work in desired subjects after a conference with the instructor in charge.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
 Repeatable. These courses are graded S/U.

### 793.01 Oral Surgery and Anesthesia

### 793.02 Orthodontics

793.03 Periodontics  
 793.04 Prosthodontics  
 793.05 Oral Pathology  
 793.06 Endodontics  
 793.07 Pedodontics  
 793.08 Operative Dentistry  
 793.09 Oral Diagnosis  
 793.10 Fixed Partial Prosthodontics  
 793.11 Oral Radiography

## 794 Group Studies P G 3-5

Group studies on special problems in each specialty of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
 Repeatable.

### 794.01 Oral Surgery and Anesthesia

### 794.02 Orthodontics

### 794.03 Periodontics

### 794.04 Prosthodontics

### 794.05 Oral Pathology

### 794.06 Endodontics

### 794.07 Pedodontics

### 794.08 Operative Dentistry

### 794.09 Oral Diagnosis

### 794.10 Fixed Partial Prosthodontics

### 794.11 Oral Radiography

## 795 Seminars in Dentistry P G 1-5

Discussion of advances in dental science and review of original literature.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Dent grad standing.

### 795.01 Oral Surgery and Anesthesia

### 795.02 Orthodontics

### 795.03 Periodontics

### 795.04 Prosthodontics

### 795.05 Oral Pathology

### 795.06 Endodontics

### 795.07 Pedodontics

### 795.08 Operative Dentistry

### 795.09 Oral Diagnosis

### 795.10 Fixed Partial Prosthodontics

### 795.11 Oral Radiography

## 796 Specialty Seminars in Dentistry P G 1-5

Seminars in each of the specialty areas of dentistry for discussion of pertinent literature, presentation, and discussion of research work and demonstration of advanced techniques.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
 Repeatable.

### 796.01 Oral Surgery and Anesthesia

### 796.02 Orthodontics

### 796.03 Periodontics

### 796.04 Prosthodontics

### 796.05 Oral Pathology

### 796.06 Endodontics

### 796.07 Pedodontics

### 796.08 Operative Dentistry

### 796.09 Oral Diagnosis

### 796.10 Fixed Partial Prosthodontics

### 796.11 Oral Radiography

## 798 Advanced Clinical Practice in Dentistry P 3-10

Broad exposure to advanced principles and practices in each specialty of dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.  
 Repeatable to maximum of 120 cr hrs.

### 798.01 Oral Surgery and Anesthesia

### 798.02 Orthodontics

### 798.03 Periodontics

### 798.04 Prosthodontics

- 798.05 Oral Pathology  
 798.06 Endodontics  
 798.07 Pedodontics  
 798.08 Operative Dentistry  
 798.09 Oral Diagnosis  
 798.10 Fixed Partial Prosthodontics  
 798.11 Oral Radiography

**885 Histologic Laboratory Technique G 1-5**

The preparation of oral and dental tissues for microscopic study.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**886 Research Methods in Dentistry G 3-5**

A discussion on conceptual, methodological, and technical problems encountered in development of dental research projects.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**894 Group Studies G 3-5**

Advanced group studies in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable.

**993 Individual Studies G 3-5**

Advanced individual studies in dentistry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable. This course is graded S/U.

**999 Research in Dentistry G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Dutch

314 Cunz Hall, 1841 Millikin Road, 292-6985

**571†\* Basic Dutch for Reading U G 5**

Fundamentals of grammar for reading purposes; applicable to students in humanities, sciences, social sciences, and professional schools.

Wi Qtr. 5 cl. Prereq: Grad standing or permission of instructor.

**572†\* Dutch for Research U G 3**

Continuation of the principles learned in 571; applied readings in students' disciplines; emphasis on close translation, grammatical analysis, and vocabulary building.

Sp Qtr. 3 cl. Prereq: 571 or equiv or permission of instructor.

## East Asian Languages and Literatures

276 Cunz Hall 1841 Millikin Road, 292-5816

**131 East Asian Humanities U 5**

Introduction to the contemporary and traditional cultures of China, Korea, and Japan. Taught through readings, films, demonstrations, and discussions.

Su, Au, Wi, Sp Qtrs. 5 cl. BER/LAC/LAR course.

**151 Masterpieces of East Asian Literature in Translation U 5**

Highlights of Chinese, Japanese, and Korean literature; novels, stories, plays, and poetry from the world's longest continuous cultural tradition.

Su, Au, Wi, Sp Qtrs. 5 cl. BER/LAC/LAR course.

**293 Individual Studies U 1-5**

Individual investigation of problems in East Asian cultures, languages, and literatures.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-10**

Special group studies course in some special area of East Asian language, literature, or culture.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 20 cr hrs.

**323 The Buddhist Tradition U 5**

History and structure of Buddhism from founding to present in South, Southeast, and East Asia; emphasis on rituals, beliefs, and local and regional variations.

5 cl. Prereq: Comp Std 270. Not open to students with credit for Rel Stds 323. Cross-listed in Religious Studies.

**341 Thought in China and Japan U 5**

The shaping of two cultures; essentials of the major traditional schools of thought in China and Japan and their impact on society.

Sp Qtr. 5 cl. BER/LAC course.

**693 Individual Studies U G 1-5**

Individual investigation of East Asian cultures, languages, and literatures.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**701 Pedagogical Syntax for East Asian Languages U G 3**

Training in the presentation of grammar in East Asian language classes; special attention given to problems of translating linguistic studies into teachable units.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor.

**702 Materials Preparation for East Asian Languages U G 3**

Preparation of materials for teaching Chinese, Japanese, and Korean; emphasis on the special problems faced by English-speaking students in learning these languages.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor.

**850 Analytical Methods G 5**

Introduction to the literary and linguistic analysis of Chinese and Japanese texts.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Chinese or Japanese 800.

## East European Languages and Literatures

232 Cunz Hall, 1841 Millikin Road, 292-6733

**294 Group Studies U 1-5**

Topics related primarily to Albanian, Estonian, Hungarian, Latvian, and Lithuanian.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for each of the languages listed above.

**671 Grammar of Selected East European Languages U G 5**

Fundamentals of grammar as required for reading one of the following: Albanian, Estonian, Hungarian, Latvian, Lithuanian, or Romanian.

Wi Qtr. 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 25 cr hrs; individual languages not repeatable.

**672 Reading of Selected East European Languages U G 5**

Reading of elementary and intermediate texts and translating into English one of the following: Albanian, Estonian, Hungarian, Latvian, Lithuanian, or Romanian.

Sp Qtr. 5 cl. Prereq: 671 (same language) or equiv, and permission of instructor. Repeatable to maximum of 25 cr hrs; individual languages not repeatable.

**693 Individual Studies U G 1-10**

Topics related primarily to Albanian, Estonian, Hungarian, Latvian, Lithuanian, and Romanian.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of chairperson. Repeatable to a maximum of 20 cr hrs, including cr hrs in 693.40. This course is graded S/U.

**694 Group Studies U G 1-10**

Topics related primarily to Albanian, Estonian, Hungarian, Latvian, Lithuanian, and Romanian.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for each of the languages listed above.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

## Economics

410 Arps Hall, 1945 North High Street, 292-6701

**100 Introduction to Economics U 5**

Study of economic concepts basic to a wide range of social problems; application of these principles to understanding economic activity in firms, households, and the economy.

Su, Au, Wi, Sp Qtrs. 5 cl. Recommended as a foundation for further courses in economics. Not open to students with credit for 200 or Agr Econ 100. BER/LAC/LAR course. SS Admis Cond course.

**200 Principles of Economics I U 5**

Introduction to economic theory: supply and demand for goods and services; market structure; the distribution of income.

Su, Au, Wi, Sp Qtrs. 5 cl. H200 (honors) may be available to students enrolled in an honors program or by permission of dept. First required course for students planning to take 500-level courses in econ. BER/LAC/LAR course. SS Admis Cond course.

H200A — Designates a version which requires Math 132 or equiv or permission of instructor.

**206 Economics of the Ghetto U 5**

Interaction between economic problems and race problems in urban areas.

5 cl. Prereq: 100 or equiv. Not open to students with credit for 206.02. BER/LAC/LAR course. SS Admis Cond course.

**294† Group Studies U 1-5**

Current problems not covered in other courses; application of economic analysis of scarcity and choice of current policy significance.

5 cl. Prereq: 100 or 200 or equiv. Repeatable to a maximum of 10 cr hrs.

**400 Principles of Economics II U 5**

Continuation of 200; theory of national income determination; economic fluctuations; money; government policy; international economics.

Su, Au, Wi, Sp Qtrs. 5 cl. H400 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 200 or permission of instructor. BER/LAC/LAR course.

**442 Elementary Economic Statistics U 5**

Descriptive statistics, discrete probability, Bayes law, random variables, sampling distributions.

Au, Wi, Sp Qtrs. 3 cl, 2 1-hr labs. Prereq: 10 cr hrs in math above the level of 104.

**500† Evolution of Economic Thought U G 5**

Critical analysis of ideas of great economists, factors which influenced those ideas; their impact upon social and economic development of the modern world.

4 cl. Prereq: 400 or equiv.

**501 Intermediate Microeconomic Theory U G 5**

Theory of consumer behavior; theory of the firm; costs and production; factor price determination; general equilibrium.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

A — Designates a version which requires Math 132 or equiv or permission of instructor.

**502 Intermediate Macroeconomic Theory U G 5**

Analysis of the determinants of national output, income and employment levels; theory of economic growth and progressive equilibrium in an economy.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv; 501 recommended.

A — Designates a version which requires Math 132 or equiv or permission of instructor.

**508\* Comparative Economic Systems U G 5**

Principles and institutions for economic decision making under capitalism, socialism, communism, and mixed systems; comparison of selected countries.

4 cl. Prereq: 400 or equiv. Not open to students with credit for 690.

**512 General Economic History U G 5**

Evolving institutional changes fundamental to Western development; analysis of the rise of nation-state, commercial and industrial development, and evolution of a market economy.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

**520 Money and Banking U G 5**

Organization, operation, and economic significance of our monetary and banking system; special reference to current conditions and problems.

Su, Au, Wi, Sp Qtrs. 4 cl. H520 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv.

**530 Government Finance in the American Economy U G 5**

Analysis of fiscal institutions and decision making in the public sector of the American economy; budget planning and execution; taxation, debt, and fiscal policy.

Su, Au, Wi, Sp Qtrs. 4 cl. H530 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv.

**532† Public Expenditure and Cost-Benefit Analysis U G 5**

Economics of public choice, public goods, non-market allocations, collective decision-making, and net-benefit maximization; case studies.

4 cl. Prereq: 400 or equiv.

**550† Economic Development U G 5**

Empirical and theoretical consideration of long-term economic changes, including changes in industrial structure, technology, and level of national product; emphasis on developing economics.

4 cl. Prereq: 400 or equiv. Not open to students with credit for 610 or 650.

**553† Population U G 5**

Techniques of population analysis; the demographic transition and economic theories of population; impact of population change both in the Third World and in industrialized nations.

4 cl. Prereq: 400 or equiv.

**554† Economics of Energy U G 5**

Energy, economic growth, and stabilization; comparison among world regions, with special reference to the role played by international oil markets.

5 cl. Prereq: 400; History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences. Not open to students with credit for 671.

**558\* Area Studies in Economic Development U G 5**

Regional analysis of economic conditions; measurement and interpretation of economic growth; national development strategies and resource utilization; inter-regional cooperation and international economic relations.

4 cl. Prereq: 400 or equiv.

**558.04 The Soviet Union and Eastern Europe**

Not open to students with credit for 559.

**560 International Economic Relations U G 5**

Survey of international economic relations; the basis of world trade; commercial and financial policy, particularly of the United States; and recent international economic organization.

Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv. Not recommended for students who plan to take 665 and 666.

**570 Government and Business U G 5**

Economic and legal aspects of government regulation of business in the United States; philosophies and concepts of public control; contemporary problems.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 400 or equiv.

**580 Labor Economics and Industrial Relations U G 5**

Survey of the field of labor economics; trade unionism, collective bargaining; wage determination, employment, unemployment; labor legislation.

Au, Wi, Sp Qtrs. 4 cl. H580 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 400 or equiv.

**590† Urban Economics U G 5**

Analysis of urban spatial structure utilizing the techniques of economics; detailed studies of urban problems concerning housing, congestion, air pollution, local public finance, zoning, and city size.

4 cl. Prereq: 400 or equiv. Not open to students with credit for 206 or 694.07.

**591† Economics of Environmental Quality U G 5**

Economic analysis of the relationships among natural resources, growth, pollution control, congestion, and social institutions.

4 cl. Prereq: 400 or equiv. Offered in cooperation with Natural Resources.

**H596† Honors Seminar in Economics U 2 or 3**

Presentations by selected faculty of economic topics and issues of current interest; discussion of research problems and methods.

1 2-hr cl. Prereq: Honors program enrollment or permission of instructor.

**600 Applications of Mathematics in Economic Analysis U G 5**

Coverage of the most common applications of mathematics to economic analysis and econometrics; the necessary tools from matrix algebra and calculus.

Au Qtr. 5 cl. Prereq: Math 152 or equiv and permission of instructor.

**613\* Economic History of the United States U G 5**

General survey from discovery of America to present; European economic background; westward movement and its effects; development of economic institutions in the United States.

Wi Qtr. 4 cl. Prereq: 501 and 502, or grad standing.

**614\* Economic History of Western Europe U G 5**

Survey from 1750 through the post-World War II period; from Britain in the West to Russia in the East.

Sp Qtr. 4 cl. Prereq: 501 and 502, or grad standing.

**625 National and International Money Markets U G 5**

Organization, functions, and control of money markets and their submarkets; flow of funds in these markets and investment policies of market participants.

Au Qtr. 4 cl. Prereq: 501 and 520.

**631 Federal Finance and Fiscal Policy U G 5**

The economics of government spending and taxation; analysis of the fiscal role and instruments of government and their effects on the economy.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level or grad standing. Not open to students with credit for 630.

**633 State and Local Government Finance U G 5**

Economic analysis of revenues and expenditures of state and local governments; vertical and horizontal relationships between agencies and units; specific problems in these areas.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level or grad standing.

**640 Probability and Statistical Decision Theory U G 5**

Theory of probability and stochastic processes; statistical inference, tests of significance and analysis of variance; statistical decision theory.

Au Qtr. 4 cl. Prereq: 442 and Math 152, or equivalents.

**641 Applied Regression and Correlation Analysis U G 5**

The general linear regression model; multiple correlation, path analysis, analysis of variance and tests of significance; specification errors.

Wi Qtr. 4 cl. Prereq: 400 and 442, or equivalents.

**642 Applied Economic Models and Forecasting U G 5**

Application of economic and statistical principles to economic problems; applications include topics in labor economics, industrial organization, macro models, and international trade.

Sp Qtr. 4 cl. Prereq: 501, 502, 641, and Math 132; or equivalents.

**650† Economic Development: Issues and Policies U G 5**

Historical and stage theories of underdevelopment; sources and patterns of growth and development; problems of demography, unbalanced growth, agriculture, and industry; foreign trade and regional development.

4 cl. Prereq: 501 or equiv. Not open to students with credit for 652.

**651† Latin American Economic Development U G 5**

Economic analysis of development strategies and of trade, financial, price, and other policies in a Latin American context.

4 cl. Prereq: 400 or equiv. Not open to students with credit for 558 or 558.01.

**665 International Commodity Flows: Theory and Policy U G 5**

Comparative advantage and the gains from trade; tariffs and other trade restrictions; economic effects of protective policies; U.S. commercial policies; regional economic integration.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level or grad standing.

**666 Financial Aspects  
of International Trade U G 5**

International payments and receipts; foreign exchange markets; balance-of-payments adjustment under different monetary systems; macroeconomic policy; international monetary reforms; foreign investments; multinational corporations.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in econ at the 500 level, or grad standing.

**670 Structure of Industry U G 5**

Nature, role, and regulation of competition; market structure and social performance; antitrust laws; current economic, legal, and policy problems in the antitrust area.

Au Qtr. 4 cl. Prereq: 501 or grad standing.

**672 Economic Analysis of Japanese Firms and Markets U G 5**

Applications of Economic Analysis to Japanese industrial organization including the firm's internal incentive structure, labor markets, and financial institutions.

Sp Qtr. 4 cl. Prereq: 501; 670 recommended.

**693 Individual Studies U G 1-5**

Advanced readings in economics and related fields.

Su, Au, Wi, Sp Qtrs. Prereq for jrs: An average of B or better in all econ courses taken and a cumulative pt-hr ratio of 3.00 or above. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 3-5**

Advanced courses in economics and related fields.

Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**700 Advanced Mathematical Techniques in Economics G 5**

Advanced mathematical analysis of economics problems; topics to include basic set theory and real analysis; optimization subject to inequality constraints and dynamic optimization.

Au Qtr. 2 1½-hr cl. Prereq: 600 or equiv. Not open to students with credit for this topic under 894.

**705 Microeconomic Theory Survey U G 4**

Theory of consumer behavior; theory of the firm; costs and production; factor price determination; general equilibrium.

Au Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 501.

**706 Macroeconomic Theory Survey U G 4**

Analysis of the determinants of the national output; income and employment levels; theory of economic growth and progressive equilibrium in an economy.

Wi Qtr. 4 cl. H706 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Grad standing or permission of instructor. Not open to students with credit for 502.

**717\* Economics of Socialism U G 5**

Survey of socialist thought and movements; relations of socialist thought to the theory and practice of socialist economics; planning, allocation, pricing, and controls.

Au Qtr. 4 cl. Prereq: 501 and 502, or 705 and 706, or grad standing.

**718\* Economic Analysis of the Soviet Union and Eastern Europe U G 5**

Analysis of the pattern of economic growth and theory, and practice of economic planning in the Soviet Union and Eastern Europe; comparison with Communist China.

Wi Qtr. 4 cl. Prereq: 501 and 502, or 705 and 706, or grad standing.

**730 Public Finance U G 5**

Comprehensive survey and analysis of the principal fiscal activities of contemporary governments; logic of public sector activity, taxation principles and practice, intergovernmental relations, current fiscal problems.

Wi Qtr. 4 cl. Prereq: 705 and grad standing, or permission of instructor. Not open to students with credit for 530.

**740 Inference and Decision Analysis  
under Uncertainty U G 5**

Distribution theory, point and interval estimation, statistical hypothesis testing, decision analysis under uncertainty.

Wi Qtr. 4 cl. Prereq: 640 or equiv.

**741 General Linear Regression Analysis U G 5**

Multiple regression analysis; the general linear model; non-linear and distributed lag models.

Sp Qtr. 4 cl. Prereq: 600 and 740, or Stat 521.

**742 Econometrics U G 5**

Review of the general linear model; identification; estimating criteria; single and simultaneous equation estimation; econometric application.

Au, Sp Qtrs. 4 cl. Prereq: 741.

**H783 Honors Research U 3-5**

A program of study arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the econ courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree *with distinction* in econ. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Urban Economics U G 5**

Application of economic theory to urban problems; topics include slums, residential segregation, intracity location of economic activity, urban renewal, urban sprawl, transportation, and governmental organization.

Su, Sp Qtrs. 4 cl. Prereq: 705, Geog 650, and grad standing; or permission of instructor.

**802† History of Economic Thought G 5**

A survey of economic thought with emphasis on the period from Adam Smith to the present.

**804 Microeconomic Theory I G 5**

Theories of consumers and producers.

Au Qtr. Prereq: 705 or equiv.

**805 Microeconomic Theory II G 5**

Classical partial equilibrium (competition, monopoly, monopolistic competition, Cournot and Bertrand oligopoly models, location models) and general equilibrium theory.

Wi Qtr. Prereq: 600 and 804.

**806 Macroeconomic Theory G 5**

Theory of income and employment; Keynesian aggregate supply and demand; consumption, saving, and the multiplier; determinants of investment and the accelerator; government's role.

Wi Qtr. Prereq: 600 and 706, or equivalents.

**808 Advanced Microeconomic Theory G 5**

Sp Qtr. Prereq: 600, 805, and 806.

**809 Advanced Macroeconomic Theory G 5**

Sp Qtr. Prereq: 600, 805, and 806.

**810 General Equilibrium Theory G 5**

Analysis is developed relevant to the simultaneous study of markets for all commodities and for all factors of production.

Su Qtr. 2 1½-hr cl. Prereq: 808. Not open to students with credit for this topic under 894.



**811 Applied Macroeconomics G 5**

Application of econometric methods to theoretical structures developed in 806 and 809; estimation and validation of macroeconomic models.

Au Qtr. 2 2¼-hr cl. Prereq: 742 and 809, or permission of instructor.

**815 Mathematical Economics I G 5**

Mathematical analysis of microeconomic problems including consumer and production theory and general equilibrium.

Wi Qtr. Prereq: 808.

**816 Mathematical Economics II G 5**

Mathematical analysis of macroeconomic problems including static and dynamic systems and optimal control.

Sp Qtr. Prereq: 809.

**820 Monetary Theory G 5**

Role of money in theoretical analysis of forces determining and influencing level of income, employment, and prices.

Au, Wi Qtrs. Prereq: 520, 805, and 806; or equivalents.

**821 Bank Structure and Regulation G 5**

Relation of bank regulation and supervision to composition of banking industry; impact of differing banking structures on economic growth and stability; proposals for structural changes.

Wi Qtr. Prereq: 520, 805, and 806; or equivalents.

**830 Advanced Public Finance G 5**

A theoretical and empirical investigation of the economic behavior of the public sector; theory of social goods, problems of tax structure, incidence, multi-unit finance.

Au Qtr. Prereq: 805.

**832 Advanced Public Finance II G 5**

Continuation of 830; topics include intergovernmental relations, tax incidence, and tax reform.

Wi Qtr. Prereq: 830.

**842 Advanced Econometrics G 5**

Theory and application of advanced quantitative research methods; computerized application of econometric methods developed in 742.

Wi Qtr. Prereq: 742.

**844† General Managerial Economics G 3**

MBA core course in microeconomics; production and consumer theory, market forms, welfare, distribution, general equilibrium, and capital theory.

2 1½-hr cl. Prereq: 200 or equiv. and differential and integral calculus. Not open to students in the structured MBA.

**850 Advanced Economic Development G 5**

Survey of theoretical models and methods used in economic development and planning; theories of dualistic and demographic development; inter-industry and sector models.

Wi Qtr. Prereq: 650, 705, and 706.

**861 Advanced Microeconomic Trade Theory G 5**

Advanced nonmonetary international trade theory; analysis of the effect of trade and commercial policies on the allocation of resources, income distribution, and growth.

Sp Qtr. 4 cl. Prereq: 805.

**862 Advanced Macroeconomic Trade Theory G 5**

Advanced monetary international trade theory; analysis of payments adjustments under alternative international monetary institutions.

Sp Qtr. Prereq: 805 and 806; 861 recommended.

**872\* Industrial Organization G 5**

Economic analysis of industry structure, conduct, performance, and related issues of public policy.

Wi Qtr. Prereq: 670 and 805.

**884\* Advanced Economics of the Labor Market G 5**

Economic theory and empirical evidence relating to labor allocation and wage determination.

Wi Qtr. Prereq: 805 and 806.

**895 Managerial Economics G 4**

Introduction to microeconomic theory of demand and supply, including cost and production functions; applications for management decision making and government regulation.

Au Qtr. 2 2-hr cl. Prereq: Enrollment in structured MBA.

**896 Business Conditions Analysis G 4**

Analysis of general economic conditions and their relation to decisions of the firm; economic forecasting models and methods for decision support and strategic planning.

Au, Sp Qtrs. 2 2-hr cl. Prereq: Enrollment in structured MBA.

**899 Interdepartmental Seminars G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Repeatable by permission.

**915 Seminar in Price Theory G 5**

Special topics in economic theory.

Prereq: 808 and 809. Repeatable to a maximum of 10 cr hrs.

**918† Seminar in Economic Problems of the Soviet Union and Eastern Europe G 5**

Selected research topics.

Prereq: 717 and 718. Repeatable to a maximum of 10 cr hrs.

**920† Seminar in Monetary Policy G 5**

Application of monetary theory to issues of public policy in banking and monetary affairs; examination of public hearings and policy literature.

Prereq: 820 and 821. Repeatable to a maximum of 10 cr hrs.

**930 Seminar in Government Finance G 5**

Analysis of theoretical and applied aspects of fiscal economics in the American and foreign economies; selected topics of current and permanent importance.

Prereq: 631 and 632. Repeatable to a maximum of 10 cr hrs.

**940 Seminar in Econometrics G 5**

Examination of economic problems whose solutions may advantageously be sought by use of the methods of mathematics and mathematical statistics.

Sp Qtr. Prereq: 742 and 842 or equiv or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**950† Seminar in Economic Development and Planning G 5**

Selected topics in the process of economic development and in planning for development; analysis and evaluation of planning methodologies, strategies, and systems.

Prereq: 650 and 850, or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**960† Seminar in International Economic Problems G 5**

Seminar in analytical problems, theoretical and applied, of international economic adjustments; development of techniques for implementation of policies.

Prereq: 861. Repeatable to a maximum of 10 cr hrs.

**970† Seminar in Structure and Regulation of Industry G 5**

Economic bases for government participation in business activities: antitrust, regulation, and collective decision making.

Prereq: 872. Repeatable to a maximum of 10 cr hrs.

**981† Seminar in the Economics of the Labor Market G 5**

Selected topics and issues in wage determination, employment, and unemployment.

Sp Qtr. Prereq: 882. Repeatable to a maximum of 10 cr hrs.

**995 Research Seminars G 3-5**

Intensive study of problems in the graduate fields of specialization.

Su, Au, Wi, Sp Qtrs. Prereq: 75 hrs of grad credit; completion of core courses in decimal subdivision or permission of seminar director. Each decimal subdivision repeatable to a maximum of 30 cr hrs. These courses are graded S/U.

- 995.01 Economic Theory and Mathematical Economics
- 995.02 Econometrics
- 995.03 Money, Banking, and Monetary Policy
- 995.04 Labor Economics
- 995.05 Structure and Regulation of Industry
- 995.06 Government Finance and Expenditure
- 995.07 Urban Economics
- 995.08 Transportation Economics
- 995.09 Economic Development and Development Planning
- 995.10 Soviet and Eastern European Economy
- 995.11 International Economics
- 995.12 Economic History

**998 Research in Economics: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Economics: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Education

110 Arps Hall, 1945 North High Street, 292-2581

**400 Basic Teaching Skills for Health Professionals U 3**

Health-related teaching skills; development of learning objectives, use of different media and teaching strategies such as lecture, group process, and tutorial method.

Au, Sp Qtrs. 2 2-hr cl. Prereq: Enrollment in one of the health professions schools.

**692 Workshop U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable. This course is graded S/U.

## Educational Policy and Leadership

121 Ramseyer Hall, 29 West Woodruff Avenue, 292-5181

**Special Topics in Education (Ed-P&L 727)** may be offered by any of the program areas listed below.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

- 727.32 Higher Education
- 727.33 Adult Education
- 727.35 Higher Education Administration
- 727.40 History of Education and Comparative Education
- 727.41 Philosophy of Education
- 727.43 Interactive Technologies
- 727.46 Instructional Design
- 727.48 Educational Development
- 727.49 Curriculum, Instruction, and Professional Development

## Curriculum, Instruction, and Professional Development

121 Ramseyer Hall, 29 West Woodruff Avenue, 292-5181

**108† Introduction to the Study of Education U 3**

An introductory study of cultural factors that affect education, with students helped to understanding through an examination of their own lives.

3 cl. Not open to students with credit for Ed-F & R 108.

**494 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-F & R 494.48 and 494.51.

- 494.48 Educational Development
- 494.51 Educational Change

**610† Alternative Schooling U G 3**

A study of the educational and developmental dynamics of the alternative schools movement as an agent of change; to inquire further regarding educational reforms and options.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl. Not open to students with credit for Ed-F&R 610.

**615 Developing Discipline for Effective Learning U G 3-5**

Causes of and procedures for dealing with school discipline problems; focus upon the teacher, student, classroom, and school situations.

Au Qtr. 1 2½-hr cl, arranged practicum. Prereq: teaching experience or enrolled in student teaching. Not open to students with credit for Ed-F&R 615.

**690 Practicum in Problems of Public Education U G 3**

Open to experienced teachers and administrators; groups are organized around specific problems; requests must be received by dept chairperson in time to allow for planning.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Ed-E&M C 461, or Ed-T&P 461, and permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-F & R 690 and Ed-T&P 690. Cross listed in Educational Theory and Practice.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-F & R 692.48, 692.49, 692.51.

**692.48 Educational Development**

**692.49 Curriculum and Instruction**

**692.51 Educational Change**

**694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-F & R 694.48, 694.49 and 694.51.

**694.48 Educational Development**

**694.49 Curriculum and Instruction**

**694.51 Educational Change**

This course is graded S/U.

**723 Individual Development in Educational Change U G 3**

Developmental processes of individuals are examined and related to processes of educational development, with special attention given to the nature of self-development, interpersonal communications and creative behavior.

Sp Qtr. 1 3-hr cl. Not open to students with credit for Ed-F & R 723. This course is graded S/U.

**724 Development of Organizations and Organizational Groups U G 3**

Dynamics of organizations and organizational groups; functions of communication, planning, and evaluation; development of innovative structures or practices.

Sp Qtr. 1 3-hr cl. Prereq: 4th yr or grad standing. Not open to students with credit for Ed-F & R 724.

**725 Development of Education and Societal Change U G 3**

Examination of developmental processes of educational institutions and programs in context of modernization and social change; attention given to policy planning and institutional development strategies for improving the effectiveness of education.

Sp Qtr. 1 3-hr cl. Not open to students with credit for Ed-F & R 725.

**726 Educational Change U G 3 or 5**

Commonly used strategies for changing people and organizations are studied. The strategies vary from collaborative problem solving to the coercive use of violence and non-violence.

Su Qtr. 1 3-hr cl. Not open to students with credit for Ed-F & R 726.

**766 Teacher Self-Assessment: Developing Evaluation Strategies for Improving Teaching U G 3**

With emphasis on developing practical strategies, the objective of this course is to help teachers develop skills for evaluating and improving their own teaching.

Au, Sp Qtrs. 1-3 hr cl. Not open to students with credit for Ed-F & R 766.

**785 Population Analysis and Educational Planning U G 3**

A seminar designed to study population trends, movements, and distributions as they relate to more effective planning for school systems.

Su, Wi Qtrs. 1 3-hr cl. Prereq: Ed-F & R 785 or Ed-T&P 785 or equiv, and Sociol 751 or 754. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-F & R 789.

**790 Problems and Processes in School Desegregation U G 3**

A seminar designed to study major problems related to school desegregation and processes of solving those problems.

Au, Sp Qtrs. 1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-F & R 790.

**800 Qualitative Research in Education G 3**

Issues and problems of scientific inquiry in educational research with emphasis on field research.

Au, Wi Qtrs. 1 3-hr cl. Not open to students with credit for Ed-F & R 800.

**814 Historical Bases of Curriculum Development G 3**

Intensive analysis of the outstanding contributions made by scholars in the field from 1900 to 1960.

Wi Qtr. Prereq: 860 or Ed-F & R 860. Not open to students with credit for Ed-F & R 815.

**825 Theories and Educational Practices of Nonverbal Communication G 3**

Investigation of theoretical and practical consequences of nonverbal communication for teaching and learning; exploration of research possibilities.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for Ed-F & R 825.

**841 Curriculum in Higher Education G 3**

A study of representative and experimental college programs in the United States.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for Ed-F & R 841.

**850 Internship in Educational Development G 3-12**

Internship experiences in research, development, or evaluation settings.

Arr. Prereq: Permission of instructor. Repeatable to a maximum 12 cr hrs, including cr hrs in Ed-F & R 850 and Ed-T&P 850. This course is graded S/U.

**851 College Teaching G 3**

Designed as initial preparation for instruction at the college level; focuses on the generic skills, strategies, and issues common to university teaching.

Au Qtr. 1 2½-hr cl. Open to grad students committed to teaching in any area at the college level. Not open to students with credit for Ed-F & R 842. This course is graded S/U.

**857 Individualizing Instruction G 3**

A study of theory, practice, and materials related to individualizing instruction.

Su, Au, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-F & R 857 or Ed-T&P 857.

**859 Junior High School Curriculum G 3**

A study of various types of junior high school programs, with special emphasis upon teaching-learning procedures as they apply to the early adolescent years.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Ed-T&P 451. Not open to students with credit for Ed-F & R 859.

**860 Fundamentals of Curriculum G 3**

Designed to serve as an overview of the field of curriculum and instruction; kindergarten through 12th grade.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-F & R 860.

**862 Role of the School in the Social Order G 3**

An orientation for teachers and administrators which deals with the basic purposes of secondary education in relation to major issues and current trends.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: Ed-E&M C 585 or Ed-T&P 585 or secondary (587) student teaching or equiv. Not open to students with credit for Ed-F & R 862.

**864 Fundamentals of Instruction G 3**

Survey of instructional theory and related behavioral science disciplines; emphasis is on application of principles of instructional theory to classroom teaching.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-E&M C 585 or Ed-T&P 585 or secondary (587) student teaching or equiv. Not open to students with credit for Ed-F & R 864.

**865 Curriculum Theory G 3**

Advanced study of curriculum; kindergarten through the 12th grade.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 860 or Ed-F & R 860 or equiv. Not open to students with credit for Ed-F & R 865.

**868 Laboratory in Curriculum Development G 3**

Advanced study of techniques of curriculum development and organization; specific problems in curriculum development which are of concern to the students enrolled.

Wi Qtr. 1 2½-hr cl. Prereq: 862 or Ed-F & R 862 or equiv. Not open to students with credit for Ed-F & R 868.

**869 Instructional Theory G 3**

Advanced study dealing with theoretical conceptions, basic principles, and generalized techniques involved in developing, executing, and evaluating instructional activities.

Wi Qtr. 1 2½-hr cl. Prereq: 862 or Ed-F & R 862, and 864 or Ed-F & R 864. Not open to students with credit for Ed-F & R 869.

**870 Practicum in Curriculum, Instruction, and Supervision G 3**

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on instruction.

Wi Qtr. 1 cl, lab arr. Prereq: Master's degree and 861 or Ed-F & R 861. Not open to students with credit for Ed-F & R 870.

**871 Practicum in Curriculum, Instruction, and Supervision G 3**

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on supervision.

Wi Qtr. 1 cl, lab arr. Prereq: 860 or 861 or 864, or Ed-F & R 860 or 861 or 864; and master's degree. Not open to students with credit for Ed-F & R 871.

**872 Practicum in Curriculum, Instruction, and Supervision G 3**

A study of the literature and methods of curriculum, instruction, and supervision in a field setting, with emphasis on curriculum.

Sp Qtr. 1 cl, lab arr. Prereq: 860 or 861, or Ed-F & R 860 or 861; and master's degree. Not open to students with credit for Ed-F & R 872.

**873 Problems of Secondary School Supervision and Curriculum Development G 3**

Supervision and curriculum development emphasizing problems involved in initiating and conducting change in the secondary school curriculum.

Sp Qtr. 1 2½-hr cl. Prereq: 860 or Ed-F & R 860. Not open to students with credit for Ed-F & R 873.

**884 Planned Field Experience**

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 or hrs, including or hrs in Ed-F & R 884.48, 884.49, and 884.51. These courses are graded S/U.

**884.48 Educational Development G 3-15**

**884.49 Curriculum, Instruction, and Supervision G 3-15**

**884.51 Educational Change G 3-15**

**894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs, including or hrs in Ed-F & R 894.48 and 894.51, Ed-Sp Sv 894.32, and Ed-Votec 894 and 894.30.

**894.48 Educational Development**

**894.49 Curriculum and Instruction**

**894.51 Educational Change**

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

**925 Seminars G 2-5**

Prereq: Written permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

**925.45 Emergent Research in Educational Technology**

An exploration, evaluation, and discussion of emergent research and technology for the purpose of encouraging the growth of individual scholarship and a sense of community.

Arr. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**925.48 Educational Development**

This course is graded S/U.

**925.49 Curriculum and Instruction****925.51 Moral Education****966 Practicum in Educational Research and Evaluation G 3**

The utilization of research strategies and evaluation techniques in studying educational problems with emphasis upon the development, conduct, and completion on individual projects.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Previous courses in the basic sequence in educational research or evaluation or permission of instructor. Not open to students with credit for Ed-F & R 966 or Ed-T&P 966 or Ed-T&P 966. This course is graded S/U. Cross-listed in Educational Theory and Practice.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**999.48 Educational Development****999.49 Curriculum and Instruction****999.51 Educational Change****Educational Administration**

301 Ramseyer Hall, 29 West Woodruff Avenue,  
292-7700

**603 Roles, Rights, and Responsibilities in Public Education U G 3**

A study of organizational, professional, and legal roles, rights, and responsibilities in public education; development of broad understanding of environment in which teachers work.

Au, Sp Qtrs. 3 cl. Not open to students with credit for Ed-Admin 601.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 or hrs, including or hrs in Ed-Admin 692.44.

**692.44 Workshop: Educational Administration and Supervision****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-T&P 451 or Ed-E&M C 460 or Ed-T&P 460, and written permission of instructor. A total of not more than 30 or hrs in individual study (any 693) will apply toward graduation for undergrad students, 15 or hrs for the master's degree and 30 or hrs for the doctoral degree. These courses are graded S/U.

**693.35 Higher Education Administration****693.44 Individual Studies: Educational Administration and Supervision**

**694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Admin 694.35 and 694.44.

**694.35 Higher Education Administration****694.44 Group Studies: Educational Administration and Supervision****806 Administration of Higher Education G 3**

Purposes and scope of higher education; governance; problems of administration-student-staff relationships; and administrative organization. Moore and Sagaria.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl or 2 1½-hr cl. Not open to students with credit for Ed-Admin 800.

**810 Understanding Educational Organizations: Insights from Organizational Theory G 3**

An introductory survey of the applications of formal organization theory for the purpose of understanding educational organizations—a core course in administrator certification. Hack, Wayson, and Blanke.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl or 2 1½-hr cl. Certification students must also enroll for 1 hr in 884B44.

**815 The Community College G 3**

History of community colleges; evaluation of organization and administration; campus planning; and federal, state, and local governmental relations with these colleges. Moore.

Au, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-Admin 815.

**820 Financing Higher Education G 3**

A study of financing higher education with emphasis on issues affecting higher education; criteria for identifying and developing sources of financial support for institutions of higher education. Hack.

Au, Wi Qtrs. 1 2½-hr cl or 2 1½-hr cl. Prereq: 806 or 815 or Ed-Admin 800 or 815. Not open to students with credit for Ed-Admin 820.

**835 Personnel Administration in Higher Education G 3**

A study of the staff personnel function in institutions of higher education through a consideration of personnel policies and operating principles. Young.

Sp Qtr. 1 2½-hr cl or 2 1½-hr cl. Prereq: 806 or 814, or Ed-Admin 800 or 815. Not open to students with credit for Ed-Admin 830.

**840 Legal Aspects of Higher Education Administration G 3**

Statutory and case law are analyzed for administrative implications; changing legal developments in college and university governance patterns.

Wi, Su Qtrs. Prereq: 806 or 814, or Ed-Admin 800 or 815. Not open to students with credit for Ed-Admin 840.

**842 Administration of Academic Affairs in Higher Education G 3**

Principles and problems of administering academic affairs in light of development, financial considerations, and evaluation. Moore and Sagaria.

Au, Sp Qtrs. 1 2½-hr cl or 2 1½-hr cl. Prereq: 806. Not open to students with credit for Ed-Admin 842.

**843 Administrative Responsibilities and Perspectives: Equity, Learning, and the Individual G 3**

Administrators' responsibility to see equity and the rights of individual are recognized and enhanced in the school setting.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 846 or permission of instructor. Mandated requirement for the Certification of Administrators in the State of Ohio.

**845 Politics and Political Leadership in American Education G 3**

A critical examination of national, state, and local politics and political leadership in American education.

Su, Au, Wi, Sp Qtrs. 2½-hr cl. Certification students must also enroll for 1 hr of 884A44.

**846 Introduction to Educational Administration G 3**

Introduction to the organizational setting of the school, the nature of administration, and personal decision making about careers in educational administration—a core course in administrator certification. Cunningham and Wayson.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for Ed-Admin 846.

**847 Human Relations in Educational Administration G 3**

Interpersonal behavior in educational organizations with emphasis on such topics as values, groups, power, communicating, conflict management, motivation, and human diversity. Anderson, Blanke, and Spillman.

Wi Qtr. Prereq: 806 or 846. Not open to students with credit for Ed-Admin 847.

**861 Fundamentals of Supervision G 3**

Supervision of instruction emphasizing general principles and practices in elementary and secondary schools. Daresh.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-F & R 861.

**866 Supervision Theory G 3**

Advanced study of supervision of instruction; kindergarten through the 12th grade.

Sp Qtr. 2 1½-hr cl. Prereq: 861 or Ed-F & R 861 or equiv. Not open to students with credit for Ed-F & R 866.

**884 Planned Field Experience**

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Admin 884.35 and 884.44. These courses are graded S/U.

**884.35 Higher Education Administration G 3-15****884.44 Planned Field Experience: Educational Administration and Supervision G 1-15**

884A44 1

884B44 1

884C44 1

884D44 3 or 6

Prereq: Permission of faculty adviser.

**925 Seminars G 2-5**

Prereq: Written permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

**925.44 Seminars: Educational Administration and Supervision****949 Collective Bargaining and Contract Administration in Education G 3**

Introduction to the processes of collective bargaining in educational organizations.

Wi Qtr. 1 2½-hr cl. Prereq: 810, 846, 847, 848, 849, or permission of the instructor.

**952 Legal Aspects of School Administration G 3**

A study of statutory and case law, legal principles, and provisions relevant to educational administration, particularly in the areas of personnel, finance, curriculum, contracts, property, liability, and organization. Staub.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 846 or equiv. Not open to students with credit for Ed-Admin 952.

**953 School Community Relations G 3**

Principles and practice in developing and maintaining appropriate school community relationships; opinion analysis; communication processes; decision-making patterns. Davis.

Sp Qtr. 1 2½-hr cl. Prereq: 846 or equiv. Not open to students with credit for Ed-Admin 953.

**955 Staff Personnel Administration G 3**

Study of personnel administration in educational institutions; theory, principles, and practices as they relate to personnel policy, recruitment, selection, orientation, appraisal, in-service education, promotion, collective negotiations, and general welfare. Young.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: 846. Not open to students with credit for Ed-Admin 955.

**956 School Finance G 3**

Examination of the theory and economics of financing public education; emphasis on sources of revenue, variations in ability and effort, state-local plans, and the federal role. Hack.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 846. Not open to students with credit for Ed-Admin 956.

**957 Business Administration of Schools G 3**

Function and role of business administrators in schools; emphasis on budgeting; payroll and accounting; purchasing; planning, constructing, operating, and maintaining the school plant. Hack.

Sp Qtr. 1 2½-hr cl. Prereq: 846. Not open to students with credit for Ed-Admin 957.

**958 Educational Facility Planning G 3**

Problems and techniques in determining educational facility needs, evaluating facilities, planning for new construction and remodeling, and utilizing specialized personnel; related legal and financial aspects.

Su Qtr. 1 2½-hr cl. Prereq: 846 or equiv. Not open to students with credit for Ed-Admin 958.

**959 Doctoral Core in Educational Administration I G 4**

Analysis of significant research in organization theory. Blanke.

Au Qtr. 2 2-hr cl, lab arr. Prereq: Master's degree and permission of instructor. Not open to students with credit for Ed-Admin 959.

**960 Doctoral Core in Educational Administration II G 4**

Advanced study of administrative problems and organizational behavior from an historical perspective. Culbertson.

Wi Qtr. 2 2-cl, lab arr. Prereq: 959 or Ed-Admin 959. Not open to students with credit for Ed-Admin 960.

**961 Doctoral Core in Educational Administration III G 4**

Advanced study in educational politics and policy making. Mitchell.

Sp Qtr. 2 2-hr cl, lab arr. Prereq: 960 or Ed-Admin 960. Not open to students with credit for Ed-Admin 961.

**962 Board Relations G 3**

A study of the respective ideas and responsibilities of the board of education (board of trustees) and the superintendent (chief educational administrator) in the governance of the school district (college/university).

Su, Au, Wi, Sp Qtrs. 2½ cl. Prereq: 810, 846, 848, 849, 861, and 925D44.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

999.35 Higher Education Administration

999.44 Educational Administration and Supervision

**Higher Education, Adult Education, and Student Affairs**

301 Ramseyer Hall, 29 West Woodruff Avenue, 292-7700

**270 Seminars in Career and Self Development U 3**

Examination of self in relation to educational and career goals; self assessment, decision making, identification, and use of campus resources, employability, and work adjustment skills.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Repeatable to a maximum of 6 cr hrs including cr hrs in Ed-Sp Sv and Ed-HuSer 270, 270.01, and Ed-P&L 270.04; with a maximum of 3 cr hrs in any decimal subdivision. This course is graded S/U.

**270.01 Self-Career Development**

Designed to provide opportunities for self-exploration and skill development; exploration of and clarification of vocational and educational interests.

**270.04 Career Development and Leadership Training in Higher Education**

Designed to explore possible careers in higher education and to conduct leadership training in terms of higher educational functions and organizations.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-Sp Sv 692.32 and Ed-Votec 692.33.

**692.32 Higher Education****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-T&P 451 or Ed-E&M C 460 or Ed-T&P 460, and written permission of instructor. A total of not more than 30 cr hrs in individual study (any 693) will apply toward graduation for undergrad students, 15 cr hrs for the master's degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**693.32 Higher Education****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Sp Sv 694.32 and Ed-Votec 694.33.

**694.32 Higher Education****780 Introduction to Student Personnel Work U G 3**

The nature of and the issues involved in student personnel work in higher education. Fitzgerald.

Au Qtr. 2 1½-hr cl. Not open to students with credit for Ed-Sp Sv 780.

**781 Academic Advising Process U G 2**

An overview of the academic advisement process including practical and philosophical questions about advisement and the role of the adviser. V. Gordon.

Wi Qtr. 2 cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 781.

**782 Practice of College Student Personnel Work U G 3**

First practical course in professional sequence; prerequisite to field work practice; major services are examined and discussed; outstanding practitioners consult on their work. Bargar, Rodgers, and Zimpher.

Sp Qtr. 2 1½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 782.

**884 Planned Field Experience**

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Sp Sv 884.32.

**887 Student Personnel Programs  
for the Culturally Different G 3**

A survey of collegiate experimental programs and practices, their philosophies, organization, administration, educational audiences, etc., for the culturally different with emphasis on black Americans. Stewart.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-Sp Sv 887.

**888 Group Interventions in  
Student Personnel Work G 3**

Emphasis on laboratory learning process for interpersonal growth and organizational dynamics; treatment of group theory, processes, and dynamics. Rodgers.

Au Qtr. 1 3-hr cl, mandatory weekend lab. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 888.

**894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Sp Sv 894.32.

**894.32 Higher Education****925 Seminars G 2-5**

Prereq: Written permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

**925.32 Higher Education****926 Student Personnel Work  
as a Professional Field G 3**

Designed to provide an opportunity, by a study of current, historical, and philosophical materials, for the formulation of a sound intellectual basis for professional practice in student personnel work. Silverman.

Sp Qtr. 2 1½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 926.

**930 Internship in College Student  
Personnel Work G 6-12**

Student's are assigned as a participant-observer in a work situation closely approximating their vocational goals, under the supervision of a qualified practitioner; full-time commitment is normally expected.

Su, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs, including cr hrs in Ed-Sp Sv 930.

**938 Instruction in Higher Education G 3**

A study of the teaching-learning environment in college, including student culture, learning theory and classroom procedure, examinations, and evaluation. Rodgers and Barger.

Sp Qtr. 3 cl. Not open to students with credit for Ed-Sp Sv 938.

**943 Interaction of the Student and the  
College Environment G 3**

A focus on the nature of the college environment, entering student, academic procedures, student performance, and student culture for those planning careers in college student personnel work. Rodgers.

Au Qtr. 2 1½-hr cl. Not open to students with credit for Ed-Sp Sv 943.

**945 Practicum in Student Personnel Work G 5**

Supervised practicum in campus student personnel agencies such as admissions, dean of students, housing, international students, student financial aid, student union, and undergraduate college offices Fitzgerald, Sagaria, and Silverman.

Su, Au, Wi, Sp Qtrs. 1 1½-hr cl, 8-10 hrs lab arr. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs, including cr hrs in Ed-Sp Sv 945.

**946 The Writings of C. G. Jung: Implications for  
Educational Research and Practice G 3**

The writings of Jung are critically examined; implications for educational research and practice are discussed, with emphasis on student/professional development, interpersonal communications, and learning. Barger.

Sp Qtr. 1 2½-hr cl. Prereq: Grad standing

**947 The Theory of Psychological Types:  
Applications to Education G 3**

The theory of psychological types (C.G. Jung) and related literature will be critically examined, with applications to learner/teacher behaviors, achievement, academic advisement, assessment methods, and research. Barger.

Su Qtr. 2 2½-hr cl.

**954 Theory and Practice of Student  
Personnel Administration G 3**

The organization and administration of student personnel services; organizational theory and approaches to organizational development, in the interest of institutional renewal. Fitzgerald, Sagaria, and Silverman.

Au, Wi, Qtrs. 1 3-hr cl. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-Sp Sv 954.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**999.32 Higher Education****Humanistic Foundations**

121 Ramseyer Hall, 29 West Woodruff Avenue,  
292-5181

**650 Humanistic Foundations of Education U G 3**

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing in a recognized university teacher education program, or grad standing, or permission of dept office.

**650.01 Philosophy of Education**

Design to provide students with an application of philosophy of education to issues and problems of teaching and living in a culturally diverse society.

Not open to students with credit for Ed-F&R 640.73 or 650.01.

**650.02 History of Modern Education**

Education and schools as factors in the development of the modern world; theories, practice, relations with other social institutions and forces, especially in Europe and America.

Not open to students with credit for Ed-F&R 640.72 or 650.02.

**650.03 Applied Ethics for Teachers**

An examination of selected moral/ethical issues which face practicing educators emphasis on developing ethical decision-making skills.

Not open to students with credit for Ed-F&R 650.03.

**650.04 Social Criticism in American Education**

Analysis and interpretation of critical stances taken by selected major writers on educational topics of current interest.

Not open to students with credit for Ed-F&R 640.71 or 650.04.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-F & R 692.55.

**692.55 Moral Education**

**693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Ed-T&P 451 or Ed-E&M C 460 or Ed-T&P 460, and written permission of instructor. A total of not more than 30 cr hrs in individual study (any 693) will apply toward graduation for undergrad students, 15 cr hrs for the master's degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**693.40 History of Education and Comparative Education****693.41 Philosophy of Education****693.45 Moral Education****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-F & R 694.40, 694.41, and 694.55.

**694.40 History of Education and Comparative Education****694.41 Philosophy of Education****694.45 Moral Education****697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-5**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation. Cross-listed in Ed Theory & Practice, Health Ed, Human Services Ed, Physical Ed, and Recreation Ed.

Repeatable to a maximum of 6 cr hrs; including cr hrs in Ed-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work, and theology.

**700.01 Seminar on Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

Wi Qtr.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/ patients.

Au Qtr.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

Sp Qtr. Arr.

**700.04 Interprofessional Practicum in Clinical Settings U G 3 or 5**

Interprofessional teamwork in clinical settings.

Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**701 Logic in Teaching U G 3**

Study of the logical aspects of teaching; includes attention to definitions, arguments, explanations, questions, and value judgments.

Au Qtr. 2 1½-hr cl. Prereq: 650.01 or Ed-F & R 650.01, and 4th yr standing. Not open to students with credit for Ed-F & R 641.75 or 701.

**702 Modern Trends in Educational Philosophy U G 3**

A study of contemporary work in philosophy of education and applications of that work to educational practice.

Su, Au, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-F & R 801 or Ed-P&L 822.

**717 Comparative Education U G 3**

Social and cultural factors influencing the differential development of educational institutions and organization.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: 4th yr standing. Not open to students with credit for Ed-F & R 641.77 or 717.

**719 People, Politics, and Schools U G 3**

An analysis of the political forces and ideological positions in American life since the Civil War and their effects on American education.

1 2½-hr cl. Prereq: 3rd yr standing. Not open to students with credit for Ed-F & R 641.71 or 719.

**720 Education in Earlier Times U G 3**

Schools and educational ideals in ancient and medieval societies; education before the rise of modern nation states; influence on contemporary practice and thinking.

3 cl. Prereq: 4th yr standing. Not open to students with credit for Ed-F & R 641.72 or 720.

**722 Studies in the History of Educational Policy U G 3**

Historical analysis of social, economic, and political factors shaping public school policy in the US since 1800.

Au Qtr. 1 2½-hr cl. Prereq: 4th yr standing.

**728 Education in Developing Countries U G 3**

Social and historical factors affecting stability and effectiveness of educational institutions and organizations in countries where programs of universal education are of recent origin.

Sp Qtr. 1 2½-hr cl. Prereq: One or more courses from 650 series or Ed-F & R 650 series or equiv. Not open to students with credit for 727 or Ed-F & R 727 prior to Wi Qtr 1986.

**811 Sources of Progressive Thought in American Education G 3**

An examination of the ideas that provided the philosophical basis for progressive education with an emphasis on the historical context in which these ideas were developed.

Au, Sp Qtrs. 1 3-hr cl. Not open to students with credit for Ed-F & R 811.

**826 Comparative Philosophy of Education G 3**

A study of alternative philosophical views of selected educational practices and policy questions.

Wi Qtr. 1 2½-hr cl. Prereq: 702 or 822 or Ed-F & R 801. Not open to students with credit for Ed-F & R 802.

**827 Ideology and Educational Policy G 3**

A study of ideologies in terms of their significance for educational policy.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: 702 or 822 or Ed-F & R 801. Not open to students with credit for Ed-F & R 803.



**828 Ethical Problems in Education G 3**

An examination of theories of value in education which focuses on the philosophical problems of formulating and defending moral judgements.

Su, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-F & R 804.

**829 Moral Education and the Schools G 3**

Explores the moral dimension of teaching and attempts to bridge recent theory and research in this area with classroom practice.

Su, Au, Wi Qtrs. 1 2½-hr cl. Prereq: Teaching experience. Not open to students with credit for Ed-F & R 805.

**884 Planned Field Experience**

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-F & R 884.55. This course is graded S/U.

**884.55 Moral Education G 3-15****901 Epistemology and Education G 3**

A study of selected epistemological problems related to educational theory and practice.

Sp Qtr. 1 2½-hr cl. Prereq: 702 or 822 or Ed-F & R 801. Not open to students with credit for Ed-F & R 901.

**902 Educational Philosophy of John Dewey G 3**

A systematic study of the writings of John Dewey in their bearings upon educational theory and practice.

Sp Qtr. 1 2½-hr cl. Prereq: 702 or 822 or Ed-F & R 801. Not open to students with credit for Ed-F & R 902.

**903 Conceptions of Mind in Education G 3**

A critical study of theories of behavior in education which focuses on the philosophical problems of describing and explaining human action.

Sp Qtr. 1 2½-hr cl. Prereq: 702 or 822 or Ed-F & R 801 or equiv. Not open to students with credit for Ed-F & R 903.

**925 Seminars G 2-5**

Prereq: Written permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

**925.40 History of Education and Comparative Education****925.41 Philosophy of Education****925.55 Moral Education****927 History of the Universities G 3**

The university as an institution through 10 centuries; patterns of development in different countries; German, English, and American contributions to the idea of the American university.

Wi Qtr. 2 1½-hr cl. Not open to students with credit for Ed-F & R 927.

**928 History of Educational Thought: Ancient and Medieval G 3**

Study and analysis of the major educational theories of the ancient and medieval periods including the educational writings of Plato, Aristotle, and St. Augustine.

Su, Au Qtrs. 1 2½-hr cl. Prereq: 650.02 or 650.04, or Ed-F & R 650.02 or 650.04. Not open to students with credit for Ed-F & R 928.

**929 History of Educational Thought: Modern G 3**

Study of the major educational theories since 1500 including Montaigne, Milton, Locke, and Rousseau and their influence on contemporary educational theory and practice.

Sp Qtr. 1 2½-hr cl. Prereq: 650.02 or 650.04, or Ed-F & R 650.02 or 650.04. Not open to students with credit for Ed-F & R 929.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**999.40 History of Education and Comparative Education****999.41 Philosophy of Education****999.55 Moral Education****Instructional Design and Technology**

225 Ramseyer Hall, 29 West Woodruff Avenue, 292-4872

**600 Basic Media Skills U G 1**

Self-instructional modules and activities emphasizing the selection, utilization, and preparation of teaching material.

Su, Au, Wi, Sp Qtrs. 3 hrs lab. Prereq: Admission to a teacher education program certification area or permission of instructor. Cost of production materials must be borne by the student. Not open to students with credit for Ed-T&P 600. This course is graded S/U.

**675 Audiovisual Materials of Instruction U G 4**

Designed to provide basic experience in theory, design, preparation/selection, utilization, and evaluation of materials and equipment available in modern learning environments; emphasis on a final synthesizing project.

2 cl, 2 2-hr lab. Not open to students with credit for Ed-F & R or Ed-T&P 675.

**676 Planning and Preparing Teacher-Made Educational Media U G 3**

Demonstration and practice in the preparation of teaching materials; emphasis on techniques for illustrating, preserving, lettering, converting, and duplicating projected and non-projected media.

1 2-hr cl, 1 2-hr lab. Prereq: 4th yr or grad standing. Not open to students with credit for Ed-F & R 674 or Ed-T&P 676.

**677 Educational Telecommunications U G 3**

The varied types of educational telecommunications in relation to designs, planning, production, utilization, and evaluation. Cambre.

Prereq: 4th yr standing. Not open to students with credit for Ed-F & R or Ed-T&P 677.

**678 Introduction to Instructional Systems Development U G 3**

Paradigms for instructional development; learner, task, and curriculum analysis; prototype development; completion of a production proposal/storyboard. Subsequent enrollment in 778 expected.

1 2-hr cl, 1 2-hr lab. Prereq: 675 or Ed-F & R 675. Not open to students with credit for Ed-F & R or Ed-T&P 678.

**680 Instructional Television Production U G 4**

Functions and operations of small format video production and post-production equipment; application of theory and research to the production of video materials for instruction.

2 ½-hr cl, 2 ½-hr lab, arr. Prereq: 677. Ed F & R 675 and 678 recommended.

**692.43 Interactive Technologies Workshops U G 1-8**

Intensive study of a problem in interactive technologies for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C 692.10, 692.56, and 692.70; Ed F & R 692.43; Ed-Hums 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; and Ed Sc&Ma 692.26 and 692.27.

**693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U

**693.43 Interactive Technologies**

Intensive individual study of a special problem in interactive technologies.

**693.46 Instructional Design**

Intensive individual study of a special problem in instructional design.

**694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 694.10, 694.56, and 694.70; Ed-F & R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; and Ed-Sc&Ma 694.26 and 694.27.

**694.43 Interactive Technologies****694.46 Instructional Design****778 Developmental Testing and Field Evaluation of Instructional Systems U G 3**

Theory and practice of formative evaluation.

Wi Qtr. 1 3-hr cl. Prereq: 678 Ed-F & R 678, and course(s) in media production resulting in a prototype instructional system. Not open to students with credit for Ed-T&P 778 or Ed-F & R 778.

**779 Development and Management of Educational Media Centers G 3**

Media specialist's responsibilities for the successful operations of a media program; planning, organization, administration, and service functions; emphasis on school library media programs.

Prereq: 675 or equiv. Not open to students with credit for Ed-F & R or Ed-T&P 679.

**788 Survey of Computer Uses in Instruction U G 3**

Applications of computers for improving instruction: computer concepts, concept of instructional systems development, programming principles and practice, and exemplary curricular applications.

1 1½-hr cl, 1½-hr arr. Not open to students with credit for Ed-F & R or Ed-T&P 788.

**875 Theory and Practice of Cataloging and Classifying Materials for School Media Centers G 3**

Principles, problems, and methods of descriptive cataloging for print and audiovisual materials.

3 cl. Prereq: 675 or Ed-F & R 675; students without undergraduate course work in cataloging will be required to complete a 1 hr/wk lab during 831. Not open to students with credit for Ed-F & R or Ed-T&P 831.

**876 Reference Services in the School Media Center G 3**

Principles, problems, and methods of reference services, including organization and administration of key tools (dictionary, directories, and encyclopedias) for both print and audiovisual materials.

3 cl. Prereq: 831 or Ed-F & R 831 or equiv. Not open to students with credit for Ed-F & R or Ed-T&P 832.

**877 Appraisal, Selection, and Acquisition of Instructional Materials for School Media Centers G 3**

Criteria and strategy for the appraisal, selection, and acquisition of instructional materials related to curricular and personal needs of school media center users.

3 cl. Prereq: 832 or Ed-F & R 832. Not open to students with credit for Ed-F & R or Ed-T&P 833.

**883 Practicum in Development and Management of Specialized School Media Services G 3**

Organization and administration of specialized media services (e.g., TV photography, CAI, and graphics) for education — design, needs assessment, personnel, budget, facilities and accountability.

3 cl and arr field visits. Prereq: 679 or Ed-F & R 679. Not open to students with credit for Ed-F & R or Ed-T&P 835. Not appropriate for fulfilling requirements for certification in school administration.

**884 Planned Field Experience G 1-15**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr rs including cr hrs in Ed-E&M C 884.10, 884.56, and 884.70; Ed F & R 884.36, 884.43, 884.46, and 884.60; Ed Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&Ma 884.26 and 884.27.

**884.43 Interactive Technologies**

Planned professional experience under supervision in a public school or other educational setting.

**884.46 Instruction Design**

Planned professional experience under supervision in a public school or other educational setting.

**889 Practicum in Instructional Design and Technology G 3-5**

Group observation, limited participation, and functional analysis of design and implementation in instructional systems and environments.

2 cl, 3-9 hrs arr. Repeatable to a maximum of 10 cr hrs, including cr hrs in Ed-T&P 889 and Ed-F & R 889.

**895 Fundamentals of Instructional Materials and Media G 3**

Theory in educational media applied to the process of instructional development.

1 3-hr cl. Prereq: 675 or Ed-F & R 675 or practical experience in using educational media in school settings. Not open to students with credit for Ed-F & R or Ed-T&P 806.

**897 Interactive Video for Instruction G 4**

Introduction to the instructional capabilities and hands-on development of interactive videotape and videodisc; topics include relevant learning theories, programming techniques, and design models.

Au, Sp, Qtrs. 2 cl, 4-hrs lab. Prereq: 678. Fundamentals of computing recommended.

**925 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**925.43 Interactive Technologies****925.46 Instructional Design****999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U

**999.43 Interactive Technologies****999.46 Instructional Design**

## Educational Services & Research

356 Arps Hall, 1945 N. High St., 292-8787

See also Educational Policy and Leadership.

The areas of specialization and the courses in the Department of Educational Services and Research comprising these areas of specialization are listed below:

### Applied Behavior Analysis

693, 722, 771, 772, 787, 788, 884, 925, 999.

### Counselor Education, 292-8936

213, 214, 270.01, 270.02, 270.03, 270.04, 271, 289.01, 289.02, 289.37, 294.01, 294.34, 413, 513, 679, 692.34, 693.34, 694.34, 767, 768, 773, 774, 775, 776, 779, 798, 875, 876, 884.34, 894.34, 925.34, 926.01, 926.02, 926.03, 926.04, 926.05, 926.06, 926.07, 926.08, 974, 975, 976, 977, 978, 995, 999.34.

### Educational Research and Evaluation, 292-3239

541, 544, 693.60, 694.60, 760, 765, 769, 785, 786, 795, 796, 797, 807, 808, 809, 810, 820, 840, 850, 863, 867, 884.60, 925.60, 930, 960, 995, 966, 999.60.

### Gifted

692.66, 693.66, 694.66, 705, 805, 884.66, 885.66, 893.66, 925.66, 999.66.

### Rehabilitation Services, 292-8148

693.25, 790, 791, 792, 862, 864, 884.25, 893.25, 925, 978, 999.

### School Psychology, 292-8148

692.61, 693.63, 875, 884.63, 893.63, 894.61, 925.61, 986, 987, 988, 989, 990, 991, 992, 999.63.

### Special Education, 292-8174

251, 289.54, 501, 502, 503, 504, 505, 506, 588.14, 588.54, 588.58, 588.62, 644, 646, 649, 651, 653, 655, 659, 660, 661, 664, 665, 670, 671, 676, 677, 680, 681, 682, 683, 684, 685, 692.47, 692.48, 692.52, 692.54, 692.62, 693.14, 693.38, 693.47, 693.48, 693.52, 693.54, 693.55, 693.58, 693.62, 693.64, 694.14, 694.47, 694.48, 694.54, 694.55, 711, 712, 713, 714, 715, 721, 722, 723, 725, 738, 739, 740, 741, 746, 750, 751, 752, 764, 766, 770, 771, 772, 777, 778, 780, 781, 782, 783, 784, 789, 844, 845, 847, 848, 849, 871, 884.14, 884.47, 884.48, 884.52, 884.54, 884.55, 884.58, 885.14, 885.38, 885.48, 885.52, 885.54, 885.55, 885.58, 885.62, 893.14, 893.38, 893.47, 893.48, 893.52, 893.54, 893.55, 893.58, 893.62, 893.64, 894.48, 894.55, 925.38, 925.47, 925.48, 925.52, 925.54, 925.55, 925.62, 999.14, 999.38, 999.47, 999.48, 999.52, 999.54, 999.55, 999.58, 999.62, 999.64, 999.67.

### 213† Introduction to Urban Education U 5

Examination of the multi-ethnic character of the urban community and the unique educational problems prospective teachers should be conscious of in order to be more effective when working with minorities.

4 cl, 2 hrs field experience arr. Not open to students with credit for Ed-Sp Sv 213 or Ed-HuSer 213.

### 214† Black Perspectives in Urban Education U 3

Examination of major educational-philosophical hallmarks that affect the education of black Americans focusing on Booker T. Washington, W.E.B. DuBois, Carter G. Woodson and important legislation.

3 cl. Not open to students with credit for Ed-Sp Sv 214 or Ed-HuSer 214.

### 251 Introduction to Exceptional Children U 3

Examination of the role of education in the habilitation and education of children and youth with learning and/or behavioral handicaps. Heward.

Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Written permission of instructor. Not open to students with credit for Ed-Excep 251 or 289.02 or Ed-HuSer 251.

### 270 Seminars in Career and Self Development U 3

Examination of self in relation to educational and career goals; self assessment, decision making, identification and use of campus resources, employability, and work adjustment skills.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Repeatable to a maximum of 12 cr hrs, including cr hrs in Ed-Sp Sv 270, 270.01, 270.02, 270.03, and 270.04; Ed-HuSer 270.01, 270.02, 270.03, 270.04; and Ed-P&L 270.04; with a maximum of 3 cr hrs in any decimal subdivision. These courses are graded S/U.

#### 270.01 Self-Career Development

Designed to provide opportunities for self-exploration and skill development; exploration of and clarification of vocational and educational interests.

#### 270.02 Personal Growth to Increase Career Competencies

Designed to provide opportunities to assist in self-exploration of and clarification for more effective development beyond the level of average performance.

#### 270.03 Study Skills Related to Career Goals

Designed to assist underachieving students with their efforts to ascertain and resolve the causes of low academic productivity; attitudinal and behavioral skills emphasized.

#### 270.04 Career Development and Leadership Training in Higher Education

Designed to explore possible careers in higher education and to conduct leadership training in terms of higher educational functions and organizations.

### 271 Seminar in Exploring Helping Relationships: Teaching/Learning U 3

Focus on self development, decision making, world of work for students exploring careers through placement in educational, and community agency settings.

Au, Wi, Sp Qtrs. 1 3-hr cl. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-Sp Sv 271 or Ed-HuSer 271, with special written permission, when unusual circumstances warrant. To be taken concurrently with field experience 289.01.

### 289 Field Experience U 2-5

Professional service with children or youth in some school or community agency.

Prereq: Permission of instructor.

#### 289.01 Introductory Experience in a School System

Au, Wi, Sp Qtrs. 160 field contact hrs. Repeatable to a maximum of 10 cr hrs, including cr hrs in Ed-Sp Sv 289.01 or Ed-HuSer 289.01, with special permission when unusual circumstances warrant. This course is graded S/U.

#### 289.02 Experience in a Community Agency

160 field contact hrs. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Sp Sv 289.02 or Ed-HuSer 289.02. This course is graded S/U.

#### 289.37† Tutoring

Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Sp Sv 289.37 or Ed-HuSer 289.37. This course is graded S/U.

#### 289.54 Mental Retardation

Wi, Sp Qtrs. 5 hrs practicum. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Excep 289.54 or Ed-HuSer 289.54.

### 294 Group Studies U 1-5

Group studies for students in specialized programs.

Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Sp Sv 294.01 and 294.34 and Ed-HuSer 294.01 and 294.34.

#### 294.01 Evaluation of Field Experiences

#### 294.34 Youth-Career Education

### 413† Experiencing the Urban Community U 3

Provides practicum experiences and discussion designed to bring prospective teachers into direct contact with the life circumstances: street, stores, homes, school, and public agencies of children living in urban areas; emphasis on preschool through 3rd grade.

2 cl, 4 hrs arr. Not open to students with credit for Ed-Sp Sv 413 or Ed-HuSer 413.

**501 Behavioral Dimensions of Educational Settings: Principles U 3**

Introduction to principles of human behavior as they apply to educational settings.

Au, Wi, Sp Qtrs. Arr. Prereq: Admission to teacher certification program in ED-S & R or Phys Ed or permission of instructor. Not open to students with credit for Phys Ed 501 or Ed-HuSer 501. Cross-listed in Physical Education.

**502 Behavioral Dimensions of Educational Settings: Applications U 3**

Application of behavioral systems and technologies to the acquisition and maintenance of academic and social behavior in educational settings.

Au, Wi, Sp Qtrs. Arr. Prereq: 501, Ed-HuSer 501, or Phys Ed 501. Not open to students with credit for Phys Ed 502 or Ed-S&R 502. Cross-listed in Physical Education.

**503 Schools U 1**

Examination of basic concepts in school organization and control, school finance, teachers' organizations, liability, and teachers' rights and responsibilities.

Au, Wi, Sp Qtrs. Arr. Prereq: 501 and 502 or Ed-HuSer 501 and 502, or Phys Ed 501 and 502, or permission of instructor. Not open to students with credit for Phys Ed 503 or Ed-S&R 503. Cross-listed in Physical Education.

**504 Technological Applications for Special and Physical Education Students U 1**

Designed for undergraduate special and physical education students who wish to gain initial orientation with microcomputer applications in education.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Admission to teacher certification program in ED-S & R or Phys Ed and permission of instructor. Not open to students with credit for Phys Ed 504 or Ed-S&R 504. Cross-listed in Physical Education.

**505 Alternative Models for Education U 3**

Examines models for educating children and youth that differ from those experienced by the typical teacher candidate in K-12 public/parochial schools. Heron.

Au Qtr. 3 cl or 1 2½-hr cl. Prereq: 501 and 502 or Ed-HuSer 501 and 502, or Phys Ed 501 and 502. Not open to students with credit for Phys Ed 505 or Ed-S&R 505. Cross-listed in Physical Education.

**506 Senior Seminar: Transition to Teaching U 2**

A seminar focusing on problems and prospects for transitioning to professional service with specific focus on problems encountered in the induction period. Cooper.

Sp Qtr. 1 2-hr cl. Prereq: or Concur: Student teaching. Not open to students with credit for Phys Ed 506 or Ed-S&R 506. Cross-listed in Physical Education.

**513† Cultural Factors Affecting Teachers in Urban Schools U 3**

Students examine their own values relative to varying cultural factors; life style, aspirations, language, family, that affect and impede the learning process between teachers and students in urban settings.

5 cl. Not open to students with credit for Ed-Sp Sv 513 or Ed-S&R 513.

**541 Introduction to Educational Research and Evaluation U 3**

A study of empirical methods as they apply in educational research, development, and evaluation settings. D'Costa.

1 2-hr cl, 1 2-hr lab. Repeatable to a maximum of 9 or hrs, including or hrs in Ed-F & R 541 and Ed T&P 541.

**544 Introduction to Educational Measurement U 3**

Overview of basic measurement principles and practices for assessment of student achievement in classroom contexts.

2 1½-hr cl. Prereq: 3rd yr standing or permission of instructor. Not open to students with credit for Ed-F&R 544.

**588 Student Teaching in Special Fields U 3-15**

Au, Wi, Sp Qtrs. Prereq: Educ 4th yr standing and written permission of instructor. A minimum of 15 or hrs in student teaching is required. Repeatable to a maximum of 15 or hrs, including or hrs in Ed-Excep 588.54 and 588.60 and Ed-HuSer 588.54 and 588.60. For additional information see the *College of Education Bulletin*. These courses are graded S/U.

**588.14 Severe Behavior Handicapped****588.54 Educable Mentally Retarded****588.58 Physically Handicapped****588.62 Specific Learning Disabilities****644† Functional Behavioral Analysis I U G 3**

Designed to develop skills and knowledge in the experimental analysis of behavior with emphasis on mental retardation.

1 2-hr cl, 2-hr practicum. Not open to students with credit for Ed-Excep 644 or Ed-S&R 644.

**646† Functional Behavioral Analysis II U G 3**

Designed to develop skills in applying behavioral principles and techniques in field experience with retarded and other handicapped persons.

1 2-hr cl, 3-hr practicum. Prereq: 644 or Ed-Excep 644 or equiv and written permission of instructor. Not open to students with credit for Ed-Excep 646 or Ed-S&R 646.

**649 Medical Aspects of Mental Retardation U G 2**

Designed for non-medical practitioners in the field of mental retardation particularly educators; focus on issues of genetic, nutritional, neurological, psychiatric, and pediatric nature; medical terminology. Cavin.

Au, Sp Qtrs. 2 cl, 2 hr arr. Prereq: Permission of instructor and jr standing in non-medical programs leading to work with the mentally retarded. Not open to students in health-related disciplines or to students with credit for Ed-Excep 649 or Ed-HuSer 649.

**651 Introduction to Exceptional Children U G 3**

An overview of the education of exceptional learners including a discussion of their characteristics and a review of historical approaches to their education and of contemporary educational practices. Ward.

Su, Au, Sp Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-Excep 651, Ed-HuSer 651 or Psych 570.

**653 Elementary Physical Education for Special Educators U G 3**

Survey of elementary physical education with a focus on handicapped pupils; practice related to theories and research.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 251 or Ed-Excep 251 or Ed-HuSer 251 or permission of instructor. Students with credit for Phys Ed 323 must obtain permission of instructor. Not open to students with credit for Ed-Excep 653, Ed-HuSer 653, or Phys Ed 653. Cross-listed in Physical Education.

**655 Organization of Speech, Language, and Hearing Programs in the Schools U G 3**

Implementation of speech, language, and hearing programs in schools; organization, methodology, and management.

1 2½-hr cl. Prereq: Permission of instructor.

**659 Instructional Procedures for Developing Speech with the Hearing Impaired U G 3**

Educational assessment of the spoken language of hearing impaired children and provision of individualized programs for speech development.

Sp Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 659 or Ed-HuSer 659.

**660 Educational Assessment for Exceptional Children with Language Disorders U G 3**

Introduction to a psycholinguistic approach to language acquisition, underlying theories, and models of language development, research, assessment techniques, and implications for exceptional children with language disorders. Connard.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 660 or Ed-HuSer 660.

**661 Educational Techniques of Developing Language with Children with Language Disorders U G 3**

Practical application of educational techniques and procedures in developing comprehension and production of language with youngsters with language disorders. Connard.

Wi Qtr. 1 2½-hr cl. Prereq: 660 or Ed-Excep 660 or Ed-HuSer 660, or permission of instructor. Not open to students with credit for Ed-Excep 661 or Ed-HuSer 661.

**664 Developing Initial Language with Preverbal and Low-Verbal Handicapped Individuals U G 3**

Provides information and techniques to educationally intervene at the prelinguistic and initial linguistic levels with preverbal and low-verbal handicapped individuals. Connard.

Wi Qtr. 1 2½-hr cl. Prereq: 660 or Ed-Excep 660 or Ed-HuSer 660, or permission of instructor. Not open to students with credit for Ed-Excep 664 or Ed-HuSer 664.

**665 Mainstreaming: The Exceptional Student in the Regular Classroom U G 3**

Rationale, educational programming, and instructional procedures for educating exceptional children in the regular classroom; emphasis on the role of the regular-class teacher.

1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or permission of instructor. Not open to students with credit for Ed-Excep 665 or Ed-HuSer 665.

**670 Remedial and Clinical Reading Instruction U G 3**

An overview of theory and practice, including causes, diagnostic procedures, remediation, and instructional materials.

Su, Au, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-Excep 670 or Ed-HuSer 670 or Ed-T&P 670. Cross-listed in Educational Theory and Practice.

**671 Clinical Practice in Treating Reading Disabilities U G 3**

Use of test materials in the diagnosis of reading disabilities; practice with remedial procedures. McCormick and Paul.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl, 3 1-hr lab arr. Prereq: Ed-HuSer 670 or Ed T&P 732, and permission of instructor. Not open to students with credit for Ed-Excep 671 or Ed-HuSer 671 or Ed-T&P 671. Cross-listed in Educational Theory and Practice.

**676 Programming for Severe Physical Impairments U G 3**

Background information and survey of programmatic considerations related to physical, motor, and fitness training of the severely handicapped.

1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or permission of instructor. Not open to students with credit for Ed-Excep 676 or Ed-HuSer 676 or Phys Ed 676. Cross-listed in Physical Education.

**677 The Parent/Professional Partnership U G 3**

Designed to help educators acquire knowledge and skills necessary to assist parents in facilitating the development, education, and socialization of severely handicapped children. Cartledge.

1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 677 or Ed-HuSer 677.

**679 Career Education in the Schools: A Survey U G 3**

A survey of career education concepts and programming: the national position, Ohio Career Development Continuum, and local application of several developmental areas of career education; career guidance practices.

3 cl. Prereq: Permission of instructor and student teaching and/or bachelor's degree. Not open to students with credit for Ed-Sp Sv 679 or Ed-HuSer 679.

**680 Introduction to Education for Visually Handicapped Students U G 3**

Survey of historical, legislative, social, and psychological aspects of blindness and visual impairment; educational and vocational programming services, and resources identified in conjunction with field experiences. Ward.

1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651. Not open to students with credit for Ed-Excep 680 or Ed-HuSer 680.

**681 Educational Implications of Eye Disorders U G 3**

Anatomy and physiology of the eye; causes of impaired vision; educational implications of eye disorders. Ward.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 681 or Ed-HuSer 681.

**682 Reading and Writing Literary Braille U G 3**

Development of proficiency in transcribing Grade II braille; teaching beginning braille reading. Ward.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 682 or Ed-HuSer 682.

**683 Communication Skills for the Visually Handicapped Students U G 3**

Special braille codes and the use of auditory, visual, and tactual media and techniques for teaching communication skills to visually handicapped students. Ward.

Wi Qtr. 1 2½-hr cl. Prereq: 682 or Ed-HuSer 682, or Ed-Excep 682. Not open to students with credit for Ed-Excep 683 or Ed-HuSer 683.

**684 Curriculum Development and Adaptations for Visually Handicapped Students U G 3**

Selection, development, and adaptation of materials and procedures for the education of visually handicapped students of varying levels of ability and need. Ward.

1 2½-hr cl. Prereq: 680 or Ed-Excep 680, 681 or Ed-Excep 681, and 682 or Ed-Excep 682. Not open to students with credit for Ed-Excep 684 or Ed-HuSer 684.

**685 Orientation and Mobility for Visually Handicapped Children U G 3**

Practicum experiences in conjunction with the development of readiness activities, instruction, and assessment of pre-cane orientation and mobility skills for the visually handicapped.

1 2½-hr cl. Prereq: 680 or Ed-Excep 680, and 681 or Ed-Excep 681 or Ed-HuSer 680 and 681. Not open to students with credit for Ed-Excep 685 or Ed-HuSer 685.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Cl hrs arr. Prereq: Written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 or hrs, including cr hrs in Ed-Excep 692.04, 692.47, 692.48, 692.52, 692.54, 692.61, 692.62, and 692.66; Ed-Sp Sv 692.34; and Ed-HuSer 692.34, 692.47, 692.48, 692.52, 692.54, 692.61, 692.62, and 692.66.

- 692.34 Counselor Education
- 692.47 General Special Education
- 692.48 Multiple Handicaps
- 692.52 Visual Handicaps
- 692.54 Developmental Handicaps
- 692.61 Child Study
- 692.62 Specific Learning Disabilities
- 692.66 Gifted

**693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 or hrs of any 693 will apply toward graduation for undergrad students. For plan A, not more than 15 or hrs of any 693 and/or 693 will apply toward the master's degree; for Plan B, not more than 20 or hrs will apply. Not more than 30 or hrs will apply toward the doctoral degree. These courses are graded S/U.

- 693.14 Severe Behavior Handicaps
- 693.25 Rehabilitation Services
- 693.34 Counselor Education
- 693.38 School Speech-Language Pathology
- 693.47 General Special Education
- 693.48 Multiple Handicaps
- 693.52 Visual Handicaps
- 693.54 Developmental Handicaps
- 693.55 Hearing Handicaps

- 693.58 Orthopedic Handicaps
- 693.60 Educational Research and Evaluation
- 693.61 Child Study
- 693.62 Specific Learning Disabilities
- 693.63 School Psychology
- 693.64 Remedial and Clinical Reading
- 693.66 Gifted
- 693.67 Special Education Administration

#### 694 Group Studies U G 1-5

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Excep 694.47, 694.48, 694.54, 694.55; Ed-Sp Sv 694.34; Ed-E&M C 694.10, 694.56, and 694.70; Ed-F & R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-Sc&Ma 694.26 and 694.27; Ed T&P 694.60; and Ed-HuSer 694.14, 694.34, 694.47, 694.48, 694.54, 694.55, and 694.66.

- 694.14 Severe Behavior Handicaps
- 694.34 Counselor Education
- 694.47 General Special Education
- 694.48 Multiple Handicaps
- 694.54 Developmental Handicaps
- 694.55 Hearing Handicaps
- 694.60 Educational Research and Evaluation
- 694.66 Gifted

#### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

#### 698 Study Tour U G 1-15

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable to different titled study tours only.

- 698.01 Domestic
- 698.02 Foreign

#### 700 Interprofessional Education

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions are not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work, and theology. Cross-listed in Ed Policy & Leadership, Ed Theory & Practice, Ed Studies, Health Education, Physical Education, and Recreation Education.

##### 700.01 Seminar on Interprofessional Care U G 3

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

##### 700.02 Changing Societal Values U G 3

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

##### 700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3

Ethical issues of concern to the professions and arising out of advanced technology; euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

##### 700.04 Interprofessional Practicum in Clinical Settings U G 3 or 5

Interprofessional teamwork in clinical settings.

Prereq: Permission of instructor.

##### 700.05 Interprofessional Seminar in Policy Analysis U G 3

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

#### 700.06 Care of Chemically Dependent Families U G 3

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context. Wi Qtr.

#### 700.07 Interprofessional Approaches to Child Abuse and Neglect G 3

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

#### 705 Teaching Gifted Students — Educational and Psychological Approaches G 3

An examination of historical trends, educational, psychological, and philosophical factors in the education of gifted persons. Swassing.

Au Qtr. 1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or permission of the instructor. Not open to students with credit for Ed-Excep 675 or Ed-HuSer 675.

#### 711 Educational Assessment of Exceptional Learners U G 3

Examination of issues and procedures associated with planning, conducting, scoring, and interpreting educational assessments. Heron.

Au Qtr. 1 2½-hr cl. Prereq: 251 and 651 or equiv. Not open to students with credit for Ed-HuSer 711.

#### 712 Early Intervention for Children with Handicaps U G 3

Focus on the education of infants and preschool children with handicaps, principles of early identification and interention emphasizing interdisciplinary services presented, and observations at preschool field-sites. Connard.

Au Qtr. 1 2-hr cl. 2-hr field-based experience. Prereq: An introductory course in special ed (251, 651, or equiv), a course in child dev (Fm&Hu Dv 361), or the family (FM&Hu Dv 360, Sociol 430, or equiv). Not open to students with credit for Ed-HuSer 712.

#### 713 Reading in Perspective for the Hearing Impaired U G 3

Educational assessment of the syntactical, semantic, and developmental reading levels of the hearing impaired student and the development of an individualized reading program. Paul.

Wi Qtr. 3 cl. Prereq: 661 or Ed-Excep 661 or Ed-HuSer 661. Not open to students with credit for Ed-Excep 713 or Ed-HuSer 713.

#### 714 Curriculum Adaptations in Programs for the Hearing Impaired U G 3

Development and adaptation of curriculum, materials, and instructional procedures for teaching special subject areas with hearing impaired students. Connard.

Sp Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 714 or Ed-HuSer 714.

#### 715 Education of Severely/Multiply-Handicapped Children U G 3

An introduction to the education of severely, profoundly, and multiply handicapped children including deaf-blind, autistic-like, severely retarded, and multiply handicapped. Orlansky.

Au Qtr. 1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or Psych 570, and permission of instructor. Not open to students with credit for Ed-Excep 715 or Ed-HuSer 715.

#### 721† Introduction to Education of Deaf-Blind and Multiply-Handicapped Children U G 3

Introduction to education of deaf-blind and multiply-handicapped; characteristics, history, legislation, educational assessment, programs, and media and materials for deaf-blind and multiply-handicapped children. Orlansky.

Prereq: Written permission of instructor. Preference given to students who have shown interest and/or commitment to deaf-blind and multiply-handicapped children. Not open to students with credit for Ed-Excep 721 or Ed-HuSer 721.

**722 Directive Teaching of Exceptional Children U G 3**

Knowledge and principles of behavior and their application in teaching social and academic skills. Cooper.

Au, Wi, Sp Qtrs. Not open to students with credit for Ed-Excep 722 or Ed-HuSer 722.

**723 Programming for Low Incidence Handicapped Children U G 3**

Survey of major curriculum/programming areas and application of procedures to hearing impaired, visually impaired, severely retarded, deaf-blind, and multiply-handicapped children. Cavin.

Wi Qtr. 3 cl. Prereq: 721 or Ed-Excep 721 or Ed-HuSer 721, and/or permission of instructor. Not open to students with credit for Ed-Excep 723 or Ed-HuSer 723.

**725 Advanced Educational Procedures and Programming for Moderately, Severely, and Profoundly Handicapped U G 3**

Procedures and programming for moderately, severely, and profoundly handicapped children; review of teaching strategies, curriculum and development, and eight major curriculum areas for educational programming. Orlansky.

Sp Qtr. Prereq: 722 or Ed-Excep 722, or Ed-HuSer 722, and 723 or Ed-Excep 723 or Ed-HuSer 723; or written permission of instructor. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-Excep 725 and or Ed-HuSer 725.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

727.14 Severe Behavior Handicaps

727.25 Rehabilitation Services

727.34 Counselor Education

727.38 School Speech-Language Pathology

727.47 General Special Education

727.48 Multiple Handicaps

727.52 Visual Handicaps

727.54 Developmental Handicaps

727.55 Hearing Handicaps

727.58 Orthopedic Handicaps

727.60 Educational Research and Evaluation

727.61 Child Study

727.62 Specific Learning Disabilities

727.63 School Psychology

727.64 Remedial and Clinical Reading

727.66 Gifted

727.67 Special Education Administration

**738 Modes of Communication for Teaching Hearing Impaired Children U G 3**

Study and practical experience in the use of communication modes utilized by hearing impaired children; emphasis on oral, dactyl, language of signs, and combined modes as applied to schooling. Paul.

Su Qtr. 1 3-hr cl. Prereq: 661 or Ed-Excep 661 or Ed-HuSer 661, and/or written permission of instructor. Not open to students with credit for Ed-Excep 738 or Ed-HuSer 738.

**739 The Use of American Sign Language in the Education of Deaf Students U G 3**

Develops expressive and receptive skills in using American Sign Language in an educational setting. Paul

Au Qtr. 1 2½-hr cl. Prereq: 738 or Ed-HuSer 738 and/or permission of instructor. Not open to students with credit for Ed-HuSer 739.

**740 Psychosocial Aspects of Hearing Impairment on School Children U G 3**

The effects of hearing impairment on psychological and social development and functioning on school aged youth; emphasis on information gathering and analysis, cognition, communication, socialization, education-vocational considerations, and adjustment in relation to school learning. Collins and Connard.

Su Qtr. 1 3-hr cl. Prereq: Written permission of instructor. Not open to students with credit for Ed-Excep 740 or Ed-HuSer 740.

**741 Sign Languages and Deaf Students: Advanced Considerations U G 3**

Designed to help participants develop advanced skills in using aspects of American Sign Language with deaf students at the secondary education level. Paul.

Wi Qtr. 1 2½-hr cl. Prereq: 739 or Ed-HuSer 739 and/or permission of instructor. Not open to students with credit for Ed-HuSer 741.

**746 Behavioral Consultation in School, Clinic, and Home Settings U G 3**

Focuses on providing behavioral consultation to regular and special education teachers, administrators, students, and parents; analyses the development, implementation, and evaluation of consultation programs in school, clinics, and home settings. Heron.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: 771 or Ed-Excep 771, and written permission of instructor. Not open to students with credit for Ed-Excep 846 or Ed-HuSer 846.

**750 Teaching Social Behavioral to Handicapped Students U G 3**

Examination of the special social skill needs of the handicapped; acquisition of skills relative to curriculum development, assessment and evaluation, and instruction of social skills.

Wi Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-HuSer 750.

**751 Advanced Educational Procedures for Learning Disabled Students U G 6**

Develops advanced training in learning strategies and individualized methods for elementary and secondary students with specific learning disabilities.

Sp Qtr. 1 2½-hr cl., 3-hr practicum, 6 hrs arr. Prereq: Ed-HuSer or Ed-S&R 651 or 770, 777, 778, and permission of instructor.

**752 Crisis Intervention and Instructional Management of SBH U G 6**

Examination of the problems, issues, and practices relative to educating children with severe behavior disorders.

Sp Qtr. 1 2½-hr cl, 6 hrs field work, arr. Prereq: Permission of instructor.

**760 Management of Educational Research and Development U G 3**

An examination of the theory, practice, and problems associated with the administration and management of research and development in educational systems and institutions.

1 3-hr cl. Prereq: Bus-Mgt 701 for undergrads; Bus-Mgt 800 for grad students. Not open to students with credit for Ed-F & R 760 or Ed T&P 760.

**764 Planning and Implementing Instruction for Generalized Outcomes U G 3**

Examination of guiding principles and operational procedures for designing and implementing instructional programs that promote the generality of newly learned skills. Heward.

Wi Qtr. 1 2½-hr cl. Prereq: 722 and permission of instructor. Not open to students with credit for Ed-HuSer 795.

**765 Introduction to Educational Evaluation U G 3**

Introduction to educational evaluation including history, models, theories, politics of evaluation, and types of evaluation.

1 2½-hr cl. Prereq: 785 or Ed-T&P 785 and/or permission of instructor. Not open to students with credit for Ed-F & R 765 or Ed-T&P 765.

### 766 Trends, Issues, and Technological Developments in Teaching Visually Handicapped Students U G 3

Study of technological research and vocational implications for visually handicapped students; development of basic skills for teaching use of audio, visual, and tactual aids including Optacon. Ward.

1 2½-hr cl. Prereq: 684 or Ed-Excep 684 or Ed-HuSer 684. Not open to students with credit for Ed-Excep 786 or Ed-HuSer 786.

### 767 Assessment in Counseling: Instrumentation U G 3

An introduction to the concepts and techniques in the appraisal of the individual with an emphasis on basic statistical concepts, and an overview of the instrumentation; designed for counselors who will be working in school, mental health, and rehabilitation settings.

1 2½-hr cl. Prereq: 773 or Ed-Sp Sv 773 or Ed-HuSer 773, or permission of instructor. Not open to students with credit for Ed-Sp Sv 777 or Ed-HuSer 767.

### 768 Assessment in Counseling: Interpretation U G 3

A continuation of 767 involving a more advanced study of concepts and techniques in the appraisal of the individual with an emphasis on the development of case studies, and interpretation of standardized and non-standardized assessment instruments; designed for counselors who will be work in in school, mental health, and rehabilitation settings.

1 2½-hr cl. Prereq: 767 or Ed-Sp Sv 777 or Ed-HuSer 767. Not open to students with credit for Ed-Sp Sv 778 or Ed-HuSer 768.

### 769 Quantitative Techniques for Educational Decisions U G 3

Principles and problems associated with utilization of quantitative techniques and procedures for educational decision making.

1 3-hr cl. Prereq: 786 or Ed-F & R 786, and 788 or Ed-F & R 788. Not open to students with credit for Ed-F & R 769 or Ed T&P 769.

### 770 Introduction to Educating Mildly-Handicapped Children and Adults U G 3

An overview of problems, issues, and practices in educating mildly handicapped children and adults who are developmentally handicapped, learning disabled, and behaviorally disordered; required for certification in learning disabilities and developmentally handicapped areas.

1 2½-hr cl. Not open to students with credit for Ed-Excep 770 or Ed-HuSer 770.

### 771 Exceptional Children: Assessment and Instruction U G 6

Academic and social assessment and instruction of children with learning behavioral disorders in a clinical setting. Sutherland.

Au, Wi, Sp Qtrs. 3 cl, 3 lab. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 771 or Ed-HuSer 771.

### 772 Applying Behavioral Approaches in the Classroom U G 3

Classroom management problems, classroom engineering, assessment for teaching and roles of key people in a behavioral model designed for children with learning and behavior disorders. Heward.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: 722 or Ed-Excep 722 or Ed-HuSer 722. Not open to students with credit for Ed-Excep 772 or Ed-HuSer 772.

### 773 Introduction to Guidance Services U G 3

Background and purposes of guidance services; techniques used in studying the individual; informational services; counseling service; placement and follow-up; developing a guidance program. Post.

Prereq: Educ 451. Not open to students with credit for Ed-Sp Sv 773 or Ed-HuSer 773.

### 774 Introduction to Counseling U G 3

Introduction to counseling theories with emphasis on theoretical bases and applications in selected school and community settings. Tosi.

2 1½-hr cl. Prereq: 773 or Ed-Sp Sv 773 or Ed-HuSer 773.

Not open to students with credit for Ed-Sp Sv 774 or Ed-HuSer 774.

### 775 Group Counseling U G 3

An overview of theories, issues, and trends of group counseling. Wigtil.

1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 775 or Ed-HuSer 775.

### 776 Counseling Children U G 3

An overview of child behavior and concerns with emphasis on counseling theory as applied to children and general treatment modalities. Wise.

1 2½-hr cl. Not open to students with credit for Ed-Sp Sv 776 or Ed-HuSer 776.

### 777 Methods and Materials for Teaching the Elementary Level Mildly Handicapped U G 6

A practicum on content, teaching techniques, instructional strategies, and materials for teaching elementary level students who are mildly or moderately retarded. Heron.

5 cl, 10 hrs practicum. Prereq: Written permission of instructor. Not open to students with credit for Ed-Excep 777 or Ed-HuSer 777.

### 778 Secondary Methods in Teaching Mildly-Handicapped Students U G 6

Presentation of the philosophy, objectives, and techniques for preparing mildly handicapped students for occupational, social, and academic competence. Cartledge.

1 2½-hr cl, 20 hrs practicum. Prereq: Written permission of instructor. Not open to students with credit for Ed-Excep 778 or Ed-HuSer 778.

### 779 Educational and Vocational Guidance U G 5

Theories, instruments, and resources for educational and vocational guidance of elementary and secondary students including an analysis of post-secondary school educational opportunities.

1 2½-hr cl, 1 2-hr lab. 20 clinical hrs. Prereq: 768 or Ed-HuSer 768 or Ed-Sp Sv 778, 773 or Ed-HuSer 773 or Ed-Sp Sv 773, and written permission of instructor. Not open to students with credit for Ed-Sp Sv 779 or Ed-HuSer 779.

### 780 Leisure Services for Special Populations U G 3

Basic information on recreation services for special populations including role of the recreation practitioner, legal considerations, and procedures for planning activities.

1 2½-hr cl. Prereq: Sr standing or above. Not open to students with credit for Ed-Excep 780 or Rec Educ 780 or Ed-HuSer 780. Cross-listed in Recreation Education.

### 781 Assessment of Leisure Skills for Special Clients U G 2

Basic information and limited practice in assessment and observation of leisure skills as they relate to leisure services; emphasis on special clients and populations.

1 2-hr cl. Prereq: 722 or Ed-Excep 722 or Ed-HuSer 722, and 780 or Ed-Excep 780 or Ed-HuSer 780, or Rec Educ 780. Not open to students with credit for Ed-Excep 781 or Rec Educ 781 or Ed-HuSer 781. Cross-listed in Recreation Education.

### 782 Developing and Implementing Leisure Plans with Special Clients U G 3

Basic information and limited experience in teaming, selecting, and modifying activities; tracking client participation and consultation skills.

1 2½-hr cl. Prereq: 781 or Ed-Excep 781 or Ed-HuSer 781 or Rec Educ 781. Not open to students with credit for Ed-Excep 782 or Ed-HuSer 782 or Rec Educ 782. Cross-listed in Recreation Education.



**783 Recreation Program Development and Evaluation for Special Populations U G 4**

Basic information and limited experience in program development, modification, utilizing current research, and program evaluation of recreation programs for special groups and individuals.

1 3½-hr cl. Prereq: 780 or Ed-Excep 780 or Ed-HuSer 780 or Rec Educ 780. Not open to students with credit for Ed-Excep 783 or Ed-HuSer 783 or Rec Educ 783. Cross-listed in Recreation Education.

**784 Leisure Programming for Children with Severe Behavior Handicaps U G 4**

Basic information and experience in programming activities for children with severe behavior handicaps.

2 2-hr cl. Prereq: 722 or Ed-Excep 722 or Ed-HuSer 722 or permission of instructor. Not open to students with credit for Ed-Excep 784 or Ed-HuSer 784 or Rec Educ 784. Cross-listed in Recreation Education.

**785 Introduction to Inquiry, Principles, Strategies, and Techniques U G 3**

Introduction to inquiry strategies and their role in educational development; emphasis is on the conceptualization of educational problems.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 4th year or grad standing. Not open to students with credit for Ed-F & R 785 or Ed T&P 785.

**786 Introduction to Inquiry: Quantitative Methods U G 3**

An introduction to quantitative techniques, with emphasis on application in educational settings.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: 4th year or grad standing. Not open to students with credit for Ed-F & R 786 or Ed-T&P 786.

**787 Applied Behavioral Analysis of Exceptional Children U G 3**

Designed to help students develop skills in directive teaching with exceptional children. Cooper.

Wi Qtr. Prereq: 722 or Ed-Excep 722 or Ed-HuSer 722. Not open to students with credit for Ed-Excep 774 or Ed-HuSer 787.

**788 Observation Study of Exceptional Children U G 3**

Measurement and evaluation techniques, research designs, geared to teacher application in the classroom. Heward.

Sp Qtr. Prereq: 722 or Ed-Excep 722 or Ed-HuSer 722. Not open to students with credit for Ed-Excep 775 or Ed-HuSer 788.

**789 Educational Assessment and Remediation of Auditory Receptive and Perceptive Disorders U G 3-6**

Educational assessment, planning, and implementation of instructional strategies for developing receptive and perceptive skills. Connard.

Au Qtr. 1 2½-hr cl. Prereq: Written permission of instructor. Not open to students with credit for Ed-Excep 776 or Ed-HuSer 789.

**790 Principles and Practices of Rehabilitation Counseling U G 3**

Orientation to the vocational rehabilitation process; a survey of principles, history, philosophies, legislation, and techniques.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 790 or Ed-HuSer 790.

**791 Orientation to Disabling Conditions U G 3**

An overview of major disabling conditions focusing on: etiology, treatment, and prognosis; physical restoration; the vocational and functional limitations created by the conditions.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sp Sv 791 or Ed-HuSer 791.

**792 Job Placement and Job Development for Persons with Disabilities U G 3**

An analysis of the theories and techniques involved in vocational counseling, job restructuring, and job development with the disabled worker; an introduction to models of interagency linkage and cooperation.

Wi Qtr. 1 2½-hr cl. Prereq: 790 or Ed-Sp Sv 790 or Ed-HuSer 790, and permission of instructor. Not open to students with credit for Ed-Sp Sv 792 or Ed-HuSer 792.

**795 Proposal Development U G 3**

Principles, processes, and research relating to the creation of proposals for developmental and research activities in educational agencies and institutions.

1 2½-hr cl. Prereq: 785 or Ed-F & R 785 or equiv. Not open to students with credit for Ed-F & R 795 or Ed-T&P 795.

**796 Classroom Test Construction U G 3**

General principles and techniques for construction and utilization of classroom tests for assessment of student achievement.

1 3-hr cl. Prereq: 4th yr or grad standing. Not open to students with credit for Ed-F & R 787 or Ed-T&P 787.

**797 Information Processing in Education U G 4**

Major emphases are placed on current applications, limitations, problems, and potential of data processing, information system, and computer technology in education.

1 3-hr cl, 1 hr lab arr. Not open to students with credit for Ed-F & R 791 or Ed-T&P 791.

**798 Participating in Multifactorial Evaluation and Individual Education Programs G 3**

Practical application of legal requirements for special education identification and placement procedures for teachers, counselors, school psychologists, and other support personnel. Waddell.

1 2½-hr cl. Prereq: Grad standing. Not open to students with credit for Ed-HuSer 798.

**800 Counseling: Practica in Basic Helping Skills G 2**

Provides the experimental component of ED-S & R 774; introduction to counseling and ED-S & R 775 group process.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. These courses are graded S/U.

**800.01 Individual Counseling**

Intensive training in basic interviewing and counseling skills with a focus on self-assessment, and on increasing one's understanding of the complexities of interpersonal processes. Tosi.

Prereq: 774 or equiv and/or permission of instructor. Not open to students with credit for or Ed-HuSer 800.01.

**800.02 Group Counseling**

An opportunity to experience the group process from a member's perspective, and to observe the role and function of a group facilitator. Wigtil.

Prereq: 775 or equiv and/or permission of instructor. Not open to students with credit for or Ed-HuSer 800.02.

**801 Multiculturalism and Counseling G 3**

Explores cultural-specific issues and their impact on counseling.

**801.01 Multicultural Issues in Counseling**

An exploration of multicultural concerns related to the knowledge, belief/attitudes, and skills of counselors. Kelsey.

Au Qtr. Prereq: 774 or Ed-HuSer 774, or permission of instructor. Not open to student with credit for or Ed-HuSer 801.01.

**801.02 Multicultural Research in Counseling**

An examination of multicultural research design and methodology, and the impact these findings have on counseling. Kelsey.

Sp Qtr. Prereq: 785 and/or 786 or their equivalents and 801.01 or equiv. Not open to students with credit for or Ed-HuSer 801.02.

**805 Teaching the Gifted: Instructional and Curricular Adaptations G 4**

Information and skills for modifying curriculum for gifted presented in a workshop format. Swassing.

Sp Qtr. 2½-hr cl. 2 hrs practica/wk. Prereq: 675 or 705 or Ed-HuSer 675 or Ed-Excep 675. Not open to students with credit for Ed-Excep 805 or Ed-HuSer 805.

**807 Educational Survey Research Methods G 3**

A study of the design principles, sampling, and data-gathering methods used in the conduct of educational survey research.

2 1½-hr cl. Prereq: 785 or Ed-F & R 785 or Ed-T&P 785, and 786 or Ed-T&P 786 or Ed-F & R 786, or equivs with written permission of instructor. Not open to students with credit for Ed-F & R 807 or Ed-T&P 807.

**808 Experimental Design in Education I G 3**

An examination of logical and quantitative principles, especially the analysis of variance, underlying basic experimental designs employed in educational research.

2 1½-hr cl. Prereq: 786 or Ed-F & R 786 or Ed-T&P 786 or equiv. Not open to students with credit for students with credit for Ed-F & R 810 or Ed-T&P 808.

**809 Experimental Design in Education II G 3**

An examination of intermediate quantitative principles and issues underlying experimental design in education, especially principles and issues associated with factorial designs employing multiple response measures.

Sp Qtr. 2 1½-hr cl. Prereq: 808 or Ed-F & R 808 or Ed-T&P 808 or equiv. Not open to students with credit for Ed-F & R 809 or Ed-T&P 809.

**810 Experimental Design in Education III G 3**

An examination of repeated measurements, mixed, hierarchical, partial hierarchical, and quasi-experimental designs and associated methods of univariate and multivariate statistical analyses.

Au Qtr. 2 1½-hr cl. Prereq: 809 or Ed-F & R 809 or Ed-T&P 809 or equiv. Not open to students with credit for Ed-F & R 810 or Ed-T&P 810.

**820 Program/Project Management G 3**

The use of management information systems in the planning and controlling of educational research and development projects, with particular emphasis on network planning techniques.

1 3-hr cl. Not open to students with credit for Ed-F & R 820 or Ed-T&P 820.

**840 Systems Concept in Education G 3 or 5**

Introduction to general systems theory and an overview of its utilization and application in the field of education.

2 2-hr cl. Not open to students with credit for Ed-F & R 830 or Ed-T&P 847.

**844 Vocational Evaluation and Development G 3**

A study of vocational evaluation, development, and work adjustment materials and practices utilized in educational and rehabilitation settings.

1 2½-hr cl. Prereq: 790 or Ed-SpSv 790 or Ed-HuSer 790 or permission of instructor. Not open to students with credit for Ed-Intec 829 or Ed-T&P 844 or Ed-HuSer 844. Cross-listed in Educational Studies.

**845 Work Adjustment and Development G 3**

A study of the principles and procedures of work adjustment and development techniques, methods, and resources utilized in educational and rehabilitation settings.

1 2½-hr cl. Prereq: Ed-Intec 730 or Ed-T&P 730 or permission of instructor. Not open to students with credit for Ed-Intec 829 or Ed-T&P 845 or Ed-HuSer 845. Cross-listed in Educational Studies.

**847 Preparation of Handicapped Children for Post-School Adjustment G 3**

Study of the roles of education, guidance, work experience, placement, and follow-up service in helping handicapped children adjust to employment, family, and community life.

1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or Psych 570, and permission of instructor. Not open to students with credit for Ed-Excep 847 or Ed-HuSer 847.

**848 Management and Administration of Programs for Exceptional Children G 4**

A review of technology, trends, and issues basic to the management and operation of a special education program with the intention of preparing leadership personnel. New.

1 3½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651, and grad standing in special education; or written permission of instructor. Not open to students with credit for Ed-Excep 848 or Ed-HuSer 848.

**849 Teaching Students with Severe Behavior Disorders G 3**

Introduction to problems, issues, and practices in educating children with severe behavior disorders including identification, assessment, educational programming, and legal considerations.

1 2½-hr cl. Prereq: 651 or Ed-Excep 651 or Ed-HuSer 651 or permission of instructor. Not open to students with credit for Ed-Excep 849 or Ed-HuSer 849.

**850 Internship in Educational Research and Development G 3-12**

Internship experiences in research, development, or evaluation settings.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs, including cr hrs in Ed-F & R 850 and Ed-T&P 850.

**851 Evaluation Methods: Principles of Needs Assessment I G 3**

Introduction to the concept of need, issues in needs assessment, and types of needs assessment strategies with a special emphasis on basic techniques and procedures.

1 2½-hr cl. Prereq: 765 or Ed-F & R 863 or Ed T&P 765 or permission of instructor. Not open to students with credit for Ed-T&P 863.

**852 Evaluation Methods: Principles for the Evaluation of Professional Personnel in Education G 3**

Designed to help people to manage the design, implementation, and evaluation of performance appraisal and review systems in educational organizations.

Wi Qtr. 1 2½-hr cl. Ed-T&P 765 recommended.

**853 Evaluation Methods: Principles of Needs Assessment II G 3**

A brief overview of needs assessment followed by an inspection of in-depth needs assessment, procedures used in education, agencies, and business/industry settings.

Sp Qtr. 1 2½-hr cl. Prereq: 765 or 851 or Ed-T&P 765 or Ed-T&P 863 or permission of instructor.

**854 Evaluation Methods: Principles and Techniques for the Evaluation of Teaching and Teachers G 3**

Designed to help people manage the design, implementation, and evaluation of performance appraisal and review systems in educational organizations.

Sp Qtr. 1 2½-hr cl. Prereq: 765 or Ed-T&P 765 recommended.

**862 Rehabilitation Case Management G 3**

An in-depth analysis of the vocational rehabilitation topics of case management, agency functioning, and the adaptation of counseling models and techniques for use with persons with disabilities.

Wi Qtr. 1 2½-hr cl. Prereq: 774 or Ed-Sp Sv 774 or Ed-HuSer 774, and 790 or Ed-HuSer 790 or Ed-Sp Sv 790. Not open to students with credit for Ed-Sp Sv 862 or Ed-HuSer 862.

**864 Reactions and Adjustment to Disability G 3**

A study of individual reactions to various disabling conditions, the adjustment process, cultural norms and expectations, and responses to the rehabilitation process.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Sp Sv 864 or Ed-HuSer 864.

**867 Educational Experimentation G 2-5**

Analysis of contribution of selected experiments to elementary, secondary, and higher education; design of experimental method for attacking educational problems.

1 2-hr lab, conf arr. Prereq: 785 or Ed-F & R 785 or Ed-T&P 785, and 15 cr hrs of grad work in educ. Repeatable to a maximum of 5 cr hrs, including cr hrs in Ed-F & R 867 and Ed-T&P 867.

**871 Programming for Students with Severe Behavior Disorders G 3**

Basic information and experience in assessment and instruction of academic and social skills of school-aged children with severe behavior handicaps.

1 2½-hr cl, 5 hrs practicum. Prereq: 651 or Ed-Excep 651, 722 or Ed-HuSer 722 or Ed-Excep 722, and 849 or Ed-Excep 849 or Ed-HuSer 849; or permission of instructor. Not open to students with credit for Ed-Excep 871 or Ed-HuSer 871.

**875 Consultation in the Human Services Profession G 3**

The consultation process, models, roles, skills, and outcomes for human services personnel will be addressed; emphasis is placed on extending theoretical and practical knowledge. Collins and Miranda.

1 3-hr cl, and field experience. Prereq: 773, 774, 775, or Ed-HuSer 773, 774, 775, grad standing, and/or permission of instructor. Not open to students with credit for Ed-HuSer 875.

**876 Organization and Administration of Guidance Services G 3**

The selection, organization, and presentation of guidance materials, including analysis of types of organization, methods of initiating a guidance program, and types of in-service programs. Sears.

3 cl. Prereq: 773 or Ed-Sp Sv 773 or Ed-HuSer 773 or equiv. Not open to students with credit for Ed-Sp Sv 876 or Ed-HuSer 876.

**884 Planned Field Experience G 3-15**

Planned counseling, supervisory, assessment, or teaching experience in a public school or other human service setting under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Excep 884.47, 884.48, 884.52, 884.54, 884.55, 884.60, 884.61, and 884.66; and Ed-Sp Sv 884.34; Ed-E&M C 884.10, 884.56, and 884.70; Ed F & R 884.36, 884.43, 884.46, and 884.60; Ed-Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&Ma 884.26, 884.27; Ed-T&P 884.60; and Ed-HuSer 884.14, 884.25, 884.34, 884.47, 884.48, 884.52, 884.54, 884.55, 884.60, 884.61, 884.62, 884.63, 884.64, 884.66, and 884.67.

**884.14 Severe Behavior Handicaps****884.25 Rehabilitation Services****884.34 Counselor Education**

200-400 contact hrs/qtr.

**884.47 General Special Education**

100 contact hrs.

**884.48 Multiple Handicaps**

100 contact hrs. This course is graded S/U.

**884.52 Visual Handicaps**

100 contact hrs. This course is graded S/U.

**884.54 Developmental Handicaps**

100 contact hrs. The grade of "P" (progress) will be issued for the first three quarters of enrollment; a grade will be issued upon completion of the fourth quarter of enrollment.

**884.55 Hearing Handicaps**

100 contact hrs. This course is graded S/U.

**884.58 Orthopedic Handicaps**

100 contact hrs.

**884.60 Educational Research and Evaluation****884.61 Child Study****884.62 Specific Learning Disabilities****884.63 School Psychology****884.64 Remedial and Clinical Reading****884.66 Gifted****884.67 Special Education Administration****885 Supervised Teaching in Special Education G 3-15**

Student teaching for qualified students in the area of special education.

Au, Wi, Sp Qtrs. 300 field contact hrs/qtr. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs including cr hrs in Ed-Excep 885.48, 885.52, 885.54, 885.55, 885.60, 885.62, 885.66; and Ed-HuSer 885.48, 885.52, 885.54, 885.55, 885.60, 885.62, and 885.66.

**885.14 Severe Behavior Handicaps**

Repeatable to a maximum of 15 cr hrs.

**885.38 School Speech-Language Pathology G 3-15**

Repeatable to a maximum of 15 cr hrs.

**885.48 Severely/Multiply Handicapped****885.52 Visual Handicaps****885.54 Developmental Handicaps****885.55 Hearing Handicaps****885.58 Orthopedic Handicaps****885.62 Specific Learning Disabilities****885.66 Gifted****893 Advanced Individual Studies G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Plan A: not more than 15 cr hrs of any 693 and/or 893 will apply toward the master's degree; Plan B: not more than 20 cr hrs will apply. Not more than 30 cr hrs will apply toward the doctoral degree. Repeatable. These courses are graded S/U.

**893.14 Severe Behavior Handicaps****893.25 Rehabilitation Services****893.34 Counselor Education****893.38 School Speech-Language Pathology****893.47 General Special Education****893.48 Multiple Handicaps****893.52 Visual Handicaps****893.54 Developmental Handicaps****893.55 Hearing Handicaps****893.58 Orthopedic Handicaps****893.62 Specific Learning Disabilities****893.63 School Psychology****893.64 Remedial and Clinical Reading****893.66 Working With the Gifted****893.67 Special Education Administration****894 Advanced Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Excep 894.48, 894.55, and 894.61; Ed-Sp Sv 894.34; and Ed-HuSer 894.34, 894.48, 894.55, 894.61, and 894.67.

**894.34 Counselor Education****894.48 Multiple Handicaps****894.55 Hearing Handicaps****894.61 Child Study****894.67 Special Education Administration****925 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. Research problems in:

**925.34 Counselor Education****925.38 School Speech-Language Pathology****925.47 General Special Education****925.48 Multiple Handicaps****925.52 Visual Handicaps****925.54 Developmental Handicaps****925.55 Hearing Handicaps****925.60 Educational Research and Evaluation**

925.61 Child Study

925.62 Specific Learning Disabilities

925.66 Gifted

## 926 Doctoral-level Professional Seminars in Counselor Education G 3

Doctoral-level professional seminars covering a range of topics in professional counseling with emphasis on new developments in the theory, practice, and research of counseling.

### 926.01 Advanced Interventions I: Diagnosis and Intervention in Counseling

An in-depth exploration of analytical, cognitive, behavioral, and humanistic approaches to the diagnosis and treatment of five major mental and emotional disorders: organic, psychotic, affective, dissociative, and somatoform.

Au Qtr. 1 2½-hr cl. Not open to students with credit for Ed-HuSer 926.01.

### 926.02 Advanced Interventions II: Brief Approaches to Counseling

An exploration of brief psychodynamic approaches to the diagnosis and treatment of five major mental and emotional disorders: personality, impulse control, anxiety, substance induced and substance use, and psychosexual.

Wi Qtr. Prereq: 926.01 or Ed-HuSer 926.01; Psych 860, 866.01, or equiv, and Psych 867.01. Not open to students with credit for Ed-HuSer 926.02.

### 926.03 Advanced Interventions III: Contemporary Systems of Counseling

An extensive exploration of the theories and applications of classical and contemporary approaches to counseling; emphasis is placed on the use of hypnosis and sensory imagery approaches to behavioral change.

Sp Qtr. Prereq: 926.02 or Ed-HuSer 926.02; Psych 860, 866.01 or equiv, or 867.01. Not open to students with credit for Ed-HuSer 926.03.

### 926.04 Critical Research Issues in Counselor Education, Supervision, and Practice

An exploration of critical issues in the principles of research as they apply to school, mental health, and rehabilitation counseling.

Sp Qtr. Prereq: ED-T&P and/or ED-T&P 786 or their equivs. Not open to students with credit for or Ed-HuSer 926.04.

### 926.05 Helping Strategies in Career Counseling

An examination of the skills necessary for individual and group career counseling.

Sp Qtr. 1 2½-hr cl. Prereq: Psych 884.01, PhD standing or permission of instructor.

### 926.06 Legal, Professional, and Ethical Issues in Counseling

An examination of current legal, professional, and ethical issues in counseling.

Au Qtr. Prereq: PhD standing or permission of instructor. Not open to students with credit for or Ed-HuSer 926.06.

### 926.07 Theories of Counselor Supervision

Knowledge and skills required for counselor supervision with emphasis on generic models, the supervisory relationship, and major theories.

Wi Qtr. Prereq: PhD standing or permission of instructor. Not open to students with credit for or Ed-HuSer 926.07.

### 926.08 Leadership Roles in Professional Counseling

An exploration of leadership strategies as applied to human service delivery systems in which counselors function.

Wi Qtr. Prereq: PhD standing or permission of instructor. Not open to students with credit for or Ed-HuSer 926.08.

## 930 Applied Evaluation Design G 3

Techniques for planning, implementing, and reporting the evaluation of programs in varied educational settings.

Sp Qtr. 1 2-hr cl. Prereq: 765 or Ed-T&P 765 or Ed-F & R 765, and 785 or Ed-T&P 785 or Ed-F & R 785, or equivs or permission of instructor. Not open to students with credit for Ed-F & R 930 or Ed-T&P 930.

## 966 Practicum in Educational Research and Evaluation G 3

The utilization of research strategies and evaluation techniques in studying educational problems with emphasis upon the development, conduct, and completion of individual projects.

3 cl. Prereq: Previous courses in the basic sequence in educational research or evaluation or permission of instructor. Not open to students with credit for Ed-F & R 966 or Ed-P&L 966 or Ed-T&P 966. Cross-listed in Educational Policy and Leadership. This course is graded S/U.

## 974 Supervised Practice in Individual Counseling: Children G 3

Counseling techniques unique to elementary age children including play media and conceptualizing the environmental press on the child.

1 2½-hr cl. Minimum 30 contact hrs. Prereq: 773 or Ed-Sp Sv 773 or Ed-HuSer 773, 774 or Ed-Sp Sv 774 or Ed-HuSer 774, 775 or Ed-Sp Sv 775 or Ed-HuSer 775; and written permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 974 and or Ed-HuSer 974.

## 975 Supervised Practice in Group Counseling: Children G 3

Supervision of each enrollee who counsels with a group of children of elementary age in a school or other institutional setting.

1 2½-hr cl. Minimum 30 contact hrs. Prereq: 773 or Ed-Sp Sv 773 or Ed-HuSer 773, 774 or Ed-Sp Sv 774 or Ed-HuSer 774; and written permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 975 and Ed-HuSer 975.

## 976 Supervised Practicum in Individual Counseling: Adolescent, Youth, and Adult G 3

Supervised practice in counseling individual clients of adolescent to adult age; emphasis on developing counseling skills, including: counseling relationship; conceptualizing clients; self-understanding.

1 2½-hr cl. Minimum 30 contact hrs. Prereq: 773 or Ed-HuSer 773 or Ed-Sp Sv 773, 774 or Ed-Sp Sv 774 or Ed-HuSer 774; and written permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 976 and Ed-HuSer 976.

## 977 Supervised Practice in Group Counseling: Adolescent, Youth, and Adult G 3

Supervision of each enrollee who counsels with a group of adolescents, youths or adults in a school or other institutional setting.

1 2½-hr cl. Minimum 30 contact hrs. Prereq: 773 or Ed-HuSer 773 or Ed-Sp Sv 773, 774 or Ed-HuSer 774 or Ed-Sp Sv 774; and written permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 977 and Ed-HuSer 977.

## 978 Supervised Field Experience in Counseling G 3

Supervised practice in guidance and counseling activities in the work setting; emphasis on the range of activities performed by guidance workers in school and related settings.

1 2½-hr cl. Rehabilitation Services—100 field contact hrs; Counselor Education—minimum 20-40 field contact hrs. Prereq: 773 or Ed-HuSer 773 or Ed-Sp Sv 773, 774 or Ed-Sp Sv 774 or Ed-HuSer 774; and written permission of instructor. Repeatable to a maximum of 9 cr hrs, including cr hrs in Ed-Sp Sv 978 and Ed-HuSer 978.

## 986 Developmental Assessment I G 3

Use of testing and observational techniques in developmental assessment with major emphasis on collecting and evaluating data related to global cognitive and affective functioning. Genshaft and Naglieri.

1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 986 and Ed-HuSer 986.

## 987 Developmental Assessment II G 3

Continuation of 986, with emphasis on the techniques developed to assess specific abilities and disabilities for educational planning. Genshaft and Naglieri.

1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 987 and Ed-HuSer 987.

**988 Developmental Assessment III G 3**

Continuation of 987, with emphasis on the analysis, synthesis, and interpretation of data. Genshaft and Naglieri.

1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 988 and Ed-HuSer 988.

**989 Developmental Assessment IV G 3**

Continuation of 988, with emphasis on intervention and the evaluation of intervention techniques. Collins.

1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 989 and Ed-HuSer 989.

**990 Supervised Practice in Developmental Assessment G 3**

Assessment of limited numbers of children within a school setting and under close supervision, emphasis on global techniques, specific techniques, educational planning, and counseling with children, teachers, and parents. Collins, Genshaft, Miranda, and Naglieri.

Su, Au, Wi, Sp Qtrs. 300 clock hrs over 4-qr sequence. No clock hrs for 986-990. Prereq: Permission of instructor; must be taken concurrently with one of the following: 986, 987, 988, or 989. Repeatable to a maximum of 21 cr hrs, including cr hrs in Ed-Excep 990 and Ed-HuSer 990.

**991 School Psychologist in American Schools G 3**

Overview of trends and issues confronting the professional school psychologist; establishing and maintaining a program of school psychological services. Genshaft.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Excep 991 and Ed-HuSer 991.

**992 Internship in Child Study G 3, 6, 9, or 12**

Professional experiences planned by the student, staff member, and local school supervisor. plan these professional experiences. Collins, Genshaft, Miranda, and Naglieri.

Au, Wi, Sp Qtrs. 1,200 clock hrs for 3-qr sequence. Prereq: Permission of instructor. Limited to select PhD and post-master's students specializing in school psychology. Repeatable to a maximum of 36 cr hrs, including cr hrs in Ed-Excep 992 and Ed-HuSer 992.

**995 Doctoral-level Internship in Counseling G 3-15**

Supervised internship in professional counseling for doctoral-level students in educational, mental health, or related settings.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: PhD standing or permission of instructor. Repeatable to a maximum of 15 cr hrs including Ed-HuSer 995. This course is graded S/U.

**999 Research G Arr 1-18**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

- 999.14 Severe Behavior Handicap
- 999.34 Counselor Education
- 999.38 Research: School Speech-Language Pathology
- 999.47 General Special Education
- 999.48 Multiple Handicaps
- 999.52 Visual Handicaps
- 999.54 Developmental Handicaps
- 999.55 Hearing Handicaps
- 999.58 Orthopedic Handicaps
- 999.60 Educational Research and Evaluation
- 999.61 Child Study
- 999.62 Specific Learning Disabilities
- 999.63 School Psychology
- 999.64 Remedial and Clinical Reading
- 999.66 Gifted
- 999.67 Research: Special Education Administration

## Educational Studies: Humanities, Science, Technological, and Vocational

227 Arps Hall, 1945 North High Street, 292-2332.

EducStds 697, 698, 700.01-700.06, and 727 may be offered by any of the program areas listed below.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable to different titled study tours only.

**698.01 Domestic****698.02 Foreign****700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation. Cross-listed in Ed Policy & Leadership, Health Ed, Ed Services and Research, Physical Ed, and Recreation Ed.

Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work, and theology. Cross-listed in Educational Policy and Leadership, Educational Theory and Practice, Educational Services and Research, Health Education, Physical Education, and Recreation Education.

**700.01 Seminar on Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology; euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

**700.04 Interprofessional Practicum in Clinical Settings U G 3, 5**

Interprofessional teamwork in clinical settings.

Prereq: Permission of instructor.

**700.05 Research and Evaluation Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessional explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**727.09 Speech/Theatre Education****727.21 Industrial Technology Education****727.25 English Education****727.27 Science Education****727.28 Social Studies Education****727.30 Vocational-Technical Education****727.33 Adult Education****727.45 Foreign Language Education**

The courses in the Department of Educational Studies are listed by program area.

**Adult Education**

160 Ramseyer Hall, 29 West Woodruff Avenue,  
292-5037

**649 General Methods in Adult Education U G 3**

Selection, integration, and evaluation of methods, techniques, and devices to facilitate the learning of adults. Dowling.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Votec or Ed-P&L 649.

**672 Introduction to Adult Education U G 3**

The nature, extent, and significance of adult education; history and types of adult education; theoretical issues; adult learning and methodology; present trends and future developments. Boggs and Dowling.

Su, Au, Sp Qtrs. Prereq: 4th yr standing; for EDU majors: Ed-T&P 451 or Ed-E&M C 461 or Ed-T&P 461. Not open to students with credit for Ed-Votec or Ed-P&L 672.

**673 Parent Education U G 3**

Nature, extent, and significance of the parent education movement; home and school relationships; methods and resources; training professionals and lay leaders; local and state programs. Dowling.

Sp Qtr. 1 2½-hr cl. Prereq: 4th yr standing; for EDU majors: Ed-T&P 451 or Ed-E&M C 461 or Ed-T&P 461. Not open to students with credit for Ed-Votec or Ed-P&L 673.

**674 Continuing Education in the Retirement Years U G 3**

Designed to provide knowledge about older adults' learning needs, available resources, and pertinent legislation; emphasis on helping older learners contribute positively to society. Boggs.

Su Qtr. 1 2½-hr cl. Prereq: Permission of instructor for undergrads. Not open to students with credit for Ed-Votec or Ed-P&L 674.

**692 Workshops U G 1-8****692.33 Adult Education**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 692.33.

**693 Individual Studies U G 1-4****693.33 Adult Education**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergraduate students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. This course is graded S/U.

**694 Group Studies U G 1-5****694.33 Adult Education**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Votec and Ed-P&L 694.33.

**925 Seminars G 2-5****925.33 Adult Education**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**931 Theory and Practice of Discussion in Adult Education G 3**

Perspectives of adult learning via discussion; analysis of research on group discussion; principles of discussion oriented adult learning; application of group discussion to problem solving. Dowling.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Votec or Ed-P&L 931.

**932 Adult Characteristics and Learning Theory G 3**

Examination of significant learning theories and their applicability to adult learning experiences. Dowling.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: 672 or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 932.

**933 Internship in Adult Education G 9**

Boggs and Dowling.

Su, Au, Wi, Sp Qtrs. Prereq: 672 or Ed-Votec 672, and 12 cr hrs of grad work in adult education. Repeatable to a maximum of 18 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 933. Limited to PhD majors in adult education and selected master's candidates with major in adult education.

**934 Organization and Administration of Adult Education Programs G 3**

The administrative functions within adult education agencies: decision making, staff development, financing, evaluating, and improving adult education programs. Boggs.

Au Qtr. 1 2½-hr cl. Prereq: 672 or Ed-Votec 672, and written permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 934.

**935 Program Planning in Adult Education G 3**

Prepares educators to implement components in planning educational programs for adults: assessing needs, setting objectives, selecting and training staff, choosing instructional strategies, promotion, and evaluation. Boggs.

Wi Qtr. 1 2½-hr cl. Prereq: 672 or Ed-Votec or Ed-P&L 672 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 935.

**999 Research G Arr****999.33 Adult Education****English Education**

249 Arps Hall, 1945 North High Street, 292-5381

**294.25 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 294.10, 294.56, and 294.70; and Ed-Hums or Ed-T&P 294.09 and 294.45 and Ed-Votec or Ed-P&L 294.

**535 Fundamentals of Secondary Reading Instruction U 3**

Principles, methods, and materials of reading instruction in secondary schools.

3 cl. Not open to students with credit for Ed-Hums 533 or Ed-T&P 535.

**560 Teaching the Reading of Literature U 4**

The objectives of the literature program and techniques for developing appreciation and improving skills in the reading of various types of prose and poetry.

4 cl. Prereq: Ed-T&P 451. Not open to students with credit for Ed-Hums or Ed-T&P 560.

**561 Teaching Language and Composition in Secondary Schools U 4**

The role of grammar and linguistics in the English program and techniques for the teaching of oral and written expression in high school.

4 cl. Prereq: Ed-T&P 451. Not open to students with credit for Ed-Hums or Ed-T&P 561.

**587.25 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing, 560 or Ed-Hums or Ed-T&P 560, 561 or Ed-Hums or Ed-T&P 561, and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 15 cr hrs. For additional information see *College of Education Bulletin*. This course is graded S/U.

**589 Laboratory Experiences in English Education U 1-3**

A field-based laboratory designed to provide tutoring, materials development, test construction and evaluation, appraisal, and instructional planning experiences within the English curriculum.

Arr. Prereq: Ed-T&P 451. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Hums or Ed-T&P 589. May be taken concurrently with one of the following: 535, 560, 561, 612, or 656.

**612 Linguistic Materials for Teachers U G 3**

Study of linguistic systems, language acquisition, and sociolinguistics as they bear on the work of classroom teachers.

Not open to students with credit for Ed-Hums or Ed-T&P 612.

**656 Literature for Adolescents U G 3**

Literature for individual, group, and whole-class reading in junior and senior high schools; interest factors, readability, and literary value as criteria for selection; bibliographic aids.

Prereq: Ed-T&P 451. Not open to students with credit for Ed-Hums 613 or Ed-T&P 656.

**681 Special Topics in English Education U 3**

Exploration of topics and their interrelationships; integration of prereq and concur courses with field experiences.

3-5 hr. Repeatable to a maximum of 18 cr hrs including cr hrs in Ed-Hums or Ed-T&P 681.01, 681.02, 681.03, 681.04 and 681.05; with not more than 6 cr hrs in a single decimal subdivision.

**681.01 Consequences of Literacy**

An investigation of the relationship between literacy and learning.

Prereq or concur: 535 or Ed-T&P 535, or Ed-Hums 533; 561 or Ed-Hums or Ed-T&P 561; Anthropol 630; and permission of instructor.

**681.02 Language and Learning**

An investigation of the relationship between language and society, language and culture, and language and learning.

Prereq or concur: 589 or Ed-Hums or Ed-T&P 589; Ed-T&P 665 or Ed-E&M C 665; Anthropol 630; and permission of instructor.

**681.03 Classroom Community**

A study of human relations and community context as related to the English classroom.

Prereq or concur: Anthropol 620.07; Ed-P&L 615 or Ed-F & R 615; and permission of instructor.

**681.04 Multicultural Materials for English Teachers**

An exploration of the range of available literary materials representing cultural diversity, and folkloristic and ethnographic methods related to multicultural education.

Prereq or concur: 560 or Ed-Hums or Ed-T&P 560; Anthropol 630; English 270; and permission of instructor.

**681.05 Individualizing and Evaluating Language Arts Instruction**

Study of practical methods and structures which relate instruction to individual abilities and interests; overview of the field of evaluation.

Prereq or concur: 561 or Ed-Hums or Ed-T&P 561, 675 or Ed-F & R or Ed-P&L 675 or Ed-HuSer 665 or Ed-Excep 665, and permission of instructor.

**692.25 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 692.10, 692.56, and 692.70; Ed F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; Ed-T&P 692.21; Ed Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 692.23, 692.29, and 692.30.

**693.25 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**694.25 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21, Ed-Sc&Ma 694.26, and 694.27; and Ed-P&L 694.22, 694.23, 694.29, and 694.30.

**856 Advanced Literature for Adolescents G 3**

An evaluation of literature for adolescents and the role it plays in the education of youth.

1 3-hr cl. Prereq: Teaching experience. Not open to students with credit for Ed-Hums 813 or Ed-T&P 856.

**873 Popular Culture and the Teaching of English G 3**

Analysis of the role of mass media/popular culture in our society; values and themes in popular culture; development of critical skills to analyze popular culture. Mertz.

1 3-hr cl. Not open to students with credit for Ed-Hums or Ed-T&P 873.

**884.25 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma or Ed-T&P 884.26 and 884.27; and Ed-VoTec 884 and Ed-P&L 884.30.

**893.25 Advanced Individual Studies in English Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**925.25 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**970 English Curriculum: Language and Composition G 3**

An evaluation of current trends and developments in linguistics and composition instruction and their relevance for the English curriculum.

3 cl. Not open to students with credit for Ed-Hums or Ed-T&P 970.

**971 English Curriculum: Literature G 3**

Critical examination of trends in the secondary school literature program.

Not open to students with credit for Ed-Hums or Ed-T&P 971.

**972 English Curriculum: Studies in the Teaching of Literature G 3**

Role of literary theory and aesthetics in English curriculum development; study of the relation of literature to the other arts.

Not open to students with credit for Ed-Hums or Ed-T&P 972.

**999.25 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Foreign Language Education**

249 Arps Hall, 1945 North High Street, 292-5381

**289.45 Field Experience U 2-5**

Professional service with children or youth in a school or community agency.

Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs, including cr hrs in Ed-E&M C or Ed-T&P 289.02 and 289.70; Ed-Hums or Ed-T&P 289.09 and 289.45; Ed-Intec 289; Ed-T&P 289.21; and Ed-VoTec or Ed-P&L 289. This course is graded S/U.

**294.45 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs, including cr hrs in Ed-E&M C or Ed-T&P 294.10, 294.56, and 294.70; Ed-Hums or Ed-T&P 294.09 and 294.45; and Ed-VoTec or Ed-P&L 294.

**586 Elementary School Student Teaching in Foreign Languages U 3**

Observation, participation, and responsible teaching of a foreign language in an elementary school; conferences or seminars.

Prereq: EDU 4th yr standing. Repeatable to a maximum of 6 or hrs, including cr hrs in Ed-Hums or Ed-T&P 586. This course is graded S/U.

**587.45 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 21 or hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

A—French  
B—Spanish  
C—German  
D—Russian  
E—Latin  
F—English

**615 Teaching of Modern Foreign Language I U G 4**

Theory and practice of teaching foreign language in beginning classes; the use and preparation of instructional materials based on research studies from educational psychology and applied linguistics.

Au Qtr, 2 2-hr cl. Prereq: 289.45 or Ed-Hums or Ed-T&P 289.45, Educ 451, and written permission of instructor. Repeatable to a maximum of 8 or hrs, including cr hrs in Ed-Hums or Ed-T&P 615.11, 615.12, 615.13, and 615.14; subdivisions not repeatable.

615.11 French  
615.12 Spanish  
615.13 German  
615.14 Russian

**616 Teaching of Modern Foreign Language II U G 4**

Study of the use of new instructional materials for intermediate and advanced foreign language classes; teaching of reading, writing, literature, and culture; evaluation.

Au Qtr, 2 2-hr cl. Prereq: 615 or Ed-Hums or Ed-T&P 615. Repeatable to a maximum of 8 or hrs, including cr hrs in Ed-Hums or Ed-T&P 616.11, 616.12, 616.14, 616.15, and 616.16; subdivisions not repeatable.

616.11 French  
616.12 Spanish  
616.13 German  
616.14 Russian

**617 Teaching of Foreign Languages in the Elementary School U G 4**

Skill development in teaching of spoken and written foreign languages on the elementary school level; construction and use of suitable materials; discussion of issues and problems, evaluation.

Prereq: 15 or hrs of educ and written permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 617.

**618 Teaching of Latin U G 4**

Values, teachers' equipment, objectives, and methods; classroom procedures; lectures and assigned readings.

3 cl, lab arr. Prereq or concur: Ed-T&P 451, Latin 201 and 202, and an additional 6 or hrs in Latin. Not open to students with credit for Ed-Hums or Ed-T&P 618.

**619 Foreign Language Education Residence in Europe U G 2-5**

Practicum in language, language teaching, history, and culture in a foreign country; each student lives with a family, and participates in instruction-related activities and in the study of social and cultural differences.

Prereq: Written permission of instructor; preregistration Au Qtr. Repeatable to a maximum of 30 or hrs including cr hrs in Ed-Hums or Ed-T&P 619.11 and 619.12.

**640 Methods and Techniques of Teaching English to Speakers of Other Languages U G 4**

Study of the use of new instructional materials for intermediate and advanced TESOL classes; teaching of reading, writing, literature, and culture; evaluation.

2 2-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 616.15 or 620.

**692.45 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 or hrs, including cr hrs in Ed-E&M C or Ed-T&P 692.10, 692.56 and 692.70; Ed F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; Ed-T&P 692.21; Ed Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 692.23, 692.29, and 692.30.

**693.45 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 or hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 or hrs for the masters degree and 30 or hrs for the doctoral degree. These courses are graded S/U.

**694.45 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs, including cr hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums or Ed-T&P 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21 and Ed-Sc&Ma or Ed-T&P 694.26 and 694.27; Ed-P&L 694.22, 694.23, 694.29, and 694.30.



**703 Studies in TESOL and Bilingual Education U G 3**

Studies of the theories underlying the teaching and learning of English as a second language and bilingual education: analyses of curricular designs and innovative programs.

1 3-hr cl. Prereq: Jr standing. Not open to students with credit for Ed-Hums or Ed-T&P 703.

**710 Selecting and Developing Second Language Instructional Materials U G 3**

Selection and development of second language instructional materials including theoretical considerations and practical applications; evaluation of instructional materials, creating materials, and adapting materials to student needs.

1 3-hr cl. Prereq: 615 or Ed-Hums or Ed-T&P 615 or permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 710.

**715 Bilingual Education Testing U G 3**

General theories of measurement as applied to bilingual education; in-depth discussion of standardized tests that evaluate the language dominance and proficiency of children in bilingual education programs.

2 3-hr cl for 5 wks. Prereq: Jr standing or above, or permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 715.

**725 Teaching Advanced Foreign Language Courses U G 3**

The teaching of language skills and aesthetic appreciation in advanced foreign language classes; emphasis on teaching interdisciplinary studies: literature, history, fine arts, music, and architecture.

Sp Qtr. 1 2½-hr cl. Prereq: At least one French or Spanish course at the 600 level.

**725.11 French**

Not open to students with credit for Ed-Hums or Ed-T&P 725.11.

**725.12 Spanish**

Not open to students with credit for Ed-Hums or Ed-T&P 725.12.

**801 Teaching Foreign Language at the College Level G 5**

Methods and techniques for teaching foreign language at the college level.

Two wks intensive workshop previous to qtr followed by a 2 hr wkly cl. Prereq: Teaching associate in the Dept of Romance Languages and Literatures or permission of instructor. For students enrolled in these courses, the minimum number of credit hours required for graduation is increased by 5, 10, or 15 hrs.

**801.01 French**

Not open to students with credit for Ed-Hums 801.01 or French 801. Cross-listed in French as 801.

**801.02 Italian**

Not open to students with credit for Ed-Hums 801.02 or Italian 801. Cross-listed in Italian as 801.

**801.03 Spanish**

Not open to students with credit for Ed-Hums 801.03 or Spanish 801. Cross-listed in Spanish as 801.

**868 Developing Syllabi for Second-Language Programs G 3**

Focus on various models currently available to second language teachers for syllabus design, development, and evaluation.

Au Qtr. 2½-hr cl.

**884.45 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma or Ed-T&P 884.26 and 884.27; and Ed-VoTec 884 and Ed-P&L 884.30.

**893.45 Advanced Individual Studies in Foreign Language Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**925.45 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**960 Analysis of the Reading Process in a Second Language G 5**

Focus on the theoretical and data-based processes of comprehending natural written second language discourse.

Wi Qtr. 2 2-hr cl, 1 hr lab. Prereq: Ed-S&R 785 or equiv.

**962 Seminar in Foreign Language Education G 4**

Analysis of major research studies and projects; evaluation and implications of findings; research considerations unique to foreign language education. Jarvis.

Su Qtr. 1 3-hr cl; 1 lab arr. Prereq: Written permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 962.

**963 Foreign Language Testing G 4**

Theory and practice of foreign language test construction including item writing, item analysis, reliability, validity, scoring, and interpretation.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Hums or Ed-T&P 963.

**999.45 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Industrial Technology Education**

200 Welding Engineering Building, 190 West 19th Avenue, 292-7471

**120 Industrial Practices and the School U 4**

Basic studies in industrial technology; introduction to industrial tools, materials, and processes; study of past, present, and future industrial technology school programs; observation and participation in local schools.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Not open to students with credit for Ed-Intec or Ed-T&P 120.

**220 Design of Constructed and Manufactured Goods U 3**

A study of historical and contemporary design technology as it is applied in the construction and manufacturing industries.

Au, Wi, Sp Qtrs. 2 2-hr cl and lab. Prereq: En Graph 121. Not open to students with credit for Ed-Intec or Ed-T&P 220.

**221 Manufacturing Practices I U 4**

A study of basic concepts of manufacturing technology through experiences in forming, separating, combining, and assembling materials used in the production of manufactured goods.

Wi Qtr. 5 2-hr cl and lab. Prereq: 120 or Ed-Intec or Ed-T&P 120, and 220 or Ed-Intec or Ed-T&P 220. Not open to students with credit for Ed-Intec or Ed-T&P 221.

**222 Manufacturing Practices II U 5**

A study of manufacturing management technology, manufacturing production technology, and manufacturing personnel technology through experiences in planning, engineering and production of selected manufactured goods.

Au Qtr. 5 2-hr cl and lab. Prereq: 221 or Ed-Intec or Ed-T&P 221. Not open to students with credit for Ed-Intec or Ed-T&P 222.

**224 Mechanical Systems and Servicing U 4**

A study of the fundamental knowledge of techniques necessary for the application of mechanical power systems to industrial activities and the practices of servicing mechanical power systems.

Wi Qtr. 5 2-hr cl and lab. Prereq: 120 or Ed-Intec or Ed-T&P 120. Not open to students with credit for Ed-Intec or Ed-T&P 224.

**225 Transmitting and Utilizing Mechanical Power U 4**

A study of the selection, installation, operation, and maintenance of mechanical power transmission systems for industrial and transportation activities.

Au Qtr. 5 2-hr cl and lab. Prereq: 224 or Ed-Intec or Ed-T&P 224. Not open to students with credit for Ed-Intec or Ed-T&P 225.

**227 Electrical Systems and Servicing U 4**

A study of the fundamental knowledge of techniques necessary for the application of electricity to industrial activities and the practices utilized in fabricating and servicing of electrical systems.

Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120 or Ed-Intec or Ed-T&P 120. Not open to students with credit for Ed-Intec or Ed-T&P 227.

**228 Electronic Systems and Servicing U 4**

A study of the fundamental knowledge of techniques necessary for the application of electronics to industrial activities and the practices utilized in fabricating and servicing electronic systems.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 227 or Ed-Intec or Ed-T&P 227. Not open to students with credit for Ed-Intec or Ed-T&P 228.

**231 Construction Practices I U 5**

A study of basic concepts of construction technology through experiences in forming, separating, and combining materials used in the production of residential structures.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 120 or Ed-Intec or Ed-T&P 120, and 220 or Ed-Intec or Ed-T&P 220. Not open to students with credit for Ed-Intec or Ed-T&P 231.

**232 Construction Practices II U 5**

A study of construction management, production, and personnel technologies through real and simulated experiences in the production of constructed goods.

Wi Qtr. 5 2-hr cl and lab. Prereq: 231 or Ed-Intec or Ed-T&P 231. Not open to students with credit for Ed-Intec or Ed-T&P 232.

**235 Graphic Reproduction Practices U 4**

An examination of graphic reproduction processes, manipulative skills necessary to teach graphic reproduction processes, and administrative procedures required to operate a graphic arts program.

Wi Qtr. 5 2-hr cl and lab. Prereq: 120 or Ed-Intec or Ed-T&P 120, and 220 or Ed-Intec or Ed-T&P 220. Not open to students with credit for Ed-Intec or Ed-T&P 235.

**236 Printing and Publishing Practices U 4**

An examination of the managed production system utilized in the printing and publishing industry.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 235 or Ed-Intec or Ed-T&P 235. Not open to students with credit for Ed-Intec or Ed-T&P 236.

**243 Elementary School Industrial Technology Activities U 5**

Laboratory experiences involving the use of tools, materials, processes, and products through which society supplies its need for food, clothing, shelter, tools, machines, records, utensils, and transportation.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq: Major standing in elementary or special ed. Not open to students with credit for Ed-Intec or Ed-T&P 243.

**250 Work Experience in Industry U 3-6**

A firsthand study of working conditions, methods, and processes of industry, and their implication for the teaching of industrial technology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs, including cr hrs in Ed-Intec or Ed-T&P 251.

**255 Handicrafts U 4**

Designed to develop skills and knowledge in the use of the common areas of handicrafts such as leather, metals, plastics, wood, and the graphic arts.

Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Open only to occ ther, phys ed, and rec educ majors. Repeatable to a maximum of 12 cr hrs, including cr hrs in Ed-Intec or Ed-T&P 255.

**289.21 Field Experience: Industrial Technology Education U 2-5**

Professional service with children or youth in a school or community agency.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 289.02 and 289.70; Ed-Hums or Ed-T&P 289.09 and 289.45; Ed-Intec 289; Ed-T&P 289.21; and Ed-VoTec or Ed-P&L 289. This course is graded S/U.

**355 Custom Production of Industrial Goods U 4**

A study of custom production planning and custom production processing of industrial goods through experiences in the custom production of selected manufactured goods.

Au, Sp Qtrs. 5 2-hr cl and lab. Prereq: 3rd yr standing in major. Not open to students with credit for 255 or Ed-Intec or Ed-T&P 255.

**436 Teaching of Driver Education U 3**

Designed to prepare teachers to organize and conduct driver training classes in the secondary schools, including methods of teaching, scheduling, and other pertinent details.

1 2-hr cl; 1 2-hr lab. Prereq: Ed-T&P 451 and valid driver's license. Not open to students with credit for Ed-Intec or Ed-T&P 436. Graduates of the College of Education who complete 436, 437, and 438, will be eligible for certification to teach driver training courses in the secondary schools of Ohio.

**437 Advanced Course in the Teaching of Driver Education U 3**

Organization and administrative aspects of driver and traffic safety education plus orientation in the use of driving simulators and driving ranges.

Su, Wi Qtrs. 3 cl. Prereq: 436 or Ed-Intec or Ed-T&P 436. Not open to students with credit for Ed-Intec or Ed-T&P 437.

**438 Personality and Behavioral Factors in Driver and Traffic Safety Education U 3**

Study of human behavior with emphasis on attitudes, motivation, and adjustment, and their relationship to safe driving.

Su, Sp Qtrs. 3 cl. Prereq: 436 or Ed-Intec or Ed-T&P 436; can be taken concur with 437. Not open to students with credit for Ed-Intec or Ed-T&P 438.

**494.21 Special Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Intec 494, Ed-T&P 494.21, and Ed-Sc&Ma or Ed-T&P 494.26 and 494.27. This course is graded S/U.

**520 Wood Products Manufacturing U G 5**

Wood product design; production organization and control; tools and equipment used to perform production practices; wood product production.

Au Qtr. 5 2-hr labs. Prereq: 231 or Ed-Intec or Ed-T&P 231 or equiv with written permission of the instructor. Not open to students with credit for Ed-Intec or Ed-T&P 520.

**525 Automation of Production Systems for Technology Educators U 5**

An introduction to robotics and automation, their applications to manufacturing, construction, communication, energy-power, systems, and methods of teaching about them; includes laboratory experiences.

Sp Qtr. 4 2-hr cl. Prereq: 222 and 227.

**532 Teaching of Industrial Technology I U 3**

Study of the societal forces and problems attributable to technology; historical, sociological, and psychological bases of industrial technology instruction; development of a philosophy underlying industrial technology education.

Au Qtr. 1 2½-hr cl. Prereq or concur: Ed-T&P 451. Not open to students with credit for Ed-Intec or Ed-T&P 532.

**533 Teaching of Industrial Technology II U 3**

Analysis of educational ends and means for industrial technology; development of units of study for contemporary industrial technology programs; review of exemplars in curriculum, instruction, and evaluation

Wi Qtr. 1 2½-hr cl. Prereq: 532 or Ed-Intec or Ed-T&P 532. Not open to students with credit for Ed-Intec or Ed-T&P 533.

**534 Teaching of Industrial Technology III U 3**

Study and application of specific teaching methods including lecture, demonstration, discussion, use of media; problems of classroom management and deviant student behavior; laboratory facilities and safety; professional considerations.

Sp Qtrs. 1 2½-hr cl. Prereq: 533 or Ed-Intec or Ed-T&P 533. Not open to students with credit for Ed-Intec or Ed-T&P 534.

**587.21 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 15 or hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**610 History of Practical Arts and Vocational Education U G 3**

History of those vocational and non-vocational phases of agriculture, business, industry, and homemaking which concern education.

Su Qtr. 3 cl. Not open to students with credit for Ed-Intec or Ed-T&P 610.

**692.21 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 or hrs, including or hrs in Ed-E&M C or Ed-T&P 692.10, 692.56 and 692.70; Ed F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; or Ed-T&P 692.21; Ed Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 693.23, 692.29, and 692.30.

**693.21 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 or hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 or hrs for the masters degree and 30 or hrs for the doctoral degree. This course is graded S/U.

**694.21 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs, including or hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums or Ed-T&P 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21; Ed-Sc&Ma 694.26 and 694.27; or Ed-T&P 694.22, 694.23, 694.29, and 694.30.

**730 Technological Activities for Teachers of Exceptional Children U G 4**

The application of technological practices in developing instructional materials and activities useful in diagnostic and remediation procedures for exceptional learners.

Au Qtr. 3 2-hr cl and lab. Prereq: Ed-Excep 651 or Ed-HuSer or Ed-S&R 651 or 718 or Ed-Hu Ser or Ed-S&R 718, or equiv with written permission of instructor. Repeatable to a maximum of 8 or hrs, including or hrs in Ed-Intec or Ed-T&P 730.

**735 Organization and Administration of Industrial Education U G 3**

International and historic background curriculum resources and development, physical organization, administrative organization, supervisory operation, and professional policies.

Su Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Intec or Ed-T&P 735.

**834 Planning Industrial Technology Facilities G 3**

Principles of industrial technology and technical laboratory planning including equipment selection for all school levels and meeting all curriculum requirements.

1 2½-hr cl. Not open to students with credit for Ed-Intec or Ed-T&P 834.

**836 Practicum in Industrial Technology Education G 3-5**

Derivation of doctrine; formulation and evaluation of basic programs, curriculum development, organizational implementation, leadership problems, and professional progress, both here and abroad.

Au Qtr. 3 cl. Prereq: Secondary (587) student teaching or equiv. Not open to students with credit for Ed-Intec or Ed-T&P 836.

**837 Research in Industrial Technology Education G 3**

Identification of research problems and needs; review of research exemplars with critical analysis of research design and procedures.

Sp Qtr. 3 cl. Prereq: Ed-T&P 785 and 786, or Ed-F & R 785 and 786 or Ed-S&R 785 or 786, or permission of instructor. Not open to students with credit for Ed-Intec or Ed-T&P 837.

**844 Vocational Evaluation and Development G 3**

A study of vocational evaluation, development, and work adjustment materials and practices utilized in educational and rehabilitation settings. Scott.

Wi Qtr. 1 2½-hr cl. Prereq: Ed-HuSer 790 or Ed-Sp Sv 790 or Ed-S&R 790 or permission of instructor. Not open to students with credit for Ed-Intec or Ed-T&P 828 or Ed-HuSer or Ed-S&R 844. Cross-listed in Educational Services and Research.

**845 Work Adjustment and Development G 3**

A study of the principles and procedures of work adjustment and development techniques, methods, and resources utilized in educational and rehabilitation settings.

Sp Qtr. 1 2½-hr cl. Prereq: 730 or Ed-Intec or Ed-T&P 730 or permission of instructor. Not open to students with credit for Ed-Intec 829 or Ed-HuSer or Ed-S&R 845. Cross-listed in Educational Services and Research.

**846 Development of Industrial Technology and Prevocational Education Programs for the Educationally Disadvantaged and Handicapped G 3**

Analysis of educational needs of disadvantaged and handicapped learners with a special emphasis on designing, conducting, and evaluating industrial technology and prevocational programs.

Au Qtr. 1 2½-hr cl. Prereq: 533 or Ed-Intec 533 or equiv with written permission of instructor. Not open to students with credit for Ed-Intec or Ed-T&P 830.

**858 Industrial Technology in the Elementary School G 3**

Selection, development, and evaluation of typical experience units in both classrooms and practical arts laboratory situations at all levels of the elementary schools.

Blankenbaker.

3 cl. Prereq: 243 or Ed-Intec or Ed-T&P 243 or equiv. Not open to students with credit for Ed-Intec 832 or Ed-T&P 858.

**859 Industrial Technology Curriculum Planning G 3**

Analysis of curriculum research and development process; review critical analysis of instructional materials; application of industrial technology curriculum, instruction, and evaluation principles to practical arts, career, and vocational education.

Au Qtr. 1 2½-hr cl. Prereq: Secondary (587) student teaching, or equiv. Not open to students with credit for Ed-Intec 833 or Ed-T&P 859.

**884.21 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma or Ed-T&P 884.26 and 884.27; Ed-VoTec 884; and Ed-P&L 884.30. This course is graded S/U.

**893.21 Advanced Individual Studies in Industrial Technology Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**894.21 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 894.10, 894.56, and 894.70; Ed-Intec 894; Ed-T&P 894.21; Ed-Sc&Ma 894; and Ed-T&P 894.26 and 894.27.

**925.21 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. This course is graded S/U.

**999.21 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Science Education**

249 Arps Hall, 1945 North High Street, 292-5381

**489 Advanced Field Experience in Science Education U 3-5**

Directed field experience emphasizing appropriate teaching strategies for different school-age children and school settings.

2 hrs field experience/cr hr, 1 2-hr seminar. Prereq: Admission to EDP and to science teacher education program. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Sc&Ma and Ed-T&P 489.01, 489.02, and 489.03; subdivisions not repeatable.

**489.01 Middle School-Jr High School Tutorial**

Middle or junior high school science program with emphasis on tutoring a student(s) in science.

Au, Wi Qtrs.

**489.02 Elementary School Program**

Planning, preparing, and teaching science to elementary school-age children.

Au, Wi Qtrs.

**489.03 Secondary School Science Classes and Laboratories**

Experience in appropriate secondary school science classroom and laboratory with emphasis on acquiring skills to develop, prepare, conduct, and evaluate laboratory experiences.

Sp Qtr. Prereq: 489.02 or Ed-Sc&Ma 489.02 or Ed-T&P 489.02 or permission of instructor; concur 551.

**494.27 Special Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Intec 494 or Ed-T&P 494.21 and Ed-Sc&Ma or Ed-T&P 494.26 and 494.27.

**551 Science in Secondary Schools U 4**

Objectives, problems and procedures, preparing teaching plans, use of demonstrations, experiments, and projects, science curriculum and evaluation, instruments and procedures, texts and reference materials.

4 cl. Prereq: Permission of program coordinator or instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 551.

**587.27 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 21 cr hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**611 Great Lakes Education Workshop U G 1-4**

Techniques and curricula for presenting interdisciplinary aspects of the oceans and Great Lakes in formal and informal education settings. Fortner and Mayer.

Sp Qtr. 10 hrs cl per cr, 1 ½ days per cr, 10 4-hr cl. Prereq: Teaching certificate or sr standing. Not open to students with credit for Nat Res 691 or 611 or Educ 727-Sea Grant. Repeatable to a maximum of 5 cr hrs. Cross-listed with Natural Resources.

**613 Methods for Conservation Education U G 3**

Experience centered course for conservation/natural resources education including objectives, instructional, and evaluative procedures appropriate to formal and non-formal settings. Roth and Helgeson.

Sp Qtr. 2 cl. 1 2-hr lab/field. Prereq: Nat Res 201 or Geog 530, and Botany/Zoology 313; Forestry 223 or equiv or sr standing. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 613 or Nat Res 613. Cross-listed in Natural Resources.

**614 Marine and Aquatic Education U G 3**

Overview of oceanic and Great Lakes resources, their functions in history, climate, commerce, and culture, and the school curriculum.

1 3-hr cl, field trips. Prereq: 20 cr hrs of social, physical, and/or biological sciences or teacher certification, and permission of instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 614 or Nat Res 614. Cross-listed in Natural Resources. Travel and subsistence costs for field trips must be borne by students.

**636 Practicum in Science for Teachers U G 3**

Use and design of apparatus, demonstrations, and experiments for general science, chemistry, biology, and physics, with special emphasis on modern secondary school instructional materials in the sciences.

Au Qtr. 3 2-hr cl. Prereq: Permission of program coordinator or instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 627.

**689 Middle and Senior High School Science Field Experience U G 6**

Experience in appropriate school science classes with an emphasis on acquiring skills to work with students in a school setting while developing skills in preparing, conducting, and evaluating teaching activities.

Su Qtr. 3 hrs/day for 5 days/wk for 8 wks. Prereq: Admission to the post-degree program in science education and concur: 551 or 546. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 689.

**692.27 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 692.10, 692.56 and 692.70; Ed F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; Ed-T&P 692.21; Ed-Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 692.23, 692.29, and 692.30.

**693.27 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**694.27 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums or Ed-T&P 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21; Ed-Sc&Ma or Ed-T&P 694.26 and 694.27; and Ed-P&L 694.22, 694.23, 694.29, and 694.30.

**721 Logic and Psychology in School Science U G 3**

A study of the nature of psychological growth and the development of logical ability in children and the implications for teaching science.

3 cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 721.

**742 Supervision of School Science Programs U G 4**

For those concerned with supervision of teacher education programs in science; objectives, curricula, recent trends, classroom management, evaluation of teaching, and professional literature.

Su Qtr. 4 cl. Prereq: Teaching experience or permission of instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 742.

**752 Science in the School Curriculum U G 4**

Foundations for science curriculum; current development, planning, and evaluation procedures, research.

2 2-hr cl. Prereq: Teaching experience or permission of instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 752.

**772 Teaching Science in College U G 4**

An examination of college Bachelor's degree, teacher's certificate, and teaching science curricula; teaching methods; student and course evaluation techniques; objectives and rationale for teaching science in general education and teacher education programs.

2 2-hr cl. Prereq: Teaching experience or permission of instructor. Not open to students with credit for Ed-Sc&Ma or Ed-T&P 772.

**884.27 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed-F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma or Ed-T&P 884.26 and 884.27; and Ed-VoTec 884 and Ed-P&L 884.30.

**893.27 Advanced Individual Studies in Science Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**894.27 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 894.10, 894.56, and 894.70; Ed-Intec 894; and Ed-Sc&Ma 894.

**925.27 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**999.27 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Social Studies Education**

249 Arps Hall, 1945 North High Street, 292-5381

**526 Social Studies in the Secondary School U 4**

A study of secondary social studies education, including an analysis of basic theories, representative methods for interpreting history and the social sciences in the classroom, and to sequential planning.

2 2-hr cl. Prereq: Ed-T&P 451. Not open to students with credit for Ed-Hums 526 or Ed-T&P 526.

**527 Curriculum, Materials, Resources, and Teaching Strategies for Secondary Social Studies U 4**

A study of social studies curricula and an analysis of materials, of resources, and of teaching strategies for use in secondary social studies. Gilliom.

2 2-hr cl. Prereq: 526 or Ed-Hums or Ed-T&P 526, and Ed-T&P 451. Not open to students with credit for Ed-Hums or Ed-T&P 527.

**587.28 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 15 cr hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**624 Social Education U G 3**

Analyses of social structures and processes in classroom grouping arrangements; teacher social roles, school traditions, ceremonies, clubs, and athletics.

1 2½-hr cl. Prereq: Ed-T&P 451 or permission of instructor or teaching experience. Not open to students with credit for Ed-Hums or Ed-T&P 624.

**692.28 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 692.10, 692.56, and 692.70; Ed F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; or Ed-T&P 692.21; Ed-Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 692.23, 692.29, and 692.30.

**693.28 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**694.28 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums or Ed-T&P 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21; Ed-Sc&Ma or Ed-T&P 694.26 and 694.27; and Ed-P&L 694, 694.23, 694.29, and 694.30.

**881 Multicultural Education in the Social Studies G 3**

Sensitizes students to cultural diversity, and provides insights and instructional tools for dealing with cultural pluralism in the classroom.

Sp Qtr. 1 2½-hr cl.

**882 Materials and Methods in the Social Studies G 3**

Study of recent innovations in teaching methodology in the social studies; review and evaluation of recently published teaching materials. Gilliom.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Hums or Ed-T&P 882.

**883 Organization and Teaching of Social Studies G 5**

Study of problems encountered in the conceptualization, planning, and teaching of the secondary social studies methods course. Gilliom.

Au Qtr. 2 cl, 2 2-hr labs. Prereq: PhD standing in educ. Not open to students with credit for Ed-Hums or Ed-T&P 883.

**884.28 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma 884.26 and 884.27; Ed-VoTec 884; and Ed-P&L 884.30.

**893.28 Advanced Individual Studies in Social Studies Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**925.28 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**982 Evaluation in Secondary Social Studies Education G 3**

Testing, measurement, and evaluation in secondary social studies; treatment of teacher-made standardized tests; discussion of reporting practices.

Au Qtr. 1 2½-hr cl. Prereq: Certification in secondary social studies. Admission to grad specialization in secondary social studies. Not open to students with credit for Ed-Hums or Ed-T&P 982.

**985 Theories of Secondary Social Studies Education G 3**

Basic theories of secondary social studies education; discussion of subject-centered, emergent needs, citizenship, reflective, and discipline-oriented approaches.

Sp Qtr. 1 2½-hr cl. Prereq: Certification in secondary social studies. Admission to doctoral program in secondary social studies. Not open to students with credit for Ed-Hums or Ed-T&P 985.

**999.28 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Speech/Theatre Education**

249 Arps Hall, 1945 North High Street, 292-5381

**289.09 Field Experience: Speech and Radio-Speech U 2-5**

Professional service with children or youth in a school or community agency.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 289.02 and 289.70; Ed-Hums or Ed-T&P 289.09 and 289.45; Ed-Intec 289; Ed-T&P 289.21; Ed-VoTec 289; and Ed-P&L 289.

**294.09 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 294.10, 294.56, and 294.70; Ed-Hums or Ed-T&P 294.09 and 294.45; Ed-VoTec 294; and Ed-P&L 294.

**442 Creative Dramatics U 3**

Philosophy, materials, methods, and evaluation of dramatic improvisation in developing creative artistic expression and problem solving.

3 cl, lab. Prereq: Ed-T&P 451. Not open to students with credit for Ed-Hums or Ed-T&P 442.

**556 Teaching of Speech in Secondary Schools U 4**

The relationship of speech to the total school program with special emphasis on fundamental processes and forensic activities.

4 cl. Prereq: Communic 240, 305, and 505; and Ed-T&P 451. Not open to students with credit for Ed-Hums or Ed-T&P 556.

**587.09 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing, 556 or Ed-Hums or Ed-T&P 556, or 631, and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to a maximum of 15 cr hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**588 Student Teaching in Radio-Speech Education U 3-15**

Au, Wi, Sp Qtrs. Prereq: 556 or Ed-T&P 556 and 4th yr standing in educ. Repeatable to 6 cr hrs. A minimum of 15 cr hrs of student teaching is required—9 cr hrs in 587.09 and 6 cr hrs in 588 or Ed-T&P 558. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**633 Storytelling, Dramatization, and Creativity U G 3**

Developing skills in storytelling and dramatization processes; conceptual and theoretical criteria to be developed from laboratory practice; emphasis on developing instrumentation for evaluation.

1 3-hr cl, 1- to 2-hr lab. Prereq: Experienced teacher or sr standing with some field experience. Not open to students with credit for Ed-Hums or Ed-T&P 629.

**634 Children's Theatre: Production and Direction U G 5**

Selection, production, and direction of plays for children with special focus upon school and recreation problems.

Prereq: Theatre 220. Not open to students with credit for Ed-Hums or Ed-T&P 630 or Theatre 565 or 501. Offered in cooperation with Theatre.

**635 Teaching Dramatics and Oral Interpretation in Secondary Schools U G 4**

The organization and conduct of dramatic classes and extra dramatic activities; resource planning for oral readings, choral speaking, radio-television programming, and theatrical production.

4 cl. Prereq: 630 or Ed-Hums or Ed-T&P 630; Communic 221; or Ed-T&P 451; and Theatre 220, 271, and 280. Not open to students with credit for Ed-Hums or Ed-T&P 631.

**692.09 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 692.10, 692.56 and 692.70; Ed-F & R or Ed-T&P 692.43; Ed-Hums or Ed-T&P 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; Ed-T&P 692.21; Ed-Sc&Ma or Ed-T&P 692.26 and 692.27; and Ed-P&L 692.22, 692.23, 692.29, and 692.30.

**693.09 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. This course is graded S/U.

**694.09 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C or Ed-T&P 694.10, 694.56, and 694.70; Ed-F & R or Ed-T&P 694.36, 694.43, and 694.46; Ed-Hums or Ed-T&P 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; Ed-T&P 694.21; Ed-Sc&Ma or Ed-T&P 694.26 and 694.27; and Ed-P&L 694.22, 694.23, 694.29, and 694.30.

**884.09 Planned Field Experience G 1-20**

Planned professional teaching experience under supervision in a public school or other educational agency

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs including cr hrs in Ed-E&M C or Ed-T&P 884.10, 884.56, and 884.70; Ed-F & R or Ed-T&P 884.36, 884.43, 884.46, and 884.60; Ed-Hums or Ed-T&P 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; Ed-T&P 884.21; Ed-Sc&Ma 884.26 and 884.27; Ed-VoTec 884; and Ed-P&L 884.30.

**893.09 Advanced Individual Studies in Speech/Theatre Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 893 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**925.09 Seminars 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**999.09 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Vocational-Technical Education**

160 Ramseyer Hall, 29 West Woodruff Avenue, 292-5037

**251 Evaluation of Occupational Competency U 3-6**

Occupational competency credit in subject matter field established by comprehensive examination.

Su, Wi Qtrs. Arr. Prereq: 4 yrs occupational experience. Repeatable to a maximum of 24 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 251. Open only to students majoring in one of the vocational education teaching and industrial training areas. This course is available for EM credit.

**252 Upgrading Experience(s) in Private/Public Enterprises U 1-6**

Upgrading of occupational competency through planned experience related to the teaching field of specialization, with 80 hours of experience equaling one credit hour.

Su, Au, Wi, Sp Qtrs. Prereq: 4 yrs occupational experience in area of teaching specialization. Repeatable to a maximum of 12 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 252. This course is graded S/U.

**289 Field Experience in a Community Agency: Vocational-Technical Education U 2-5**

Professional service with children or youth in some school or community agency.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 289.

**289.30 Vocational-Technical Education****294 Group Studies in Vocational-Technical Education U 1-5**

Group studies for students in specialized programs.

Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 294.

**294.30 Vocational-Technical Education****476 Assessing Learning Needs of Employees U 3**

A comprehensive analysis of processes for assessing learning needs utilized by training departments in business, industry, and government.

1 3-hr cl. Not open to students with credit for Ed-Votec or Ed-P&L 476.

**521 Teaching Shorthand and Transcription U 3**

Objectives, methods, classroom procedures, materials, and evaluation for teaching shorthand, transcription, and business English.

Sp Qtr. 2½-hr cl. Prereq: 265 or Ed-Votec 265, and Ed-T&P 451; or equivs. Not open to students with credit for Ed-Votec or Ed-P&L 521.

**522 Teaching Typewriting and Office Practice U 3**

Objectives, methods, classroom procedures, and materials for teaching typewriting and clerical practices.

Au Qtr. 2½-hr cl. Prereq: 262 or Ed-Votec or Ed-P&L 262, and Ed-T&P 451; or equivs. Not open to students with credit for Ed-Votec or Ed-P&L 520.

**523 Teaching Accounting and Automated Processing U 3**

The objectives, methods, classroom procedures, and materials for teaching accounting, business mathematics, and automated processing.

Wi Qtr. 2½-hr cl. Prereq: Accting 521 and Ed-T&P 451, or equivs. Not open to students with credit for Ed-Votec or Ed-P&L 523.

**524 Teaching Basic Business Subjects U 3**

Objectives, methods, classroom, procedures, and materials for teaching general business, business law, consumer economics, and business organization in the high school.

Au Qtr. 2½-hr cl. Prereq: Ed-T&P 451 or equiv, and 25 cr hrs in geog, econ, and bus adm. Not open to students with credit for Ed-Votec or Ed-P&L 524.

**529 Methods of Teaching Marketing Education U 3**

Objectives, methods, classroom procedures, and materials for teaching marketing education classes.

Au Qtr. Prereq: Ed-T&P 451 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 529.

**530 Methods of Teaching Trade and Industrial Subjects U 3**

Designed to prepare trade and industrial teachers in the preparation and delivery of lessons for the related technical classes and manipulative operations in the laboratory.

Sp Qtr. 1 2½-hr cl. Prereq: Trade and industrial education major or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 530.

**531 Evaluation of Vocational Student Performance U 3**

Designed to prepare trade and industrial teachers for the task of evaluating student performance in a shop or laboratory setting.

Wi Qtr. 1 2½-hr cl. Prereq: Trade and industrial major or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 531.

**575 Vocational-Technical Teaching**

Development of basic cognitive and performance skills required to earn a one-year vocational certificate by new nondegree vocational teachers.

Su, Au, Wi, Sp Qtrs. Prereq: Current employment as a vocational teacher. Repeatable to a maximum of 24 cr hrs, including cr hrs in Ed-Votec or Ed-P&L 575.

**575.01 Preservice Program U 8**

Su Qtr. 8 hrs/day for 20 days. This course is graded S/U.

**575.02 Inservice I U 2**

Su, Au, Wi, Sp Qtrs. Prereq: 575.01 or Ed-Votec or Ed-P&L 575.01.

**575.03 Inservice II U 2**

Su, Au, Wi, Sp Qtrs. Prereq: 575.02 or Ed-Votec or Ed-P&L 575.02.

**575.04 Inservice III U 2**

Su, Au, Wi, Sp Qtrs. Prereq: 575.03 or Ed-Votec or Ed-P&L 575.03.

**575.05 Two Week Followup Program U 4**

The refinement of curriculum development leadership and human relations skills required by employed, one-year certified vocational teachers.

Su Qtr. 8 hrs/day for 10 days. Prereq: 575.04 or Ed-Votec or Ed-P&L 575.04. This course is graded S/U.

**575.06 Vocational-Technical Teaching: In-Service IV U 1**

The development and refinement of basic design and development skills required of a second year nondegreed vocational teacher to earn a one-year vocational certificate.

**575.07 Vocational-Technical Teaching: In-Service V U 1**

Continuation of 575.06.

Wi Qtr. Arr. Prereq: 575.06.

**575.08 Vocational-Technical Teaching: In-Service VI U 1**

Continuation of 575.07.

Sp Qtr. Arr. Prereq: 575.07.

**575.09 Vocational-Technical Teaching: Clinical Project U 3**

Design and development of a clinical project that addresses a teacher's cognitive or performance skill need for a nondegreed vocational teacher to earn a one-year vocational certificate.

Su, Au, Wi, Sp Qtrs. Prereq: Employment as a Vocational Teacher.

**587 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: Ed 4th yr standing. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to the required 15 or hrs, including or hrs in Ed-Votec 587 or Ed-P&L 587.22, 587.23, and 587.29. For additional information, see *College of Education Bulletin*. These courses are graded S/U.

**587.22 Trade and Industrial Education****587.23 Business Education****587.29 Marketing Education****601 Business and Office Education Programs U G 3**

Organization, implementation, evaluation, and improvement of vocational office education programs on the secondary school level.

Su, Wi Qtrs. 2½-hr cl. Prereq or concur: 522 or Ed-Votec or Ed-P&L 520, or 521 or Ed-Votec or Ed-P&L 521, or 523 or Ed-Votec or Ed-P&L 523, or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 601. Required of all business education majors.

**602 Cooperative Office Education U G 3**

A study of new approaches to organization, operation, and supervision of the Cooperative Office Education Program and the understanding and evaluation of the recent thrust in vocational education and work-study programs.

Au Qtr. 2½-hr cl. Prereq: 522 or 523, Ed-Votec 520 or 523, or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 602.

**605 Curriculum Content for Marketing Occupational Subjects U G 3**

Securing, evaluating, and organizing instructional material and experiences for marketing cooperative education and adult extension courses.

Sp Qtr. 3 cl. Prereq: 529 or Ed-Votec or Ed-P&L 529. Not open to students with credit for Ed-Votec or Ed-P&L 605.

**606 Function and Structure of Marketing Education Programs U G 3**

The organization of high school, postsecondary, and adult marketing education programs and their administration on local, state, and national levels.

Wi Qtr. 1 2½-hr cl. Prereq: Ed-T&P 451 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 606.

**608 Practicum in Vocational Education U G 2-3**

Directed employment or supervised practical work experience in a recognized occupation required for vocational teacher certification, or for training vocational-technical personnel in private or public work settings.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-Votec major or permission of instructor, and permission of adviser. Not open to students with 6 or hrs in Ed-Votec or Ed-P&L 608.23 or 608.29 or 608.30. Each decimal subdivision repeatable to a maximum of 6 or hrs. These courses are graded S/U.

**608.23 Business Education****608.29 Marketing Education****608.30 Vocational-Technical and Adult Education****609 Evolution of Vocational Education U G 3**

Introduction to the development of vocational education including consideration of influences affecting legislation, federal acts, and basic concepts which have evolved.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 609.

**620 Introduction to Business Teacher Education U G 5**

Examination of the role of the business education classroom teacher; discussion of theories, practices, and problems of business education in general and vocational education programs.

Au Qtr. 1 3-hr cl, 2-hr clinical. Prereq: Upper-division admission to Business Teacher Education Program.

**621 Curriculum Development and Evaluation in Business Education U G 5**

Analysis and evaluation of business education curricula, instructional strategies, curricula, instructional strategies, curriculum, and course of study development in traditional and non-traditional public, private, and corporate school settings.

Wi Qtr. 1 3-hr cl, 2-hr clinical. Prereq: 620 or Ed-P&L 620.

**622 Business Technology Education I U G 5**

The relationship of business technology to business education subjects is discussed; foundational understanding and skill/application development in business education subjects.

Au Qtr. 1 3-hr cl, 2-hr clinical. Prereq: 620 or Ed-P&L 620.

**623 Business Technology Education II U G 5**

Advanced applications of business technology to business education subjects; planning classroom instruction, policy, followup evaluations are discussed; field-based experiences in business and educational settings.

Wi Qtr. 1 3-hr cl, 2-hr lab. Prereq: 622 or Ed-P&L 622.

**625 Teaching and Learning Strategies in Business Information Management Systems U G 5**

An exploration and evaluation of instructional strategies as applied to business information management systems.

Sp Qtr. 1 3-hr cl, 2-hr clinical. Prereq: 622 or Ed-P&L 622.

**626 Teaching and Learning Strategies in Business Economic and Management Education U G 5**

An exploration and evaluation of instructional strategies as applied to business economic education subjects and business management education subjects.

Au Qtr. 1 3-hr cl, 2-hr clinical. Prereq: 620, 622, or Ed-P&L 620, 622 permission of instructor, and jr standing or above.

**627 Teaching and Learning Strategies in Business Communication Education U G 5**

Emphasis on business communications as an integrated part of various business education subjects and as a separate course; computerized instructional materials are discussed.

Au Qtr. 1 3-hr cl, 2-hr clinical. Prereq: 620 and 622 or Ed-P&L 620 and 622.



**628 Supervised Teaching Internship U G 15**

Observation of business education classroom instruction in field-based school settings; an in-depth evaluation of classroom learning theory, motivation, vocational choice, and communication is required. Seminars.

Au, Wi, Qtrs. 2-hr cl, 15 hrs field experience. Prereq: Permission of instructor, completion of all prof educ courses, sr standing or above, and 2.50 cumulative pt-hr ratio.

**629 Advanced Teaching Internship U G 15**

Responsible and intensive teaching in an approved field-based school setting; teaching styles are practiced under supervision of a career professional, with continual follow-up conferences, seminars.

Wi, Sp Qtrs. 2-hr cl, 15 hrs field experience. Prereq: Permission of instructor and satisfactory completion of 628 or Ed-P&L 628.

**630 Supervision of Student Vocational-Industrial Clubs U 3**

Designed to provide student vocational-industrial club coordinators, instructors, and supervisors with leadership competencies for promoting and maintaining local, state, and national activities.

Au, Sp Qtrs. 3 cl. Not open to students with credit for Ed-Votec 630 or Ed-P&L 630.

**631 Instructional Strategies for Vocational Work Experience Programs U G 3**

Preparation and delivery of lessons, placement, and follow-up of students on-the-job.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Edu major. Not open to students with credit for Ed-Votec 631 or Ed-P&L 631.

**632 Microcomputer Applications in Business Education U G 5**

A survey of microcomputer applications in business education.

Au Qtr. 1 3-hr cl, 2-hr lab. Prereq: 622 or Ed-P&L 622 and Cptr/Inf 100.

**646 Coordination of Cooperative Vocational-Technical Education Programs U G 3**

Designed to develop the knowledges, attitudes, and competencies to operate effectively a cooperative vocational-technical education program.

Au Qtr. 1 2½-hr cl. Prereq: Ed-T&P 451 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 646.

**655 Shop and Laboratory Organization and Management U G 3**

Designed to help vocational and technical teachers to plan, organize, and manage vocational shops and technical laboratories used in various educational settings.

Au Qtr. 1 2½-hr cl. Not open to students with credit for Ed-Votec 656 or Ed-P&L 656.

**657 Occupational Analysis U G 3**

Development and utilization of procedures used in analyzing a technical occupation for teaching content.

Au, Sp Qtrs. 3 cl, arr field experience.

**658 Selection and Organization of a Trade and Industrial Program U G 3**

Designed to provide trade and industrial instructors the competencies to prepare and/or refine a course of study according to state department of education guidelines.

Su, Au, Sp Qtrs. 1 2½-hr cl. Prereq: Trade and industrial major or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 658.

**659 Laboratory Safety and Accident Prevention for Industrial Teachers U G 3**

Designed to develop an awareness of safety as well as the prevention of accidents in industrial shops and laboratories.

Wi Qtr. Prereq: Trade and industrial major. Not open to students with credit for Ed-Votec or Ed-P&L 659.

**660 Developing Instruction for Business and Industry U G 3**

The systematic development of instructional programs for business and industry; role of the instructional developer in business and industry will also be examined.

Su, Wi Qtrs. 2½ hr cl. Prereq: 657 or Ed-P&L 657 or permission of instructor.

**670 Designing Individualized Training Systems U G 3**

The design of individualized training and performance systems for business and industry.

Au, Sp Qtrs. 1 2½-hr cl.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-F & R or Ed-P&L 692.48, 692.49, and 692.51.

**692.22 Trade and Industrial Education**

**692.23 Business Education**

**692.29 Marketing Education**

**692.30 Vocational-Technical Education**

**693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Educ 451 or Ed-E&M C 460 or Ed-T&P 460, and written permission of instructor. A total of not more than 30 cr hrs in individual study (any 693) will apply toward graduation for undergrad students, 15 cr hrs for the master's degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**693.22 Trade and Industrial Education**

**693.23 Business Education**

**693.29 Marketing Education**

**693.30 Vocational-Technical Education**

**694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-F & R or Ed-P&L 694.48, 694.49, and 694.51.

**694.22 Trade and Industrial Education**

**694.23 Business Education**

**694.29 Marketing Education**

**694.30 Vocational-Technical Education**

**707 Survey of Vocational Education U G 3**

A survey of vocational-technical education, vocational guidance, and industrial arts.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Ed-T&P 451. Open to vocational educators, school administrators, and other graduate students who desire information about vocational education. Not open to students with credit for Ed-Votec or Ed-P&L 807.

**757 Aspects of Training and Development in Vocational Education G 3**

Overview of theoretical frameworks and practices related to training and development in vocational education; specific job roles of educational specialists will also be examined.

Au, Sp Qtrs. 1 2½-hr cl.

**758 Applications of Statistical Quality Control to Vocational Education and Training U G 3**

An examination of current statistical quality control theory and practice applied to education and business/industry training.

Miller.

Sp Qtr. 1 3-hr cl. Prereq: 830 or permission of instructor.

**800 Organization and Teaching of Typing and Office Practice G 3**

The purposes, content, organization, materials, and methods of evaluation for typing and office practice courses; office practice as a part of an intensive vocational curriculum.

Sp Qtr. 2½-hr cl. Prereq: Teaching experience or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 801.

**802 Administration and Supervision of Business Education G 3**

Administrative problems in business education related to program, facilities, placement and follow-up of graduates, public relations, and federal-state reimbursement.

Au Qtr. 1 2½-hr cl. Prereq: Grad standing in business or vocational education or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 802.

**803 Improvement of Instruction in Basic Business Subjects G 3**

A study of objectives, methods, materials, and methods of evaluation for courses such as general business, consumer education, and business law.

Au Qtr. 2½-hr cl. Prereq: 524 or Ed-Votec 524 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 803.

**804 Improvement of Instruction in Bookkeeping and Data Processing G 2**

Evaluation of the content, materials, and methods of teaching bookkeeping, accounting, and data processing on the secondary and postsecondary school levels.

Sp Qtrs. 2 hr cl. Prereq: 523 or Ed-Votec or Ed-P&L 523 or equiv. Not open to students with credit for Ed-Votec or Ed-P&L 804.

**805 Improvement of Instruction in Shorthand G 2**

Teaching procedures basic to the development of vocational proficiency in typewriting, shorthand, and transcription; available instructional materials, evaluation, and standards of achievement.

Wi Qtr. 2 cl. Prereq: Teaching experience or permission of instructor. Not open to students with credit for Ed-Votec or Ed-P&L 805.

**808 Principles in Business Education G 3**

Meaning, purpose, and scope of the business education program; analysis of principles and fundamental issues.

Sp Qtr. 1 2½-hr cl. Open only to grad students in business education, distributive education, or vocational education, or permission of instructor. Not open to students with credit for Ed-Votec 800.

**821 Administrative Practices in Vocational Education G 3**

A study of the concepts of vocational education program administration, including management skills, policy development, staff management, finance, and program evaluation.

Sp, Su Qtrs. 1 2 ½-hr cl. Not open to students with credit for Agr Educ 811 or 821, or Ed-Votec or Ed-P&L 821. Cross-listed in Agricultural Education.

**830 Supervision of Vocational Instruction G 3**

A study of the concepts of vocational education supervision, including leadership styles, improving instruction, and program and personnel evaluation.

Wi Qtr. 1 2½-hr cl. Prereq: 609 or Ed-Votec 609 or equiv and written permission of instructor. Cross listed in Agricultural Education.

**830.22 Trade and Industrial Education**

Not open to students with credit for Agr Educ 811 or 830, or Ed-Votec 730.22 or 830.22 or Ed-P&L 830.22.

**830.23 Business Education**

Not open to students with credit for Agr Educ 811 or 830, or Ed-Votec 730.23 or 830.23 or Ed-P&L 830.23.

**830.29 Marketing Education**

Not open to students with credit for Agr Educ 811 or 830, or Ed-Votec 730.29 or 830.29 or Ed-P&L 830.29.

**830.30 Vocational-Technical Education**

Not open to students with credit for Agr Educ 811 or 830, or Ed-Votec 730.30 or 830.30 or Ed-P&L 830.30.

**833 Vocational Education Program Planning G 3**

A study of the planning, development, management, and evaluation of instructional systems in vocational education programs.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for Agr Educ 823 or 833, or Ed-Votec or Ed-P&L 833. Cross listed in Agricultural Education.

**884 Planned Field Experience G 1-15**

Planned professional teaching experience in a public school or other educational agency under supervision.

Prereq: Written permission of area adviser. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-Votec 884 and Ed-P&L 884.30.

**884.30 Vocational-Technical Education****893.30 Advanced Individual Studies in Vocational-Technical Education G 1-4**

Su, Au, Wi, Sp Qtrs. Arr. Not more than 15 cr hrs of any 693 and/or 893 will apply toward the Master's degree; not more than 30 cr hrs will apply to the doctoral degree. Repeatable. This course is graded S/U.

**894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-F & R 894.48 and 894.51, Ed-Sp Sv 894.32, and Ed-Votec 894 and 894.30.

**894.30 Vocational-Technical Education****925 Seminars G 2-5**

Prereq: Written permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

Research problems in:

**925.22 Trade and Industrial Education****925.23 Business and Office Education****925.29 Marketing Education****925.30 Vocational-Technical Education****999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**999.22 Trade and Industrial Education****999.23 Business and Office Education****999.29 Marketing Education****999.30 Vocational-Technical Education**

## Educational Theory and Practice

257 Arps Hall, 1945 North High Street, 292-1257

Ed-T&P 697, Ed-T&P 698, and Ed-T&P 727 may be offered by any of the program areas listed below.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-5**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable to different titled study tours only.

**698.01 Domestic****698.02 Foreign**

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 or hrs, including or hrs in Ed-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions are not repeatable, except 700.04 which is repeatable to a maximum of 10 or hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work, and theology. Cross-listed in Ed Policy & Leadership, Ed Theory & Practice, Ed Studies, Health Education, Physical Education, and Recreation Education.

**700.01 Seminar on Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology; euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

**700.04 Interprofessional Practicum in Clinical Settings U G 3 or 5**

Interprofessional teamwork in clinical settings.

Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

**727.10 Elementary Education****727.26 Mathematics Education****727.36 Teacher Education****727.56 Language Arts, Literature, and Reading****727.70 Early Childhood Education**

The courses in the Department of Educational Theory and Practice are listed by program area.

**Early and Middle Childhood Education**

257 Arps Hall, 1945 North High Street 292-1257

**289 Field Experience U 2-5**

Professional service with children or youth in a school or community agency.

Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs, including or hrs in Ed-E&M C 289.02 and 289.70, Ed-Hums 289.09 and 289.45, and Ed-Intec 289. This course is graded S/U.

**289.02 Experience in a Community Agency**

This course is graded S/U.

**289.10 Elementary Education**

Planned elementary education field experience under supervision.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs including 289.02 and 289.70.

**289.70 Early Childhood Education****294 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs, including or hrs in Ed-E&M C 294.10, 294.56, and 294.70; and Ed-Hums 294.09 and 294.45.

**294.10 Elementary Education****294.70 Early Childhood Education****460 Elementary Education: Child Guidance U 4**

Designed to develop an understanding of child growth and development principles in relation to instruction.

Au, Wi, Sp Qtrs. Lab arr. Prereq: Ed-T&P 451. Not open to students with credit for Ed-E&M C 460.

**461 Elementary Education: Conceptions of Teaching U 3**

Designed to acquaint students with certain aspects of elementary school programs which cut across separate subject areas, and to acquaint students with certain teaching behaviors.

Prereq: 460 or Ed-E&M C 460. Not open to students with credit for Ed-E&M C 461.

**467 Introduction to Children's Literature U 3**

Study of literature for children with emphasis on standards for selecting materials with reference to the interests, needs, and abilities at different age levels.

Su, Au, Wi, Sp Qtrs. Prereq: Ed-T&P 451 or permission of instructor. Not open to students with credit for Ed-E&M C 467.

**501 Kindergarten and Preschool Teaching U 3**

Recent development in the education of young children and its influence on the selection and guidance of appropriate activities.

Prereq: 460 or Ed-E&M C 460. Not open to students with credit for Ed-E&M C 501.

**502 Elementary Education: Mathematics U 3**

A study of the methods and materials used in arithmetic instruction; includes development of functional relationships with other curriculum areas, diagnostic procedures, and remedial work.

Prereq: 460 or Ed-E&M C 460, and Math 105 and 106. Not open to students with credit for Ed-E&M C 502.

**507 Elementary Education: Language Arts U 3**

The teaching of language arts, including listening, oral, and written communications.

Prereq: 460 or Ed-E&M C 460. Not open to students with credit for Ed-E&M C 507.

**508 Elementary Education: Social Studies U 4**

Sequential arrangement of the elementary education curriculum; emphasis on social studies in the elementary school program.

Lab arr. Prereq: 460 or Ed-E&M C 460. Not open to students with credit for Ed-E&M C 508.

**511 Elementary Education: Science U 4**

The role of science in childhood education; study of content, methods, materials, and equipment.

Lab arr. Prereq: 460 or Ed-E&M C 460, and 15 or hrs of science (natural sciences part of BER may be used). Not open to students with credit for Ed-E&M C 511.

**513 Elementary Education: Reading U 4**

A study of various methods and materials used in the teaching of reading in the elementary school.

Lab arr. Prereq: 460 or Ed-E&M C 460. Not open to students with credit for Ed-E&M C 513. Students may not schedule more than 20 or hrs while taking this course.

**585 Elementary Education Student Teaching**

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Maximum transfer credit accepted is 6 or hrs. Not open to students with maximum allowable or hrs in Ed-E&M C 585.10, 585.11, 585.12, and 585.14. For additional information, see *College of Education Bulletin*. These courses are graded S/U.

**585.10 Standard Elementary Student Teaching U 9 or 15**

Prereq: 4th yr standing in educ and enrollment in regular elementary education degree program. 15 or hrs required.

**585.11 In-Service Student Teaching U 6 or 9**

Prereq: 3 or more yrs of successful teaching experience.

**585.12 Postdegree Elementary Student Teaching U 15**

Prereq: Bachelor's degree.

**585.14 Elementary Student Teaching for Field-Based Programs U 3-15**

Students participate in teaching functions and assume major classroom responsibilities on a gradual basis from the beginning of the program.

Prereq: Enrollment in one of the approved elementary and early and middle childhood education field-based programs. Repeatable to 15 or hrs.

**H599 Honors Course U 3-5**

A program of accelerated study for students with special aptitudes.

Prereq: Enrollment in the Honors Achievement Program and permission of instructor. Repeatable to a maximum of 15 or hrs, including or hrs in Ed-E&M C H599 and Ed-Intec H599.

**604 Theories and Practices of Bilingual/Multicultural Education U G 3**

Historic, legislative, and judicial background of bilingual/multicultural education as related to program development; examination of research on educational practices in bilingual/multicultural programs.

1 2½-hr cl. Prereq: Ed-T&P 451 or equiv or written permission of instructor. Not open to students with credit for Ed-M&M C 604.

**674 Family Participation in Early Childhood School Programs U G 3**

The purposes and importance of family involvement in early childhood school programs, types of programs, resources, methods, and curricula.

Prereq: Ed-P&L 673, or Ed-Votec 673, or permission of instructor. Not open to students with credit for Ed-E&M C 674.

**690 Practicum in Problems of Public Education U G 3**

Group review of specific problems in public education.

3 cl. Prereq: 461 or Ed-E&M C 461 or equiv, and permission of instructor. Open to experienced teachers and administrators. Request to offer practicum must be received by dept in time to allow for planning. Repeatable to a maximum of 9 or hrs, including or hrs in Ed-E&M C 690, Ed-F & R 690, and Ed-P&L 690. Cross-listed in Educational Policy and Leadership. This course is graded S/U.

**692 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 or hrs, including or hrs in Ed-E&M C 692.10, 692.56, and 692.70; Ed F & R 692.43; Ed-Hums 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; and Ed Sc&Ma 692.26 and 692.27.

**692.10 Elementary Education****692.70 Early Childhood Education****693 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 or hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 or hrs for the masters degree and 30 or hrs for the doctoral degree. These courses are graded S/U.

**693.10 Elementary Education****693.70 Early Childhood Education****694 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs, including or hrs in Ed-E&M C 694.10, 694.56, and 694.70; Ed-F & R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; and Ed-Sc&Ma 694.26 and 694.27.

**694.10 Elementary Education****694.70 Early Childhood Education****701 A Survey of Current Research and Trends in Early and Middle Childhood Education U G 3**

Designed to emphasize the appraisal of recent research and the application of efficacious findings to teaching practice and educational policy in the area of early and middle childhood education.

Su, Au, Wi, Sp Qtrs. 1 2½-hr or 2 1½-hr cl.

**728 Analysis of Teaching Young Children U G 3**

Current education and human development theories as they relate to the teaching-learning phenomenon. R. Williams.

1 2½-hr sem and 1 clinical observation. Prereq: Basic course in child development. Designed for grad students/in-service teachers. Not open to students with credit for Ed-E&M C 724.

**736 Integrating Strategies: Teacher Questioning Behavior U G 3**

Designed to analyze and facilitate mastery of question-asking strategies and techniques to improve instruction and the responding patterns of students. Cunningham.

3 cl. Not open to students with credit for Ed-E&M C 736.

**811 Science in Elementary Education G 3**

Problems of elementary school science instruction with emphasis on pertinent literature and classroom implementation of current developments in science curriculum and methodology.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching or 3 yrs teaching experience. Not open to students with credit for Ed-E&M C 811.

**812 Mathematics in Elementary Schools G 3**

Applications of research and theory to improve children's competence and problem solving; organization of instructional programs and contemporary instructional questions. Stull.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching or 3 yrs teaching experience. Not open to students with credit for Ed-E&M C 812.

**814 Social Studies in the Elementary School G 3**

The educational values of social studies, reasons for and ways and means of integrating the social sciences with emphasis upon program innovations and research.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching or 3 yrs teaching experience. Not open to students with credit for Ed-E&M C 814.

**815 Guidance Problems in the Elementary School G 3**

Selected problems which the elementary teacher faces in providing individual, small-group, and large-group guidance.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching. Not open to students with credit for Ed-E&M C 815.

**818 Foundations of Elementary Education G 3**

Study of phenomena that undergird bear on practice in elementary education; topics include the family, childhood and children, teachers and teaching, and schooling.

Not open to students with credit for Ed-E&M C 818.

**819 The Changing American Elementary School G 3**

Investigation of objectives, issues, and curriculum organization of the modern elementary school program.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching or 3 yrs teaching experience. Not open to students with credit for Ed-E&M C 819.

**821 School Problems in Child Development G 3**

Advanced study based upon research in education and related fields which aids the teacher in guiding developmental activities of children in the elementary school.

Not open to students with credit for Ed-E&M C 821.

**823 Creative Experiences in the Elementary School Curriculum G 3**

Study of the nature of creativity and aesthetics as related to the elementary school curriculum.

Not open to students with credit for Ed-E&M C 823.

**824 Designing School Programs for Children Age Two to Six G 3**

A study of the characteristics and needs of children two to six years of age as they relate to the development of educational programs.

Not open to students with credit for Ed-E&M C 824.

**825 Methods of Developing Language and Cognition in Early Childhood G 3**

Curriculum methods and materials in developing language and cognition in school programs for children ages three to eight, based upon research findings.

Prereq: 824 or Ed-E&M C 824 or permission of instructor. Not open to students with credit for Ed-E&M C 825.

**826 Research in Early Childhood Education G 3**

Exploration of research methods and techniques related to early childhood school programs; review of research in the field; in-depth investigation of interest area.

Prereq: 785 and 786 or Ed-F & R 785 and 786, or permission of instructor. Not open to students with credit for Ed-E&M C 826.

**829 Problems in Elementary School Curriculum and Supervision G 3**

An analysis of the programs and practices involved in facing major curriculum problems in the elementary schools; synthesis of supervision and curriculum.

Prereq: 819 and Ed-F & R 861 or Ed-P&L 861. Not open to students with credit for Ed-E&M C 829.

**830 Early Childhood Education: Multi-Cultural Influences G 3**

A study of early childhood curriculum content and teaching methods as influenced by multi-cultural factors.

1 3-hr cl. Prereq: Written permission of instructor. Not open to students with credit for Ed-E&M C 830.

**838 Learning Styles G 3**

Education dimensions of learning styles in children and adults related to developmental, neurological, social, and environmental substrates of learning. Languis.

1 3-hr cl. Prereq: Previous teaching experience or permission of instructor. Not open to students with credit for Ed-E&M C 838. Open to grad students in any field of specialization in education.

**839 Evaluation in Elementary Schools G 3**

Appraisal of materials and methods in terms of educational aims and research findings; consideration of instruments and procedures for comparing achievements with established objectives.

Prereq: 585 or Ed-E&M C 585 or secondary (587) student teaching or 3 yrs teaching experience. Not open to students with credit for Ed-E&M C 820.

**848 Understanding Preschool Play G 3**

A study of relevant theories, developmental stages, and research as they relate to developing programs for young children.

1 3-hr cl. Prereq: Ed-E&M C 460, or Fm&Hu Dv 332 or 662, or permission of instructor. Not open to students with credit for Ed-E&M C 831.

**849 Observing and Facilitating Preschool Play G 3**

Continuation of 848; extensive analysis of experiences in facilitating preschool play and clinical experience regarding the play of young children.

1 3-hr cl or field experience. Prereq: 848 or Ed-E&M C 831 or equiv with written permission of instructor. Not open to students with credit for Ed-E&M C 832.

**852 Science and Early Childhood Education G 3**

The nature, scope, and role of science experiences in the learning and development of young children; integration and application of current developments; theory and research in science with early childhood education. Languis.

1 3-hr cl. Prereq: Experience with young children or introductory child development course. Not open to students with credit for Ed-E&M C 835.

**884 Planned Field Experience G 1-15**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs including cr hrs in Ed-E&M C 884.10, 884.56, and 884.70; Ed F & R 884.36, 884.43, 884.46, and 884.60; Ed-Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&Ma 884.26 and 884.27.

**884.10 Elementary Education**

This course is graded S/U.

**884.70 Early Childhood Education**

This course is graded S/U.

**893.10 Advanced Individual Studies in Elementary Education G 1-4**

Prereq: Permission of instructor. For thesis option, not more than 15 cr hrs of any 693 and/or 893 will apply toward the master's degree. For non-thesis option, not more than 20 cr hrs will apply. Not more than 30 cr hrs will apply toward the doctoral degree. This course is graded S/U.

**894 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 894.10, 894.56, and 894.70; Ed-Intec 894; and Ed-Sc&Ma 894.

**894.10 Elementary Education****894.70 Early Childhood Education****920 Advanced Concepts in Elementary School Science Education G 3**

Emphasis on functions of leadership personnel in developing and improving elementary school science programs and on evaluation of current developments and research.

Prereq: 811 or permission of instructor. Not open to students with credit for Ed-E&M C 920.

**925 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**925.10 Elementary Education****925.70 Early Childhood Education**

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**999.10 Elementary Education****999.70 Early Childhood Education**

## Language Arts, Literature, and Reading Education

200 Ramseyer Hall, 29 West Woodruff Avenue,  
292-0711

**294.56 Group Studies U 1-5**

Group studies for students in specialized programs.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-E&M C 294.10, 294.56, and 294.70; and Ed Hums 294.09 and 294.45.

**535 Fundamentals of Secondary Reading Instruction U 3**

Principles, methods, and materials of reading instruction in secondary schools.

3 cl. Not open to students with credit for EducStds 535 or Ed-Hums 533. Cross-listed in Educational Studies.

**605 Reading in the Bilingual/Multicultural Classroom U G 3**

Major issues in reading theory and instruction as related to specific needs of children who are learning English as a second language.

1 2½-hr cl. Prereq: Ed-T&P 451 or equiv or written permission of instructor. Not open to students with credit for Ed-E&M C 605.

**606 Language Arts in the Bilingual/Multicultural Classroom U G 3**

Research and theories of first and second language acquisition as related to methods of teaching listening, speaking, reading, and writing in bilingual/multicultural classroom.

1 2½-hr cl. Prereq: Ed-T&P 451 or equiv or written permission of instructor. Not open to students with credit for Ed-E&M C 606.

**665 Applied Linguistics for Teachers of Reading/Language Arts U G 3**

Structure of language, language acquisition, and language variation applied to language arts/reading principles, methods, and materials. DeStefano.

2 1½-hr cl. Not open to students with credit for Ed-E&M C 665.

**670 Remedial and Clinical Reading Instruction U G 3**

An overview of theory and practice, including causes, diagnostic procedures, remediation, and instructional materials.

Su, Au, Wi Qtrs. 1 2½-hr cl. Not open to students with credit for Ed-Excep 670. Cross-listed in Educational Services and Research.

**671 Clinical Practice in Treating Reading Disabilities U G 3**

Use of test materials in the diagnosis of reading disabilities; practice with remedial procedures.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl, 3 1-hr lab arr. Prereq: Ed-HuSer 670 or Ed-T&P 732, and permission of instructor. Not open to students with credit for Ed-Excep 675. Cross-listed in Educational Services and Research.

**692.56 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C 692.10, 692.56 and 692.70; Ed-F & R 692.43; Ed-Hums 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; and Ed Sc&Ma 692.26 and 692.27. These courses are graded S/U.

**693.56 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**694.56 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 694.10, 694.56, and 694.70; Ed-F & R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; and Ed-Sc&Ma 694.26 and 694.27.

**722 Literature Across the Curriculum U G 3**

Non-fiction for ages 4-12 as it contributes to social studies, the sciences, language arts, and the creative arts; emphasis on identifying quality selections and planning related to learning experiences.

1 3-hr cl. Prereq: 467 or Ed-E&M C 467. Not open to students with credit for Ed-E&M C 722.

**732 Corrective Reading U G 3**

Diagnostic techniques and instructional methods and materials useful to the elementary and secondary classroom teacher in helping individuals and small groups of problem readers. Zutell.

Prereq: 665 or Educ Stds 612. Not open to students with credit for Ed-E&M C 732.

**734 Evaluation of Reading U G 3**

Examination of current measurement techniques in reading from theoretical, technical, and cultural perspectives.

1 2½-hr cl. Not open to students with credit for Ed-E&M C 734 or Ed-Hums 734.

**816 Language Arts in the Elementary School G 3**

Problems, research, and current methods of teaching the four major areas of the language arts in the elementary school; listening, speaking, reading, and writing.

Prereq: 665 or EducStds 612. Not open to students with credit for Ed-E&M C 813.

**817 Advanced Course in Children's Literature G 3**

An evaluation of the changing role and increased importance of literature in the education of children and youth.

Prereq: 467 or Ed-E&M C 467, or 813 or Ed-E&M C 813. Not open to students with credit for Ed-E&M C 817.

**827 Advanced Study in the Teaching of Developmental Reading G 3**

Designed to provide experienced teachers the opportunity to extend and update their knowledge of the reading process and the principles underlying effective reading instruction.

Prereq: 665 or EducStds 612. Not open to students with credit for Ed-E&M C 827.

**828 Trends and Issues in Teaching Reading in the Elementary School G 3**

Designed for experienced teachers and curriculum workers; current developments, trends, and issues critically analyzed according to available research evidence.

Prereq: 813 or Ed-E&M C 813 or permission of instructor. Not open to students with credit for Ed-E&M C 828.

**840 Writing in the Elementary School G 3**

Study of the implications from recent research and theory in language learning and use in respect to writing, spelling, handwriting, and grammar.

1 2½-hr cl. Prereq: 813 or Ed-E&M C 813. Not open to students with credit for Ed-E&M C 840.

**841 Poetry for Children G 3**

An in-depth study of poetry for children including children's interest in poetry, forms of poetry, and representative poets, classroom approaches for encouraging children's involvement and appreciation of poetry.

1 2½-hr cl. Prereq: 817 or 856 or Ed-E&M C 817 or Ed-Hums 813. Not open to students with credit for Ed-E&M C 841.

**843 Literature for Middle Childhood G 3**

Analysis and study of fiction for children ages 8-12; emphasis on literary quality, strategies for classroom use, and relevant issues.

1 2½-hr cl. Prereq: 817 or Ed-E&M C 817. Not open to students with credit for Ed-E&M C 822.

**853 Critical Reading in the Content Fields G 3**

Exploration of the problems of developing critical reading ability in a variety of curricular fields.

Prereq: 535 or 827 or Ed-E&M C 827 or Ed-Hums 533, and permission of instructor. Not open to students with credit for Ed-E&M C 833 or Ed-Hums 833.

**854 Reading in Its Social Setting G 3**

The influence of culture on the nature, quality, and quantity of reading development; the relationship of reading to language development and mass media.

Not open to students with credit for Ed-E&M C 854.

**855 Practicum in Reading G 3**

Application of research, diagnostic, prognostic, and program development methodology in field settings.

Lab arr. Prereq: Permission of instructor. Not open to students with credit for Ed-E&M C 855.

**860 Language Arts in the Early Childhood Program G 3**

*The process of children's language acquisition leading towards development of reading skills; practical applications from theory and research on language processing.*

1 3-hr cl. Prereq: Experience in working with young children or introductory level child development course. Not open to students with credit for Ed-E&M C 836.

**861 Literature in Early Childhood Education G 3**

Study of literature for children ages two through seven; emphasis on the importance of early exposure to literature for language acquisition and for cognitive and affective development.

1 2½-hr cl. Prereq: 467 and/or 728, or Ed-E&M C 467 and/or 724. Not open to students with credit for Ed-E&M C 837.

**862 Roots of Fantasy for Children G 3**

A study of selected works of fantasy for children (grades 4-9) along with their sources in traditional literature; works based on Arthurian legends, the Welsh Mabinogion, and other folklore from the British Isles.

1 2½-hr cl. Prereq: 817 or 856 or Ed-E&M C 817 or Ed-Hums 813. Not open to students with credit for Ed-E&M C 842.

**884.56 Planned Field Experience G 1-15**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs including cr hrs in Ed-E&M C 884.10, 884.56, and 884.70; Ed F & R 884.36, 884.43, 884.46, and 884.60; Ed-Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&Ma 884.26 and 884.27. This course is graded S/U.

**893.56 Advanced Individual Studies in Language Arts, Literature, and Reading Education G 1-4**

Prereq: Permission of instructor. For thesis option, not more than 15 cr hrs of any 693 and/or 893 will apply toward the master's degree. For non-thesis option, not more than 20 cr hrs will apply. Not more than 30 cr hrs will apply toward the doctoral degree. This course is graded S/U.

**894.56 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 894.10, 894.56, and 894.70; Ed-Intec 894; and Ed-Sc&Ma 894.

**921 A Guided Survey of Research in Reading G 3**

Designed to provide acquaintance with scientific studies relating to reading, methods used, results attained, including implications and limitations, and the problems meriting further investigation.

Prereq: 6 cr hrs in grad reading courses. Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-E&M C 921.

**925.56 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**999.56 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Mathematics Education**

202 Arps Hall, 1945 North High Street, 292-1257

**489 Advanced Field Experience in Mathematics Education U 3-5**

Directed field experience emphasizing appropriate teaching strategies for different school age children and school settings.

2 hrs field experience/cr hr, 1 2-hr seminar. Prereq: Admission to EDP and to science and mathematics teacher education program. Repeatable to a maximum of 15 cr hrs, including cr hrs in Ed-Sc&Ma 489.01, 489.02, and 489.03; subdivisions not repeatable.

**489.01 Middle School-Jr High School Tutorial**

Middle or junior high school mathematics program with emphasis on tutoring a student(s) in mathematics.

Au, Wi Qtrs.

**489.02 Elementary School Program**

Planning, preparing, and teaching mathematics to elementary school age children.

Au, Wi Qtrs.

**489.03 Secondary School Mathematics Classes and Laboratories**

Experience in appropriate secondary school mathematics classroom and laboratory with emphasis on acquiring skills to develop, prepare, conduct, and evaluate laboratory experiences.

Sp Qtr. Prereq: 489.02 or Ed-Sc&Ma 489.02 or permission of instructor; concur 551.

**546 Teaching Mathematics in Secondary Schools I U 4**

Mathematical concepts, objectives, and classroom procedures appropriate for secondary schools; selection, preparation, and use of teaching materials including lesson plans, study guides, textbooks, and multisensory aids.

Sp Qtrs. 4 cl. Prereq: Ed-T&P 451 and 20 cr hrs in math. Not open to students with credit for Ed-Sc&Ma 546.

**587.26 Student Teaching in Secondary Schools U 3-15**

Observation, participation, and responsible teaching in a public school; individual and group conferences and seminars.

Prereq: EDU 4th yr standing and permission of program coordinator. Students desiring teaching in more than one area should indicate accurately both section numbers and hours in each. Repeatable to 21 cr hrs. For additional information see the *College of Education Bulletin*. This course is graded S/U.

**621 Teaching Mathematics in Secondary Schools II U G 4**

Selected problems in curriculum; evaluation, materials of instruction, and the teaching of specific topics in arithmetic, algebra, and geometry.

Au Qtr. 4 cl. Prereq: 546 or Ed-Sc&Ma 546, and 25 cr hrs in math. Not open to students with credit for Ed-Sc&Ma 621.

**689 Middle and Senior High School Mathematics Field Experience U G 6**

Experience in appropriate mathematics classes with an emphasis on acquiring skills to work with students in a school setting while developing skills in preparing, conducting, and evaluating teaching activities.

Su Qtr. 3-hrs/day for 5 days/wk for 8 wks. Prereq: Admission to the post-degree program in mathematics education and concur: 551 or 546. Not open to students with credit for Ed-Sc&Ma 689.

**692.26 Workshops U G 1-8**

Intensive study of a problem common to the participants for the purpose of developing sound principles and practices relating to it.

Arr. Prereq: Teaching experience and written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs, including cr hrs in Ed-E&M C 692.10, 692.56, and 692.70; Ed F & R 692.43; Ed-Hums 692.09, 692.25, 692.28, and 692.45; Ed-Intec 692; and Ed Sc&Ma 692.26 and 692.27.

**693.26 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. These courses are graded S/U.

**694.26 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 694.10, 694.56, and 694.70; Ed-F & R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; and Ed-Sc&Ma 694.26 and 694.27.

**711 Concepts of School Mathematics G 3**

Organizing concepts of school mathematics, their development through the mathematics curriculum, and their role on the learning of mathematics.

3 cl. Prereq: A course in foundations of math or concur Math 645, grad standing in math educ or math or permission of instructor. Subdivisions intended to be taken in sequence. Subdivisions not repeatable.

**711.01 Functions**

Su Qtr. Prereq: Math 580.

**711.02 Equivalence**

Au Qtr. Prereq: 711.01 or permission of instructor.

**711.03 Measure and Measurement**

Wi Qtr. Prereq: 711.01, 711.02, or permission of instructor.

**711.04 Variable**

Su Qtr. Prereq: 711.01, 711.02, 711.03, or permission of instructor.

**712 Methods of School Mathematics G 3**

Examination of curriculum, instruction, and forces that influence curriculum and instruction in school mathematics, grades 7 through 12.

2 1½-hr cl. Prereq: Grad standing in math edu or permission of instructor.

**712.01 Introduction to Teaching of Secondary School Mathematics**

Su Qtr.

**712.02 Classroom Procedures**

Au Qtr.

**712.03 Providing Effective Instruction in Mathematics**

Wi Qtr.

**721 Logic and Psychology in School Mathematics U G 3**

A study of the nature of psychological growth and the development of logical ability in children and the implications for teaching mathematics.

3 cl. Prereq: Teaching experience or written permission of instructor. Not open to students with credit for Ed-Sc&Ma 721.

**802 Processes of School Mathematics G 2-5**

Processes of school mathematics, their development through the mathematics curriculum, and their role in the teaching and learning of mathematics.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in math ed or math, or permission of instructor.

**802.01 Representations****802.02 Examples and Nonexamples****802.03 Axiomatics****802.04 Problem Solving****802.05 Experimentation****802.06 Exposition****884.26 Planned Field Experience G 1-15**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 25 cr hrs including cr hrs in Ed-E&M C 884.10, 884.56, and 884.70; Ed F & R 884.36, 884.43, 884.46, and 884.60; Ed-Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&Ma 884.26 and 884.27.

**893.26 Advanced Individual Studies in Mathematics Education G 1-4**

Prereq: Permission of instructor. For thesis option, not more than 15 cr hrs of any 893 and/or 893 will apply toward the master's degree. For non-thesis option, not more than 20 cr hrs will apply. Not more than 30 cr hrs will apply toward the doctoral degree. This course is graded S/U.

**894.26 Group Studies G 1-5**

Advanced group studies on special problems in education.

Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&M C 894.10, 894.56, and 894.70; Ed-Intec 894; and Ed-Sc&Ma 894.

**899 Interdepartmental Seminar in Teaching College Mathematics G 2-4**

Discussion of problems raised by courses for liberal or general education, service courses, or special education courses commonly offered in college mathematics; given cooperatively by Math and Ed-T&P.

1 3-hr cl. Prereq: Permission of instructor. Not open to students with credit for Ed-Sc&Ma 899.

**925.26 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times.

**999.26 Research G Arr**

Research for thesis or dissertation purposes only. Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

**Teacher Education**

200 Ramseyer Hall, 29 West Woodruff Avenue,  
292-0711 or 292-1280

**435† Theory and Practice in Secondary Education U 5**

A laboratory field experience course introducing concepts, problems, and skills common to prospective secondary school teachers.

4 2-hr cl. Prereq: Psych 230; students in phys ed: Phys Ed 232 or equiv. Not open to students with cr for Ed-F & R 435.

**450 Professional Introduction I U 6**

A common, integrated introduction to human development, general instructional methods, human relations, cultural pluralism, and school as a social phenomenon; extensive clinical and field experiences.

Su, Au, Wi, Sp Qtrs. Lect, lab exper in field arr. Prereq: Psych 100 and admission to an undergrad teacher education program certification area.



**451 Professional Introduction II U 6**

Continuation of 450.

Su Au, Wi, Sp Qtrs. Lect, lab exper in field arr. Prereq: 450.

**683 Solving Classroom Problems U G 3**

Exploration of problem areas of classroom control, student learning, parent relationships, relationships with other teachers, and time management. Cruickshank.

1 2½-hr cl. Prereq: Student teaching or permission of instructor. Not open to students with credit for Ed-F &amp; R 683.

**693.36 Individual Studies U G 1-4**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, or 15 cr hrs for the masters degree and 30 cr hrs for the doctoral degree. This course is graded S/U.

**694.36 Group Studies U G 1-5**

Group studies on special problems in education.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs, including cr hrs in Ed-E&amp;M C 694.10, 694.56, and 694.70; Ed-F &amp; R 694.36, 694.43, and 694.46; Ed-Hums 694.09, 694.25, 694.28, and 694.45; Ed-Intec 694; and Ed-Sc&amp;Ma 694.26 and 694.27. This course is graded S/U.

**756 Inservice Education of Teachers G 3**

An overview of the goals, problems, practices, issues, research, theory, organizations, and literature of inservice education for teachers.

Sp Qtr. 1 3-hr cl.

**768 Directing Student Teachers U G 3**

Principles and techniques for directing the laboratory experiences of student teachers and other teacher education students.

1 2½-hr cl. Prereq: experience. Not open to students with credit for Ed-E&amp;M C 768.

**822 Simulation and Games in Education G 3**

Intended to familiarize participants with the potential of simulation and games as instructional alternatives.

1 2½-hr cl. Not open to students with credit for Ed-F &amp; R 822.

**851 College Teaching G 3**

Designed as initial preparation for instruction at the college level; focuses on the generic skills, strategies, and issues common to university teaching.

1 2½-hr cl. Open to grad students committed to teaching in any area at the college level. Not open to students with credit for Ed-F &amp; R 842 or Ed-P&amp;L 851. Cross-listed in Educational Policy and Leadership. This course is graded S/U.

**884.36 Planned Field Experience G 1-15**

Planned professional teaching experience under supervision in a public school or other educational agency.

Prereq: Written permission of area adviser. Repeatable to a maximum of 15 cr hrs including cr hrs in Ed-E&amp;M C 884.10, 884.56, and 884.70; Ed F &amp; R 884.36, 884.43, 884.46, and 884.60; Ed-Hums 884.09, 884.25, 884.28, and 884.45; Ed-Intec 884; and Ed-Sc&amp;Ma 884.26 and 884.27. This course is graded S/U.

**893.36 Advanced Individual Studies in Teacher Education G 1-4**

Prereq: Permission of instructor. For thesis option, not more than 15 cr hrs of any 693 and/or 893 will apply toward the master's degree. For non-thesis option, not more than 20 cr hrs will apply. Not more than 30 cr hrs will apply toward the doctoral degree. This course is graded S/U.

**925.36 Seminars G 2-5**

Prereq: Permission of instructor. Students with permission of advisers may register for more than one section of 925 or for the same section two or more times. This course is graded S/U.

**926 Curriculum and Instruction in Teacher Education G 6**

Study of teacher education curriculum and how instruction is conducted; hands-on experience with newer instructional alternatives, e.g., microteaching, reflective teaching, and simulation.

2 2½-hr cl. Not open to students with credit for Ed-F &amp; R 918.

**927 Trends, Issues, and Problems in Teacher Education G 3**

Provides awareness and knowledge of critical events and circumstances related to teacher preparation.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for Ed-F &amp; R 919.

**928 Inquiry in Teacher Education G 3**

Study of a variety of research in teacher education with emphasis on research on teacher effectiveness.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for Ed-F &amp; R 920.

**929 Developing the Curriculum in Teacher Education G 4**

To acquaint prospective teachers of teachers with processes for curriculum development in teacher education: to permit them to develop a curriculum for the preparation of teachers.

Su Qtr. 1 2-hr cl, 1 2-hr lab. Open only to PhD students. Not open to students with credit for Ed-F &amp; R 921.

**937 Roles of Field and Clinical Experiences in Teacher Education G 3**

An analysis of student teaching and related direct experiences in teacher education with special emphasis on the theoretical basis, purposes, organization, curriculum patterns, evaluation, administration, and problems in the design of experiences.

3 cl. Prereq: Master's degree, college supervision of student teachers, or permission of instructor. Not open to students with credit for Ed-F&amp;R 937.

**999.36 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. These courses are graded S/U.

## Electrical Engineering

205 Electronics Laboratories, 2015 Neil Avenue, 292-2572

**201 Circuit Analysis I U 4**

Analysis methods for resistive circuits including dependent sources and the operational amplifier; transient and step responses of RLC circuits up to 2nd order; and phasor analysis and the sinusoidal steady-state response.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Physics 133, En Graph 200 or Cptr/Inf 221, and concur: Math 415; a minimum cumulative pt-hr ratio of 2.00; and acceptance as an elec eng major or written permission of dept.

**202 Circuit Analysis II U 4**

Average power and RMS values; Laplace transform methods and s-plane analysis; resonance and frequency response; magnetically coupled circuits and two-ports; analysis using Fourier series.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 201, Math 415, and a minimum cumulative pt-hr ratio of 2.00.

**206 Switching Circuits Lab U 2**

NAND, NOR, XOR gates; combinational circuits; adders, code converters; flip flops: sequential circuits; shift registers, counters.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 260.

**207 Circuits Laboratory I U 2**

Use of basic electrical measuring instruments including the oscilloscope; laboratory investigation of transient response and frequency response; introduction to the operational amplifier.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 202.

**208 Circuits Laboratory II U 2**

Properties of inductors and capacitors; bridge circuits; computer aided analysis techniques; active filters; Fourier analysis; and double-tuned circuits.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 207, concur: 350.

**260 Introduction to Logic Design U 3**

Introduction to combinational switching theory, Boolean algebra, and clocked sequential networks.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Math 153, Physics 133, En Graph 200, a minimum cumulative pt-hr ratio of 2.00, and acceptance as an elec eng major or written permission of instructor.

**293 Individual Studies in Electrical Engineering U 1-15**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**350 Signals and Systems I U 4**

Linear systems and models; convolution and impulse response for discrete and continuous time; state variables; Z transforms.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 202 and Math 415.

**417 Electromagnetics Laboratory U 1**

Transmission line parameters; attenuation, magnitude and phase of voltage and current on lines; reflected waves; waveguide characteristics and techniques; antenna patterns and impedances; optical devices.

Au, Wi, Sp Qtrs. 1 3-hr lab. Prereq or concur: 512.

**427 Electronic Devices and Circuits Laboratory I U 2**

Transistor characteristics, large and small signal parameters, transistor bias and amplifier circuits, operational amplifiers, logic circuits, waveform generation.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq or concur: 522.

**447 Electrical Energy Conversion Laboratory I U 2**

Characteristics of transformers, direct current, and alternating current electromechanical energy conversion devices; inspection of power system facilities.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Concur: 541.

**457 Signals and Systems Laboratory U 2**

Laboratory study of signal processing, control systems and their components, operational amplifiers, and analog computers.

Au, Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 550.

**460 Introduction to Microprocessor Based Systems U 3**

Hardware and software organization of a typical microprocessor; machine language programming, interfacing peripheral devices, and input-output programming; real-time computer applications, self-paced laboratory included.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 260 and En Graph 200.

**489 Professional Practice in Industry U 2**

Preparation of a comprehensive report based on actual employment experience in a co-op job in industry.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to co-op program in elec eng. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**500 Electrical Circuits U 4**

Introduction to circuit analysis; circuit analysis concepts and their extension to mechanical and thermal systems by analogy; electrical instruments and measurements.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: Physics 133 and Math 254. Open only to engineering majors, or with written permission of dept.

**510 Field Theory I U G 4**

Vector relations, static electric fields, dielectric materials, boundary conditions, boundary value problems, field mapping, steady electric currents and their magnetic fields, and ferromagnetic materials.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 202, Eng Mech 215, Math 415, and Physics 133; major standing in elec eng or permission of dept.

**511 Field Theory II U G 4**

Time changing electric and magnetic fields, induced fields, displacement current, Maxwell's equations, plane waves, Poynting vector, energy relations and polarization.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 510.

**512 Transmission and Radiation U G 4**

General transmission theory, infinite line, terminated line, impedance transformation, Smith chart, rectangular waveguides, group and phase velocity, wave propagation, radiation, and optical applications.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 511.

**520 Electronic Devices and Controls U 4**

Theory and applications of electronic devices; study of control circuits, feedback, operational amplifiers, and instrumentation.

Au, Wi, Sp Qtrs. 3 cl, 3-hr lab. Prereq: 500 or 202 or Mech Eng 382 or equiv; open only to eng majors or with written permission of dept.

**521 Electronic Devices and Circuits I U G 4**

First of a sequence of two electronics courses including diodes and transistor electrical characteristics, transistor amplifier circuits, and operational amplifiers.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 202.

**522 Electronic Devices and Circuits II U G 4**

A continuation of 521 including digital circuits, waveform generation, and computer-aided design.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 521.

**540 Electric Machinery U 3**

Electromechanical devices; an introduction to the basic principles of analysis of electromechanical devices; the approach is organized to extend the circuit concepts and dynamic analysis introduced in the preceding course.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 202 or 500 or Mech Eng 382 or equiv. Open only to engineering majors, or with written permission of dept.

**541 Energy Conversion and Power Systems U G 4**

Three-phase systems, energy conversion principles, transformers, basic concepts of rotating machines, introduction to power systems components, steady-state and transient operation, insulation, and grounding.

Au, Wi, Sp Qtr. 4 cl. Prereq: 202.

**550 Signals and Systems II U G 4**

Fourier and Laplace transforms; digital filters; feedback systems; block diagrams; stability; Routh criteria; Nyquist and Bode analysis; root locus.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 350.

**580 Professional Aspects of Electrical Engineering U 1**

Employment problems of graduating seniors, professional aspects of engineering and professional societies and ethics; discussion of employment practices.

Au Qtr. 1 cl. This course is graded S/U.

**601 Communication Theory U G 3**

An introductory course in communication theory including both analog and digital modulation concepts and introductory noise concepts.

Au, Wi Qtrs. 3 cl. Prereq: 550 and Stat 421.

**607 Communication Laboratory U G 2**

Laboratory in the areas of communication theory and signal processing.

Au, Wi Qtrs. 1 cl, 1 3-hr lab. Concur: 601.

**624 Power Electronic Devices and Circuits U G 3**

Thyristor characteristics, single and multi-phase uncontrolled and controlled rectifiers, ac regulators, switching regulators, and inverters.

Sp Qtr. 3 cl. Prereq: 522 or equiv.

**628 Electronic Devices and Circuits  
Laboratory II U G 2**

Rectifier circuits, thyristor characteristics, thyristor circuits, switching regulators, and power amplifiers.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 427, concur: 624.

**631 Electron Device Physical Theory I U G 4**

Physical electronics principles, statistical distributions, conduction, diffusion, energy bands in solids, potential distribution, photoelectric effects, and their application to electron devices.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Chem 205, Math 415, and prereq or concur: 510.

**637 Solid State Microelectronics  
Laboratory I U G 4**

Introduction to laboratory techniques including oxidation, chemical processes, photolithography, diffusion, and metalization; fabrication and measurements of p-n junction planar diodes.

Au Qtr. 2 cl, 1 4-hr lab. Prereq: 631 or equiv with written permission of instructor.

**638 Solid State Microelectronics  
Laboratory II U G 4**

Design and fabrication of integrated circuit projects such as amplifiers, NMOS, CMOS, and bipolar digital circuits.

Wi Qtr. 2 cl, 1 4-hr lab. Prereq: 637.

**640 Industrial/Commercial Power  
Systems U G 3**

An introduction to power system design for commercial buildings and industrial plants; legal and economic considerations; equipment specifications and ratings; design practice; fault calculations, protection, and coordination; grounding; and illumination design.

Sp Qtr. 3 cl. Prereq: 540 or 541.

**643 Electric Machines U G 3**

Magnetic circuits, transformers, electromechanical energy conversion principles, concepts of rotating machines, direct current machines, synchronous machines, and induction machines.

Au Qtr. 3 cl. Prereq: 541.

**645 Engineering Economics and Applications to  
Power Systems U G 3**

Basic financial-mathematical concepts, engineering economics, evaluation of multiple alternatives, time period considerations, cost evaluations, electric utility rate economics, public utility regulation, economics of generation and transmission, and case studies and examples.

Au Qtr. 3 cl. Prereq: 541.

**647 Electrical Energy Conversion  
Laboratory II U G 2**

Linear and rotary electromechanical devices in the steady state and in the transient state; inspections of electric power system facilities.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq or concur: 643 or 740.

**650 Linear Systems with Random Inputs U G 3**

Basic introduction to random processes, correlation functions, spectral density, and the design of optimum filters by several methods in the time and frequency domains.

Au Qtr. 3 cl. Prereq: 550 and Stat 421. Not open to students enrolled in, or having credit for 805.

**661 Digital Circuit Design U G 3**

An introduction to digital circuit design using integrated circuit components; gates, counters, latches, ALU, shift registers, multiplexers, memories, etc.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 206, and 520 or 521.

**670 Introduction to Bio-Medical  
Engineering U G 3**

Introduction to the engineering aspects of life science, utilizing lectures from engineering, medicine, and life science.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 4th yr standing in ENG or permission of instructor.

**693 Individual Studies in Electrical  
Engineering U G 1-18**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 or hrs. This course is graded S/U.

**694 Group Studies in Electrical  
Engineering U G 1-18**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 or hrs.

**700 Digital Signal Processing U G 3**

Analysis and design of discrete-time systems, sampling theory, the z-transform, the discrete Fourier Transform, the fast Fourier transform, digital filter design techniques, and finite register length effects in digital filters.

Au Qtr. 3 cl. Prereq: 550.

**702 Communications Systems U G 3**

A study of communications systems with emphasis on signal-to-noise characteristics of various modulation and coding techniques.

Sp Qtr. 3 cl. Prereq: 601.

**703 Space Communications U G 3**

A study of space communication systems; long-distance transmission, wave propagation, and system considerations.

Sp Qtr. 3 cl. Prereq: 601.

**704 Radar Systems U G 3**

Study of radar systems and their applications; emphasis on measurement of target parameters by means of radar with applications to ranging, tracking, mapping, and navigation.

Au Qtr. 3 cl. Prereq or concur: 601.

**705 Digital Communication Systems U G 3**

Reliable transmission and reception of digital data including study of baseband transmission and modulation methods employed in digital communication systems; introduction to information theory and algebraic coding.

Wi Qtr. 3 cl. Prereq: 601 or equiv with written permission of instructor.

**710 Microwave Circuits U G 4**

Theory of microwave passive devices, transformers, couplers, filters, resonators, and circulators; computer-aided design of microwave circuits; microstrip realization and testing with a network analyzer.

Au Qtr. 3 cl. Prereq: 512 or equiv.

**711 Radiation from Antennas U G 3**

Dipole, loop, aperture, reflector, lens, surface wave, and other antennas; array theory; radiation resistance, directivity, and input impedance.

Wi Qtr. 3 cl. Prereq: 512 or equiv.

**712\* Microwave Optics U G 3**

Geometrical optics, physical optics, aperture radiation integrals, minimum range requirements, stationary phase, sidelobes, aperture blocking, radar echo area, and geometrical theory of diffraction.

Au Qtr. 3 cl. Prereq: 719.

**713 Elements of Radio Wave Propagation U G 3**

Practical methods for predicting tropospheric, groundwave, and ionospheric propagation, including refraction, reflection, and extinction effects.

Sp Qtr. 3 cl. Prereq: 512 or equiv.

**716 Optics with Laser Light U G 4**

Theoretical description of plane, spherical waves; holography; diffraction; Gaussian beams; optical spatial filtering; matrix ray optics; laboratory experience.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 512 and 550.

**719 Electromagnetic Field Theory I U G 3**

Fundamental laws of electrodynamics; dielectric, magnetic, and conductive media; energy, force, and momentum; radiation, scattering, and dispersion; interior boundary value problems; and Green's functions.

Au Qtr. 3 cl. Prereq: 512 or equiv.

**720 Circuit Theory of Solid State Devices U G 3**

Advanced circuit theory of solid-state devices.

Wi Qtr. 3 cl. Prereq: 522.

**721 Advanced Electronic Circuits U G 3**

Integrating and differentiating circuits; counting circuits; timing circuits; pulse circuits; wave-forming and wave-shaping circuits.

Sp Qtr. 3 cl. Prereq: 522 and 621 or equivs.

**722 Active Network and Logic Circuit Design by Digital Computer U G 3**

Study of computer aided network design programs, topological matrices; active device modeling, linear, and non-linear solutions; logic circuit analysis and design by digital computer.

Au Qtr. 3 cl. Prereq: 522.

**723 Microwave Transistor Amplifiers and Oscillators U G 4**

Design principles of microwave transistor amplifiers and oscillators; low-noise, power, and broadband amplifiers; and computer-aided design, microstrip realizations, and testing in the laboratory.

Wi Qtr. 3 cl. 1 3-hr lab. Prereq: 512 and 522; or permission of instructor.

**732 Quantum Electron Devices U G 4**

Interaction of radiation with atomic systems, theory of laser oscillation, electro-optic effects, propagation of laser beams, optical resonators, specific laser systems.

Sp Qtr. 4 cl. Prereq: 631 and Math 415, or equivs.

**733 Parametric Electronics and Nonlinear Optics U G 3**

Coupled mode theory of wave interactions; acousto-optical devices; nonlinear optical phenomena; optical parametric processes; tunable optical oscillator; high power laser interactions.

Wi Qtr. 3 cl. Prereq: 512 and Math 415, or equivs.

**734†\* Solid State Electronics Design and Technology I U G 3**

Discrete and integrated circuit device design and silicon technologies, VLSI processing procedures, and device measurements for process development.

Wi Qtr. 3 cl. Prereq: 631 or permission of instructor.

**735†\* Solid State Electronics Design and Technology II U G 3**

III-V compound semiconductor device fabrication technology; epitaxy, doping, advanced lithography, and plasma processing; GaAs and InP high speed transistors, diodes, and IC design approaches; test structures; and reliability and failure mechanisms.

Sp Qtr. 3 cl. Prereq: 734 or permission of instructor.

**740 Electric Power Systems I U G 3**

A study of major components and steady state operation of electric power systems; network concepts, symmetrical components, asymmetrical systems, power flow, and system stability.

Au Qtr. 3 cl. Prereq: 541.

**741 Electric Power Systems II U G 3**

A study of methods and devices used in system protection; protection systems, relay types, pilot wire and carrier systems, relay response, protection of machines, transformers, buses, and lines; instrument transformers; and modern trends in protection.

Wi Qtr. 3 cl. Prereq: 740.

**742 Electric Power Systems III U G 3**

A study of transient operation of electric power systems; circuit breakers, circuit interruption, switching transients, and modern circuit breakers; traveling waves, reflections, conductor systems, and insulation coordination; and neutral grounding.

Sp Qtr. 3 cl. Prereq: 740.

**743 Control of Electric Machines U G 3**

Modern devices for control of electric machines, converters, and inverters; voltage, speed, and frequency control; and ratings and selection of electric machines.

Wi Qtr. 3 cl. Prereq: 541.

**745 Electric Power System Reliability U G 3**

Basic probability and statistics for reliability analysis, basic reliability concepts, combinatorial reliability, reliability evaluation of generation, transmission and distribution facilities, analysis of maintenance, outages, and failures.

Wi Qtr. 3 cl. Prereq: 541 and Stat 421.

**746 Power System Control and Stability U G 3**

Digital computer modeling, stability, and control representation of excitation and governor systems, analysis of transient stability of multimachine systems.

Sp Qtr. 3 cl. Prereq: 740 and 750 or equiv with written permission of instructor.

**747 High Voltage Engineering and Laboratory I U G 4**

Dielectric strength and breakdown of gases, liquids, and solids, electric field design problems in power system equipment; laboratory study of high voltage insulation.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 541.

**748 Power System Laboratory U G 2**

A laboratory study of power system problems from the areas of transformers, machines, and system protection; and visits of electric power plants and high voltage power system facilities.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 740.

**749 High Voltage and Engineering Laboratory II U G 4**

Impulse and switching surge phenomena, electric field and insulation design problems in electric power system equipment, insulation aging, and lightning and fast discharges; laboratory studies of measurement problems, electric fields, electromagnetic interference, and equipment insulation.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 747.

**750 Linear System Theory U G 3**

Canonical realization of transfer functions; state observability and controllability; state feedback and asymptotic observers; reduced order observers; direct transfer function design.

Au Qtr. 3 cl. Prereq: 550.

**751 Analysis and Design of Digital Control Systems U G 3**

An introduction to the analysis and design of digital control systems using state-variable methods, controllability and observability, control law design, feed-forward design, system identification, optimal control, and dynamic programming.

Sp Qtr. 3 cl. Prereq: 755.

**752 Feedback Control Systems I U G 3**

Application of feedback principles to control systems, system equations, performance criteria, compensation, and multivariable systems.

Au, Wi Qtrs. 3 cl. Prereq: 550.

**754 Feedback Control Systems II U G 3**

Analysis of nonlinear control systems; computer simulation, numerical methods, phase-plane techniques, describing functions, and switched systems.

Sp Qtr. 3 cl. Prereq: 752.

**755 Digital Control Systems U G 3**

Difference equations, z-transforms, digital filtering, sampling quantization, analog-digital conversion; block diagramming to model digital and hybrid control systems.

Wi Qtr. 3 cl. Prereq: 550.

**757 Control Laboratory I U G 3**

Laboratory study of feedback control systems with experiments analyzing different types of plants, transducers, and control techniques; emphasis on real-time computer control.

Wi, Sp Qtrs. 2 cl, 4 lab hrs. Prereq: 360 or 460 or equiv, 457, and prereq or concur: 755.

**758 Control Laboratory II U G 3**

Laboratory study of advanced feedback control techniques as applied to nonlinear and multi-output systems under computer or microprocessor control.

Au Qtr. 1 1-hr cl, 1 4-hr lab. Prereq: 757. Limited to 10 students.

**760 Theory and Design of Digital Computers U G 3**

Design of general purpose digital computers including arithmetic and control units, input/output, memory subsystems, interrelation of hardware and software systems, and introduction to microprogramming.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 460 or Cptr/Inf 360, and Elec Eng 661.

**761 Switching Circuit Theory U G 3**

State minimization, asynchronous sequential machines, the state assignment problem, transient analysis of combinational switching networks, linear sequential networks, and threshold logic.

Wi, Sp Qtrs. 3 cl. Prereq: 760 or Cptr/Inf 675.

**763 Introduction to Real-Time Robotics Systems U G 3**

Components of a Robot System, types, electronic system components, and analog-digital conversion; error analysis; hardware and software.

Au Qtr. 3 cl. Prereq: 460 or equiv, 550, and 752.

**765 Microcomputer Structures U G 3**

An investigation of current microcomputer structures with emphasis on hardware implementation of I/O, direct memory access, interrupts, memory, and microprogramming.

Au, Wi Qtrs. 3 cl. Prereq: 760.

**766 Computer Interfacing and Protocols U G 3**

A hardware oriented course dealing with the electrical principles of computer interfaces for digital communication including time domain effects, serial/parallel interfaces, modems, and associated protocols.

Wi Qtr. 3 cl. Prereq: 661 and 760 or Cptr/Inf 675 or equiv.

**767 Digital Logic Laboratory U G 3**

A self-paced laboratory involving the design of basic computer components such as registers, arithmetic logic units, counters, and the design of sequential machines.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 427 and 661.

**769 Microprocessor Laboratory U G 3**

Open shop design in which students design, construct, debug, and program microprocessor systems based on currently available microprocessors, memories, I/O devices, etc. using sophisticated microprocessor development systems.

Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: 661 and 765, or equivs with permission of instructor.

**770 Biological Control Systems U G 3**

Application of control theory to the analysis of biological control systems such as visual, muscular, thermal, and cardiovascular; receptor, nerve axon, and muscle transfer characteristics.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 550 or equiv; 670 and permission of instructor, or Zoology 522.

**771 Bio-Medical Instrumentation U G 3**

Application of electrical engineering to instrumentation, monitoring, and signal and data handling in bio-electrical measurements; consideration of implants, heart pacers, electrocardiograms and electroencephalographs, and speech analysis.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 550 or equiv; 670 and permission of instructor, or Zoology 522.

**772 Clinical Bio-Medical Engineering U G 3**

Classroom and hospital investigation of clinical instrumentation problems such as EEG, EKG, catheter measurements, spectral analysis, pacemakers, and electrical safety.

Sp Qtr. 1 cl, 2 3-hr labs. Prereq: 771 or Med 797 or equiv with written permission of instructor.

**793 Individual Studies in Electrical Engineering U G 1-18**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 or hrs. This course is graded S/U.

**800 Stochastic Digital Signal Processing G 3**

Signal processing techniques for discrete-time stochastic signals; optimal filtering and prediction, parametric and non-parametric spectrum estimation, recursive filtering.

Wi Qtr. 3 cl. Prereq: 700; 650 or 804.

**803 Coding Theory G 3**

Error detection and correction codes for communications and data storage, finite fields and polynomial algebra, linear codes, Hamming and Reed-Mueller codes, cyclic codes, burst error correction codes, interleaving, Fire codes, and Reed-Solomon codes.

Sp Qtr. 3 cl. Prereq: 705, 762 or equiv with written permission of instructor. Not open to students with credit for 863.

**804 Signal Analysis G 3**

Analysis of continuous time and discrete time signals, Fourier transforms and series, z-transforms, Hilbert transforms, distribution theory, analytic signals, cyclic convolution, and energy and power spectral densities.

Au Qtr. 3 cl. Prereq: 550 and 702 or equiv with written permission of instructor.

**805 Random Processes in Electrical Engineering G 3**

Random variables; random processes; autocorrelation; cross-correlation; energy and power spectral densities; Gaussian, Poisson, Markov, and Weiner processes; and random processes in linear systems.

Wi, Qtr. 3 cl. Prereq: 804 and Stat 520.

**806 Signal Detection and Estimation G 3**

Binary and M-ary decision theory; Bayes, minimax, ideal, and Neyman-Pearson detectors; maximum likelihood and maximum a posteriori estimation; and receiver operating characteristics.

Sp Qtr. 3 cl. Prereq: 805.

**810 Electromagnetic Field Theory II G 3**

Solution of Maxwell's equations in time and frequency domains; field theorems; integral representations; eigenfunction solutions; fields of moving charges.

Wi Qtr. 3 cl. Prereq: 719.

**814 Advanced Antenna Theory I G 3**

Field theorems; boundary-value problems; solution of the integral equations for scattering problems; radiation integrals; far-field criteria; antenna theorems; mathematical and numerical techniques.

Au Qtr. 3 cl. Prereq: 810 or 711.

**815 Advanced Antenna Theory II G 3**

Mutual impedance; moment method, aperture antennas; ground plane effects; horn and reflector antennas; pattern synthesis; antenna measurements.

Sp Qtr. 3 cl. Prereq: 711 and 810.

**817 Advanced Electromagnetic Theory I G 3**

Foundations of the electrodynamics of continuous media; physical implications of the theory; moving sources, boundaries, and media; scalar Green's functions.

Au Qtr. 3 cl. Prereq: 810 or equiv.

**818 Advanced Electromagnetic Theory II G 3**

Vector wave functions and dyadic Green's functions; integral equations and their solution by the moment, variational, and T-matrix methods; application to antenna and scattering problems.

Wi Qtr. 3 cl. Prereq: 817.

**819 Advanced Electromagnetic Theory III G 3**

Use of asymptotic methods to obtain high-frequency solutions; geometrical optics and the propagation through inhomogeneous media; geometrical theory of diffraction and its application to antenna and scattering problems.

Sp Qtr. 3 cl. Prereq: 818.

**830\* Semiconductor Theory G 3**

Direct-reciprocal lattice, lattice waves and phonon theory, electron state and bandstructure theory, electron dynamics, Fermi-Dirac statistics, transport properties and Boltzmann equation (derivations and applications of drift and diffusion equations), and scattering mechanisms.

Au Qtr. 3 cl. Prereq: 631 or equiv.

**831\* Semiconductor Device Theory G 3**

Basic semiconductor device current equations including generation and recombination mechanisms and charge trapping, measurements and analysis of interface states, advanced p-n junction theory, avalanche breakdown, metal-semiconductor contacts, MIS capacitors, and short channel devices.

Wi Qtr. 3 cl. Prereq: 830.

**832\* High-Speed Semiconductor Devices G 3**

Principles underlying the operation and application of high-speed solid-state active devices, electron transport in high fields, Gunn effect, superlattices, heterostructures, and modulation doped devices.

Sp Qtr. 3 cl. Prereq: 831 or permission of instructor.

**841 Computer Methods in Power System Analysis G 3**

A study of computer methods in electric power system analysis; incidence and network matrices, algorithms for formation of network matrices, three-phase network matrices, short circuit studies, iterative solution of simultaneous algebraic and differential equations, and power flow and transient stability studies.

Wi Qtr. 3 cl. Prereq: 740.

**842 Economic Operation and Control of Electric Power Systems G 3**

Load modeling and forecasting, automatic generation control, generation scheduling, computer control, state estimation, on-line power flow, and power flow models.

Au Qtr. 3 cl. Concur: 740.

**843 High Voltage Transmission Systems G 3**

High voltage transmission systems, electrical characteristics, corona phenomena, radio and television interference, audible noise, corona loss, electromagnetic field effects, insulation design, siting and route selection, and model studies.

Sp Qtr. 3 cl. Prereq: 740 or 747.

**850 Theory and Design of Feedback Control Systems G 3**

Linear feedback theory, introduction to stability, the quadratic regulator, output feedback pole placement and design of servocompensators, and CAD techniques for control systems.

Wi Qtr. 3 cl. Prereq: 750.

**851\* Stochastic Estimation and Control Systems G 3**

Synthesis of systems, both linear and nonlinear, with statistical inputs; Weiner filter; Kalman filter; advanced topics.

Wi Qtr. 3 cl. Prereq: 750 and 650 or 805.

**852\* Adaptive Control G 3**

Adaptive control for linear time-invariant systems; includes indirect and model reference adaptive controllers, plus a discussion of robustness issues in adaptive control.

Wi Qtr. 3 cl. Prereq: 750.

**853\* Analysis of Nonlinear Systems G 3**

An advanced study of non-linear systems and methods of analysis; stability studies with Liapunov functions and functional analysis; applications from electric circuits and control systems.

Au Qtr. 3 cl. Prereq: 754 and 851 or permission of instructor.

**854† Optimal Control Theory I G 3**

Optimal control by dynamic programming, Pontryagin's maximum principle and variational methods; minimum time, energy, and fuel problems for linear continuous and discrete systems.

Sp Qtr. 3 cl. Prereq: 750 and 752.

**855 Optimal Control Theory II G 3**

Computational methods in optimal control and large scale dynamical systems; decentralization hierarchy and their effects on modelling, stability analysis, and optimal controller design and implementation.

Au Qtr. 3 cl. Prereq: 850 and 854.

**861 Fault Tolerant Design of Digital Systems G 3**

Reliable design of digital systems; fault detection; redundancy techniques; diagnosis of failures; automatic test generation and fault simulation; design for testability; and signature analysis.

Au Qtr. 3 cl. Prereq or concur: 761.

**862 Computational Aspects of Robotics G 3**

Study of computer hardware and programming issues involved in applying the mathematical equations that describe robotic mechanisms equipped with sensory inputs.

Sp Qtr. 3 cl. Prereq: 763, 760 and knowledge of PASCAL programming language, or permission of instructor.

**864 Advanced Digital Systems Design G 3**

Digital system hardware and software design alternatives; simulation and emulation of computers; control structure and microprogramming; advanced topics.

Wi Qtr. 3 cl. Prereq: 760.

**865 Advanced Sequential Circuit Theory G 3**

State identification and fault detection; finite automata, memory definiteness, and information losslessness; linear sequential machines; finite state recognizers.

Sp Qtr. 3 cl. Prereq: 761 or permission of instructor.

**Radio Astronomy Theory I**

See Astron 862.

**Radio Astronomy Theory II**

See Astron 863.

**870 Biological Systems Modeling I G 3**

Consideration of current literature in the area of biological system modeling; cardio-vascular, and pulmonary systems; computer implementation of models.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 550, or concur: Physiol 601 or Zoology 522.

**871 Biological System Modeling II G 3**

Modeling of such biological systems as renal or thermoregulatory for parameter identification; digital and analog computer laboratory implementation.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 550, and Physiol 601 or Zoology 522.

**872 Bio-Medical Systems Modeling of Man-Machines G 3**

Systems theory applied to the engineering aspects of the human eye-hand tracking interface comparing hybrid computer simulation with experimental data.

Sp Qtr. 3 cl. Prereq: 870 or 871.

**873\* Clinical Instrumentation and Signal Processing G 3**

Basic principles of information transfer and signal processing as applied to clinical health care delivery, such as remote diagnosis, ECG analysis, and telemetry.

Sp Qtr. 3 cl. Prereq: 601 or 764 and 771 or permission of instructor.

**880 Advanced Studies in Electrical Engineering G 1-18**

Su, Au, Wi, Sp Qtrs. 1-3 cl. Repeatable to a maximum of 18 or hrs.

**881 Seminar in Electrical Engineering G 1-3**

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 or hrs.

**894 Group Studies in Electrical Engineering G 1-18**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 18 or hrs.

**910†\* Advanced Antenna Theory III G 3**

Development of the Dyadic Green's function for one and two dimensional periodic structures of arbitrarily oriented elements; application to Phased Arrays with and without scan compensations.

Wi Qtr. 3 cl. Prereq: 711, 810, 815, or permission of instructor.

**993 Individual Studies in Electrical Engineering G 1-18**

Su, Au, Wi, Sp Qtrs. Individual conf. Repeatable to a maximum of 18 cr hrs.

**999 Research in Electrical Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Engineering

122 Hitchcock Hall, 2070 Neil Avenue, 292-2651

**100 Engineering Survey U 1**

Academic requirements; University procedures, grading system, and resources; overview of engineering academic areas of study and services.

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Enrollment in ENG. Not open to students with credit for Agr 100, Arts Col 100, Arts&Sci 100, Home Ec 100, Nat Res 100, and UVC 100. This course is graded S/U.

**195 Women in Engineering U 1**

Discussion of the unique problems facing women engineering students and professionals; resources available to deal with those problems.

Wi, Sp Qtrs. 1 cl. This course is graded S/U.

**198 Introduction to Engineering U 1**

Lectures and discussion of various engineering disciplines: current activities, expectations, responsibilities and future trends.

Sp Qtr. 2 cl. This course is graded S/U.

**H299 Engineering Honors Seminar U 1**

Undergraduate Research Scholars will present oral reports and lead discussion on their specific research projects.

Sp Qtr. 1 cl. Prereq: Participation in ENG Honors Program. Repeatable to a maximum of 2 cr hrs. This course is graded S/U.

**689 Professional Practice in Engineering U 0**

Students complete a cooperative assignment in private industry or for a government agency; assignment is supervised by the employer and monitored and evaluated by the co-op program.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of the Director of the Co-op Program in Engineering. This course is graded S/U.

## Engineering Graphics

240 Hitchcock Hall, 2070 Neil Avenue, 292-7923

**110 General Engineering Graphics U 5**

Graphic language of engineering and its application to the analysis, development, representation, and communication of engineering concepts. Meyers.

Su, Au, Wi, Sp Qtrs. 5 2-hr cl and lab. Prereq or concur: Math 149 or 150. VPA Admis Cond course.

**121 Graphic Presentation I U 3**

Presentation of three-dimensional subjects by precise graphics; orthographic, pictorial, and dimensioning. Boyer.

Au, Wi, Sp Qtrs. 3 cl, 3 1-hr labs. Not open to students with credit for 110. VPA Admis Cond course.

**122 Graphic Presentation II U 3**

Continuation of 121; elements of descriptive geometry, intersections, and development of surfaces, shade, and shadow. Bertoline.

Au, Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq: 121. VPA Admis Cond course.

**141 Engineering Graphics I U 3**

Methods of problem solving and algorithmic development; introduction to 3-dimensional orthographic and pictorial visualization and presentation. Wilke.

Su, Au, Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq or concur: Math 150 or equiv. VPA Admis Cond course.

**H141 Engineering Graphics I U 3**

Methods of problem solving and algorithmic development, and introduction to 3-dimensional orthographic and pictorial visualization and presentation. Wilke.

Au, Wi Qtrs. 3 2-hr cl, lab. Prereq or concur: selection for honors program and Math 150 or equiv.

**142 Engineering Graphics II U 3**

Graphic problem solving techniques; introduction to computer graphics display methods; development of dimensioning and graphics skills. Nasman.

Su, Au, Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq: 141. VPA Admis Cond course.

**143 Engineering Graphics III U 3**

Intermediate interactive computer graphics techniques and graphics conventions; comprehensive engineering problem solving project. Kearns.

Su, Au, Wi, Sp Qtrs. 3 2-hr cl and lab. Prereq: 142.

**200 Computer Utilization with Introduction to Engineering Analysis U 3**

Application of the digital computer to engineering analysis; use of algebraic programming languages; computer center facilities and procedures. Duane.

Su, Au, Wi, Sp Qtrs. 3 cl and lab hr. Prereq or concur: Math 151.

**204 Technical Drawing U 3**

Various systems of size description including precision dimensioning; fastening systems; and organization and preparation of engineering drawings, perspective, and computer graphics. Bertoline.

Au, Wi, Sp Qtrs. 2 2-hr cl and lab. Prereq: 121 or written permission of instructor.

**206\* Architectural Drawing for Residential and Light Commercial Buildings U 4**

Preparation of drawings of wood-framed and steel-framed residential and light commercial buildings; terminology; permit and code requirements. Nasman.

Sp Qtr. 4 2-hr cl and lab. Prereq: 121 or written permission of instructor.

**294 Group Studies in Engineering Graphics U 1-5**

Group studies of specially selected topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**304 Technical Illustration U 3**

Preparation of presentation graphics with emphasis on commercial techniques and design applications. Boyer.

Wi, Sp Qtrs. 2 2-hr cl, lab. Prereq: 121.

**404 Technical Airbrush Illustration U 3**

Preparation of airbrush graphics with emphasis on commercial techniques, materials, and presentations. Boyer.

Au Qtr. 1 cl, 2 2-hr labs. Prereq: 121.

**410 Computer Graphics U 3**

An advanced course in graphics with emphasis on the application of computer-generated graphics to the solution of engineering problems. Miller.

Sp Qtr. 3 cl. Prereq: 200 or written permission of instructor.

**593 Individual Studies U G 1-5**

Opportunity to pursue special-interest topics not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

**640 Solid Modeling in Engineering U G 4**

Theory and engineering applications of solid modeling in design, analysis, and manufacturing.

Su, Sp Qtrs. Prereq: 143, Math 254; Aero Eng 580 or Ceram En 406 or Metal En 250 or Cptr/Inf 541 and/or permission of instructor.

**694 Group Studies in Engineering Graphics U G 1-5**

Special topics in engineering graphics; topics, credit hours, and instructor announced the quarter preceeding the offering.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 or hrs.

**794 Group Studies U G 1-5**

Interdisciplinary topics related to engineering design, graphics, and vision.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

## Engineering Mechanics

209 Boyd Laboratory, 155 West Woodruff Avenue,  
292-2731

**210 Statics U 4**

Resultant and equilibrium of coplanar and non-coplanar force systems; trusses, frames, and connected bodies; friction; centroids and moment of inertia of masses and areas.

Su, Au, Wi, Sp Qtrs. 4 cl. H210 (honors) may be available to students enrolled in the Engineering honors program, or by permission of instructor. Prereq: Physics 131, prereq or concur: Math 254, and a minimum cumulative pt-hr ratio of 2.00 or acceptance as an ENG major or a cumulative pt-hr ratio equal to or greater than that of intended major.

**215 Statics and Strength of Materials U 5**

Resultant and equilibrium of isolated and connected body force systems; introduction to response of deformable bodies to action of axial, bending, and torsional loads.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Physics 131, prereq or concur: Math 254, and a minimum cumulative pt-hr ratio of 2.00 or acceptance as an ENG major or a cumulative pt-hr ratio equal to or greater than that of intended major.

**410 Dynamics U 4**

Linear and angular motion from constant and variable forces; connected bodies; impulses; momentum; energy.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 210 or 215. Not open to students with credit for 415.

**415 Dynamics U 4**

Dynamics of particles and rigid bodies; impulses, momentum, work, and energy; three dimensional vector acceleration; conservative systems; single degree of freedom vibration analysis.

Au, Sp Qtrs. 4 cl. Prereq: 210 or 215, and Math 255 or 415.

**420 Strength of Materials U 4**

Normal and shearing stress and strain; energy; torsion; flexural stress; beam deflections; combined stress, theories of failure; columns.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 210.

**622 Advanced Strength of Materials U G 4**

Mohr's Circle for strain; failure theories; curved beams; bending of non-symmetrical sections; non-circular torsion; beams on elastic foundations; and load-deflection relations by energy methods.

Au Qtr. 4 cl. Prereq: 215 or 420, and Math 255 or equiv.

**627 Experimental Methods in Mechanics U G 3**

Static and dynamic strain analysis by electrical gauges; grid techniques; brittle coatings; analogies; reflective photoelasticity in normal and oblique incidence; motion measurements.

Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: 215 or 420.

**633 Vibrations Laboratory U G 3**

Experiments in vibrations of discrete systems, beams, plates, and shells; stress wave propagation.

Sp Qtr. 2 2-hr labs. Prereq: 410 or 415, and Math 255 or equiv.

**634 Introduction to Ultrasonics U G 4**

Ultrasonic waves in solids and fluids; ultrasonic generators and systems; physical ultrasonics; applications of ultrasonics.

Au Qtr. 4 cl. Prereq: 215 or 420, and Math 255 or 256 or 415.

Not open to students with credit for Weld Eng 634. Cross-listed in Welding Engineering.

**644 Engineering Fracture Mechanics U G 3**

Fracture and fatigue; stress intensity factors; the stability of cracks; compliance and energy rate analysis; plane stress, plane strain; crack propagation and arrest.

Wi Qtr. 3 cl. Prereq: 420 and Math 512 or equiv with written permission of instructor.

**662 Introduction to the Mechanics of Composites U G 4**

An introduction to the macromechanical analysis of anisotropic composite structures, including governing constituent equations, strength and stiffness advantages, and failure envelopes.

Au, Sp Qtrs. 4 cl. Prereq: 215 and 420. Not open to students with credit for Civil En 662 or Mech Eng 662. Cross-listed in Civil Engineering and Mechanical Engineering.

**694 Group Studies in Engineering Mechanics U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs. The student must register for a specific study area indicated below, and may register for more than one at a time.

- A— Experimental Stress Analysis
- B— Dynamics
- C— Fluid Mechanics
- D— Elasticity
- E— Strength of Materials
- F— Vibrations
- G— Plasticity
- H— Plates and Shells
- I— Continuous Media
- J— Fracture Mechanics
- K— Biomechanics
- L— Ultrasonics

**711 Advanced Engineering Dynamics U G 4**

Three-dimensional kinematics and kinetics of particles and rigid bodies; Lagrangian mechanics; Hamiltonian methods; engineering applications.

Sp Qtr. 4 cl. Prereq: 410 or 415, and Math 255 or equiv.

**712†\* Energy Principles in Mechanics U G 3**

Theoretical development of energy principles in mechanics; strain energy and complementary energy with related minimal principles; applications to problems in elasticity, dynamics, and vibrations.

Au Qtr. 3 cl. Prereq: 420 and Math 255 or equiv.

**731 Vibrations of Discrete Systems U G 4**

Free and forced vibrations of mechanical systems having lumped mass and elasticity; multiple degrees of freedom; dissipative systems; random vibrations; engineering applications.

Au Qtr. 4 cl. Prereq: 410 or 415, and Math 255 or equiv.

**732\* Nonlinear Vibrations U G 3**

Vibrations of damped and undamped systems with nonlinear restoring forces; self-sustained oscillations; application of Hill's equation of stability of non-linear oscillations.

Sp Qtr. 3 cl. Prereq: 731 and Math 255 or equiv.



**734 Vibrations of Continuous Systems U G 3**

Equations of motion for strings, membranes, prismatical bars, and plates for various boundary conditions; approximate methods for complicated shapes; wave propagation in elastic media.

Wi Qtr. 3 cl. Prereq: 410 or 415, and Math 255.

**740 Elasticity U G 4**

Classical problems in elasticity; St-Venant torsion and bending theory; plane problems in rectangular and polar coordinates; axisymmetric problems.

Au Qtr. 4 cl. Prereq: 215 or 420, and prereq or concur: Math 512.

**743 Introduction to Continuum Mechanics U G 4**

Continuum mechanics in Cartesian coordinates, analysis of deformation and stress, balance principles, constitutive equations; introductory concepts in viscoelasticity and plasticity.

Sp Qtr. 4 cl. Prereq: 420 and Math 255.

**751 Elastic Stability U G 3**

Buckling of struts, rings, arches, and plates; torsional instability; stability criteria, exact and approximate methods.

Au Qtr. 3 cl. Prereq: 420 and Math 255 or equiv.

**754 Plates and Shells U G 4**

Basic equations; classical solutions and approximate methods in the theory of thin plates; Membrane theory of shells of revolution.

Wi Qtr. 4 cl. Prereq: 215 or 420, and prereq or concur: Math 512.

**762 Structural Composites U G 3**

An introduction to the analysis and design synthesis of beams, columns, rods, plates, and panels made of structural composites.

Wi Qtr. 3 cl. Prereq: 662 or Mech Eng 662 or Civil En 662 or permission of instructor. Not open to students with credit for Civil En 762 or Mech Eng 762. Cross-listed in Civil Engineering and Mechanical Engineering.

**763 Introduction to the Finite Element Method U G 4**

Basic concepts, formulation, and application of finite element techniques for numerical solution of problems in structural and continuum mechanics, geotechnical engineering, and water resources engineering.

Wi Qtr. 4 cl. Prereq: En Graph 200 and Civil En 406 or Math 568 or equiv. Not open to students with credit for 761, Civil En 761 or 763. Cross-listed in Civil Engineering.

**770†\* Biomechanics U G 3**

Discrete mass and continuum mechanics; description of biological materials; biodynamics of limb and gross body motions; various models for injury to head, neck and torso.

Wi Qtr. 3 cl. Prereq: 420 and Math 415 or 512; or permission of instructor.

**793 Individual Studies in Engineering Mechanics U G 2-5**

See 694 for topics.

Su, Au, Wi, Sp Qtrs. Prereq: 711, 731, 740, and permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**800\* Methods of Engineering Analysis G 3**

Solution of boundary value, eigenvalue, and initial value problems arising in mechanics by approximate methods; weighted residual and stationary functional methods.

Au Qtr. 3 cl. Prereq: 10 cr hrs of 700-level courses in eng mech and Math 512 or equiv.

**833\* Elastic Wave Propagation G 3**

Dispersion and group velocity; waves in extended media; propagation and reflection in half space; Lamb problem; waves in plates and rods by exact theory scattering of waves.

Au Qtr. 3 cl. Prereq: 731 or 734.

**835†\* Random Vibrations G 3**

Description of random processes; statistical properties of the response of mechanical systems; optimization of systems subjected to random inputs; instrumentation.

Sp Qtr. 3 cl. Prereq: 731.

**839 Finite Element Method in Engineering Science G 5**

Approximation of boundary value and initial value problems; variational methods, hybrid and mixed method; convergence and accuracy of finite element approximations; recent developments, advanced applications.

Sp Qtr. 5 cl. Prereq: 763 or Civil En 763, and Math 601 or equiv. Not open to students with credit for Civil En 839. Cross-listed in Civil Engineering.

**840†\* Theory of Continuous Media G 3**

Equilibrium, compatibility, and strain displacement relationships for a general continuum; constitutive equations for problems of elasticity, fluid dynamics, and inelasticity.

Au Qtr. 3 cl. Prereq: 740.

**843\* Advanced Elasticity G 3**

Complex variable methods; anisotropic elasticity; three-dimensional elasticity; mixed boundary value problems; variational methods.

Wi Qtr. 3 cl. Prereq: 740.

**844 Advanced Fracture Mechanics G 3**

Treatment of advanced topics in fracture mechanics; elastic-plastic fracture, dynamic crack propagation and arrest, time dependent fracture, fracture of composites, and fatigue crack growth.

Sp Qtr. 3 cl. Prereq: 644 or permission of instructor.

**847†\* Theory of Plasticity G 3**

Plastic range stress-strain relations; elasto-plastic behavior of beams and trusses; torsion of prismatic bars; plane strain; shear lines; limit analysis.

Wi Qtr. 3 cl. Prereq: 740 and Math 512.

**855\* Advanced Shells G 3**

Differential geometry of surface; general equations for arbitrary shell; solutions to membrane and bending equations.

Sp Qtr. 3 cl. Prereq: 754.

**862 Advanced Mechanics of Structural Composites G 3**

An introduction to current important topic areas in structural composites; among these topics are fracture mechanisms and models, energy method modeling, dynamic structural response, and numerical modeling schemes.

Sp Qtr. 3 cl. Prereq: 762 or Mech Eng 762 or Civil En 762 or permission of instructor. Not open to students with credit for Mech Eng 862 or Civil En 862. Cross-listed in Mechanical Engineering and Civil Engineering.

**864†\* Theory of Viscoelasticity G 3**

Basic concepts of time dependent inelastic behavior; viscoelastic constitutive laws; correspondence principles; quasi-static and dynamic problems.

Sp Qtr. 3 cl. Prereq: 740.

**889 Seminar in Engineering Mechanics G 1**

Lectures and discussions covering a range of topics, presented by staff, graduate students, and guest speakers.

Wi, Sp Qtrs. 1 cl: Repeatable to a maximum of 6 cr hrs.

**894 Group Studies in Engineering Mechanics G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. The student must register for a specific study area indicated below, and may register for more than one at a time.

- A— Experimental Stress Analysis
- B— Dynamics
- C— Fluid Mechanics
- D— Elasticity
- E— Strength of Materials
- F— Vibrations
- G— Plasticity
- H— Plates and Shells
- I— Continuous Media
- J— Fracture Mechanics
- K— Biomechanics
- L— Ultrasonics

**993 Individual Studies in Engineering Mechanics G 2-5**

See 894 for topics.

Su, Au, Wi, Sp Qtrs. Prereq: Evidence of sufficient background in area of study chosen and permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**999 Research in Engineering Mechanics G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## English

421 Denney Hall, 164 West 17th Avenue, 292-6065

**020 Beginning Intensive English as a Second Language U 0**

Intensive instruction in English as a second language for students at a beginning level of proficiency; listening, speaking, structure, reading, and writing. Holschuh, Director.

Su, Au, Wi, Sp Qtrs. 5 5-hr cl. Prereq: Admission to American Language Program and approval of ALP director. Repeatable for 2 qtrs. This course is graded S/U.

**021 Elementary Intensive English as a Second Language U 0**

Intensive instruction in English as a second language for students at an elementary level of proficiency; listening, speaking, structure, reading, and writing. Holschuh, Director.

Su, Au, Wi, Sp Qtrs. 5 5-hr cl. Prereq: Admission to American Language Program and approval of ALP director. Repeatable for 2 qtrs. This course is graded S/U.

**022 Intermediate Intensive English as a Second Language U 0**

Intensive instruction in English as a second language for students at an intermediate level of proficiency; listening, speaking, structure, reading, and writing. Holschuh, Director.

Su, Au, Wi, Sp Qtrs. 5 5-hr cl. Prereq: Admission to American Language Program, approval of ALP director, and completion of 021 or equiv. Repeatable for 2 qtrs. This course is graded S/U.

**023 Advanced Intensive English as a Second Language U 0**

Intensive instruction in English as a second language for students with advanced proficiency; listening, speaking, structure, reading, and writing, with emphasis on English for academic purposes. Holschuh, Director.

Su, Au, Wi, Sp Qtrs. 5 5-hr cl. Prereq: Admission to American Language Program, approval of ALP director and completion of 022 or equiv. Repeatable for 2 qtrs. This course is graded S/U.

**040† Basic Reading U 3**

Training in reading designed to prepare the student for college-level reading of expository prose. Duffey, Director.

Au Qtr. 5 cl. Prereq: Determined by testing. Students should score 10 or below on both the English and Social Studies sections of the ACT. Credit will not count toward graduation in any degree program. This course is graded S/U.

**050 Basic Writing I U 3**

First course in a two-course sequence providing an introduction to writing and reading skills in preparation for 110 or 111. Duffey, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Determined by testing. Not open to students with credit for 051, 060, 100, 100.01, 100.02, 100.03, 110, or 111. Credit will not count toward graduation in any degree program.

**051 Basic Writing II U 3**

Second course in a two-course sequence in preparation for 110 or 111. Duffey, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Successful completion of 050. Not open to students with credit for 060, 100, 100.01, 100.02, 100.03, 110, or 111. Credit will not count toward graduation in any degree program.

**052 Basic Writing and Reading I U 5**

First course in a two-course sequence that integrates basic reading and writing in preparation for English 110 or 111. Duffey, Director.

Su, Au, Wi, Sp Qtrs. 5 cl or 2 2-hr cl. Not open to students with credit for 050, 050A, 051, 060, 110, or 111. Credit will not count toward graduation in any degree program.

**053 Basic Writing and Reading II U 5**

Second course in a two-course sequence in preparation for English 110 or 111. Duffey, Director.

Su, Au, Wi, Sp Qtrs. 5 cl or 2 2-hr cl. Prereq: 052. Not open to students with credit for 051, 060, 110 or 111. Credit will not count toward graduation in any degree program.

**060 Basic Writing III U 3**

A one-course introduction to writing and reading skills in preparation for 110 or 111 for students who test above 050, but below 110. Duffey, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Determined by testing. Not open to students with credit for 050, 051, 100, 100.01, 100.02, 100.03, 110, or 111. Credit will not count toward graduation in any degree program.

**104 Basic Spoken English for International Graduate Teaching Associates U 5**

Practice of basic oral and aural English language skills for non-native speakers. Sarwark, Director.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Placement test or recommendation of director. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**105 Classroom English for International Graduate Teaching Associates U 5**

Practice of spoken and pedagogical skills for effective classroom teaching by non-native speaking graduate teaching associates. Sarwark, Director.

Su, Au, Wi, Sp Qtrs. 3 1½-hr cl, 1 1-hr indiv conf. Prereq: Successful completion of 104 and/or Sph/Hrng 035; or placement test; or recommendation of director. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**106 General English as a Second Language U 5**

Review of English structure for non-native speakers of English; major emphasis is on writing, with attention also to development of oral-aural skills. Kantor, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Placement test or recommendation of director. Not open to students having earned a D or above in 071, 072, or 073.

**107 Advanced English as a Second Language U 5**

Reviews advanced English patterns with emphasis on their use in writing essays. Kantor, Director.

Su, Au, Wi, Sp Qtrs. Prereq: Placement test or grade of D or above in 106. Not open to students having earned a D or above in 072 or 073.

**108 Academic Writing in English as a Second Language U 3**

Attention given to problems of structure and diction appropriate to extended treatment of abstract topics. Kantor, Director.

Prereq: Placement test or grade of D or above in 107. Not open to students having earned D or above in 073.

**108.01 Undergraduates**

Idiomatic writing of themes, reports, and examinations. Intended for undergrads.

**108.02 Advanced Undergraduates and Graduates**

Idiomatic writing of reports, examinations, and theses. Intended for advanced undergrad and grad students.

**110 Freshman English Composition U 5**

Training in the fundamentals of expository writing, as illustrated in the student's own writing and in the essays of professional writers. O'Hare, Director.

Su, Au, Wi, Sp Qtrs. No prereq except when testing determines 050, 060, 106, 107, or 108.01 to be required. Not open to students with credit for 100, 102, 103, 104, 105, 111, H195, or 301. This course is available for EM credit only through the AP program.

**H110 Honors Freshman English Composition U 5**

Intensive training in the fundamentals of writing for selected students, as illustrated in the student's own writing and in the essays of professional writers.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 28 or above on the English section of the ACT exam or 660 on the verbal section of the SAT.

**111 Composition and Literature U 5**

Fundamentals of expository writing, as illustrated in the student's own writing and in literary models exemplifying clear thinking and writing. O'Hare, Director.

Su, Au, Wi, Sp Qtrs. 5 cl. No prereq except when testing determines 050, 051, 060, 106, 107, or 108.01 to be required. Not open to students with credit for 100, 102, 103, 104, 105, 110, H195, 210, 301, 302, 303, 304, or 305.

**H111 Honors Composition and Literature U 5**

Intensive training in the fundamentals of expository writing for selected students, as illustrated in the student's own writing and in professional literary models.

Au, Wi Qtrs. 5 cl. Prereq: 28 or above on the English section of the ACT exam or 660 on the verbal section of the SAT.

**160 The Experience of Literature U 5**

Reflections of human experience in major works of English and American literature; authors drawn from Shakespeare, Swift, Wordsworth, Austen, Dickens, Hawthorne, Yeats, Faulkner, Frost.

Au, Wi, Sp Qtrs. Prereq: Fr standing only. This course is available for EM credit only through AP or CLEP programs. BER/LAC course.

**193 Individual Studies U 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Fr standing and permission of Director of Freshman English. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

**General Prerequisites for Courses Numbered 200 and 300**

*Unless otherwise indicated, the prerequisite for 200- and 300-level courses is English 110 or 111 or equivalent.*

**201 Selected Masterpieces of British Literature: Medieval through 18th Century U 5**

An introductory critical study of the works of major British writers from 800 to 1800.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 110 or 111 or equiv. Not open to students with credit for 283 or 284. BER/LAC/LAR course.

**202 Selected Masterpieces of British Literature: Romantic, Victorian, and Modern U 5**

An introductory critical study of works of major British writers of the 19th and 20th centuries.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 110 or 111 or equiv. Not open to students with credit for 284 or 285. BER/LAC/LAR course.

**210 Intermediate Essay Writing U 5**

An intermediate course that extends and refines expository writing and analytic reading skills, with an emphasis on style and an introduction to documentation. O'Hare, Director.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 110 or 111 or equiv. Not open to students with credit for 301, 302, 303, 304, or 305.

**H210 Honors Intermediate Essay Writing U 5**

An intensive intermediate course that extends and refines expository writing and analytic reading skills, with an emphasis on style and an introduction to documentation.

Au, Wi Qtrs. 5 cl. Prereq: A score of 4 or above on the Advanced Placement Test which earns the incoming student credit for 110.

**220 Introduction to Shakespeare U 5**

Study of selected plays designed to give an understanding of drama as theatrical art and as an interpretation of fundamental human experience.

Su, Au, Wi, Sp Qtrs; H220 Au Qtr. H220 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 110 or 111 or equiv. Prereq for H220: 110 or 111 or equiv, and enrollment in an honors program. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**260 Introduction to Poetry U 5**

Designed to help students understand and appreciate poetry through intensive study of a representative group of poems.

Su, Au, Wi, Sp Qtrs. H260 (honors) may be available to students enrolled in an honors program or by permission of dept. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**261 Introduction to Fiction U 5**

Intensive study of a number of short stories and novels to acquaint the general student with some of the important themes and techniques of fiction.

Su, Au, Wi, Sp Qtrs. H261 (honors) may be available to students enrolled in an honors program or by permission of dept. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**262 Introduction to Drama U 5**

A critical analysis of selected dramatic masterpieces from Greek antiquity to the present, designed to clarify the nature and major achievements of western dramatic art.

Su, Au, Sp Qtrs. H262 (honors) may be available to students enrolled in an honors program or by permission of dept. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**265 Writing of Fiction I U 5**

Practice in the writing of fiction; analysis and discussion of student work, with some attention to general methods of fiction and the publishing situation. Citino, Director.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**266 Writing of Poetry I U 5**

Practice in the writing of poetry; emphasis on the students' own work, with reference to established poetic patterns and established poetry. Citino, Director.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**270 Introduction to Folklore U 5**

A general study of the field of folklore including basic approaches and a survey of primary folk materials: folktales, legends, folksongs, ballads, and folk beliefs.

Su, Au, Wi, Sp Qtrs. BER/LAC/LAR course.

**271 Introduction to English Language Study U 5**

An introduction to the grammar, history, and social and regional dialects of the English language.

Au, Wi, Sp Qtrs. Not open to students with credit for 570, 669, 671, 672; or Linguist 201 or 601.

**272 Introduction to Science Fiction U 5**

An introduction to science fiction, especially the 20th-century varieties, with equal emphasis on the literature, its origins, and its social ramifications.

Su, Au, Wi, Sp Qtrs. 4 or 5 cl. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**274 Introduction to the History of English U 5**

A study of the historical development of the English language, with emphasis on its outer history, and on the history of words and sentences.

Sp Qtr. Prereq: 110 or 111 or equiv. Not open to students with credit for 672.

**275 Thematic Approaches to Literature U 5**

An introduction to literature through the examination of a major theme as treated in different genres and periods; topic varies quarterly.

Wi Qtr. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**280 The English Bible U 5**

The Bible in English translation, with special attention to its literary qualities, conceptual content, and development within history.

Au, Wi, Sp Qtrs. BER/LAC/LAR course.

**281 Introduction to Afro-American Literature U 5**

A study of representative literary works by black American writers from 1760 to the present.

Sp Qtr. Offered in cooperation with Black Studies. BER/LAC course.

**290 Introduction to American Literature U 5**

An introductory critical study of significant works of American literature.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 551, 552, or 553. BER/LAC/LAR course.

**294† Group Studies U 3-5**

Topic varies from quarter to quarter on subjects not otherwise covered by English courses.

Repeatable to a maximum of 30 cr hrs.

**H296 Honors Seminar: Literature and Intellectual Movements U 5**

Studies in the relationship of works of literature to their general intellectual contexts, involving such topics as Deism, Marxism, Primitivism, Freudian psychology; topic varies quarterly.

Wi Qtr. Prereq: Cumulative pt-hr ratio of 3.00 or better, with 3.50 or better in English, and permission of dept. BER/LAC course.

**301 Informative Writing U 5**

Intensive advanced training in the art of informative writing. Corbett, Director.

Su, Au, Wi, Sp Qtrs. Prereq: 110 or 111 or equiv with written permission of course director, and jr or sr standing.

**302 Critical Writing U 5**

Intensive practice in writing various kinds of analyses of literary texts.

Su, Au, Wi, Sp Qtrs. Prereq: 110 or 111 or equiv with written permission of instructor. Required of English majors.

**303 Research and Term Paper Writing U 5**

Emphasis in researching, analyzing, and documenting secondary material for the formal essay and term paper; assignments incorporate research principles with informative, persuasive, and argumentative writing. O'Hare, Director.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 110 or 111 or equiv with permission of course director, and jr or sr standing.

**304 Business and Professional Writing U 3**

The study of principles and the practice of techniques associated with business and professional writing; emphasis on the style, organization, and conventions appropriate to business letters and reports. Locker, Director.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 110 or 111 or equiv with permission of course director, and jr or sr standing.

**305 Technical Writing U 3**

Training in practical writing for industry, business, and research, with emphasis on the special requirements and techniques for the professional report. Falor, Director.

Su, Au, Wi, Sp Qtrs. 2 cl, 1 hr conf. Prereq: 110 or 111 or equiv with written permission of course director, and jr or sr standing in the BS curricula.

**373 American and English Literature and Film U 5**

The interrelationship between literary and cinematic art.

Au, Sp Qtrs. Not open to students with credit for 273. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**500-level courses may provide graduate credit only in depts other than English.**

**General Prerequisite for Courses Numbered 500**

*Unless otherwise indicated, the prerequisites for 500- and 600-level courses are 10 credit hours of English courses at the 200 or 300 level or the equivalent work in allied departments or permission of the instructor.*

**513 Introduction to Medieval Literature U G 5**

The study of masterpieces from the Middle Ages, chosen for their values in interpreting medieval culture as well as for their independent literary worth.

Wi Qtr. Fulfills in part the ASC advanced English composition requirement.

**515 Introduction to Chaucer U G 5**

A close study of *Troilus and Criseyde* and *The Canterbury Tales* as introduction to the artist and his period.

Sp Qtr. Not open to students with credit for 615. Fulfills in part the ASC advanced English composition requirement.

**520 Shakespeare U G 5**

A critical consideration of the art, personality, and achievement of Shakespeare in the light of Renaissance and modern significance.

Su, Au, Wi, Sp Qtrs. Fulfills in part the ASC advanced English composition requirement.

**521 The English Renaissance U G 5**

A study of Tudor prose and poetry as they exemplify literary art and as they reflect the creative and inquiring temper of the age.

Wi Qtr. Not open to students with credit for 621. Fulfills in part the ASC advanced English composition requirement.

**522 Early 17th-Century Literature U G 5**

A study of the poetry and prose of 1600-1660, including the major works of Milton.

Sp Qtr. Fulfills in part the ASC advanced English composition requirement.

**531 Restoration and Early 18th-Century Literature U G 5**

A study of poetry, prose, and drama from Dryden and the Restoration playwrights to the works of Swift and Pope.

Wi Qtr. Fulfills in part the ASC advanced English composition requirement.

**535 Literature of the 18th Century U G 5**

A study of the ideas and artistry of the major figures of the 18th century: Swift, Pope, Fielding, Sterne, Boswell, and Johnson.

Sp Qtr. Fulfills in part the ASC advanced English composition requirement.

**540 Romantic and Victorian Poetry U G 5**

Readings in Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, Tennyson, Browning, Arnold, Hopkins, and Hardy as seen against the intellectual background of the 19th century.

Sp Qtr. Fulfills in part the ASC advanced English composition requirement.

**542 19th-Century English Novel U G 5**

Readings in a group of major novelists, such as Austen, Dickens, and Thackeray, with special emphasis upon social and humanistic values.

Wi Qtr. Not open to students with credit for 641. Fulfills in part the ASC advanced English composition requirement.

**543 20th-Century British Fiction U G 5**

A study of the development of British fiction after 1900, with emphasis on such major novelists as Conrad, Joyce, Lawrence, and Woolf.

Au, Wi, Sp Qtrs. Not open to students with credit for 643. Fulfills in part the ASC advanced English composition requirement.

**547 20th-Century Poetry U G 5**

A study of 20th-century American and British poetry, with emphasis on such major figures as Frost, Yeats, Stevens, Eliot, Williams, and Auden.

Su, Sp Qtrs. Fulfills in part the ASC advanced English composition requirement.

**549 Modern Drama U G 5**

An historical and critical examination of the major developments, personalities, and achievements in the drama of Europe and America since the advent of Ibsen.

Au Qtr. Not open to students with credit for 649. Fulfills in part the ASC advanced English composition requirement.

**551 American Renaissance in Literature U G 5**

An introduction to the major American writers of the mid-19th century: Poe, Hawthorne, Melville, Emerson, Thoreau, and Whitman.

Su, Au, Sp Qtrs. Fulfills in part the ASC advanced English composition requirement.

**552 American Literature, 1865-1914 U G 5**

Studies in fiction and poetry emphasizing such major figures as Twain, Howells, James, Dickinson, Robinson, Crane, Dreiser, and Willa Cather.

Au, Wi Qtrs. Fulfills in part the ASC advanced English composition requirement.

**553 20th-Century American Fiction U G 5**

A study of American fiction after 1914, with emphasis on the work of such major figures as Anderson, Fitzgerald, Hemingway, and Faulkner.

Au, Wi, Sp Qtrs. Fulfills in part the ASC advanced English composition requirement.

**560 Studies in English and American Poetry U G 5**

Topic varies; examples: the dramatic monologue; epic and mock epic; the religious lyric; narrative poetry.

Au Qtr. Repeatable to a maximum of 10 cr hrs. Fulfills in part the ASC advanced English composition requirement.

**561 Studies in English and American Fiction U G 5**

Topic varies; examples: tragedy and irony in the novel; the novel of initiation; the novel and the city; the modern short story.

Sp Qtr. Repeatable to a maximum of 10 cr hrs. Fulfills in part the ASC advanced English composition requirement.

**562 Studies in English and American Drama U G 5**

Topic varies; examples: the revenge play; Restoration and 18th-century drama; tragedy; the play within the play.

Wi Qtr. Repeatable to a maximum of 10 cr hrs. Fulfills in part the ASC advanced English composition requirement.

**563 Studies in Contemporary Literature U G 5**

A study of prose and poetry written since approximately 1945.

Wi Qtr. 5 cl.

**564 Studies in a Major Author U G 5**

Topic varies; examples: Austen; Faulkner; Joyce; Pope.

Sp Qtr. Repeatable to a maximum of 10 cr hrs. Fulfills in part the ASC advanced English composition requirement.

**571 Studies in the English Language U G 5**

Topic varies; examples: American English; the sociology of American dialects; language and style.

Au Qtr. Repeatable to a maximum of 10 cr hrs.

**572 Traditional Grammar and Usage U G 5**

An examination of terminology and structures traditionally associated with the study of English grammar and of usage rules, especially problematical ones, governing edited written American English.

Su, Au, Wi, Sp Qtrs.

**573 Rhetorical Theory and the Analysis of Discourse U G 5**

A study of contemporary rhetorical theories to show how a range of literary and non-literary texts persuade readers to assent or action.

Wi Qtr. 5 cl.

**575 Studies in Literary Forms and Themes U G 5**

Topic varies; examples: ironic forms; the Trojan War in English literature; the hero and the anti-hero; pastoralism and romance.

Wi Qtr. Repeatable to a maximum of 10 cr hrs. Fulfills in part the ASC advanced English composition requirement.

**576 Studies in Critical Theory U G 5**

Study of selected issues or movements in critical theory; topics vary; for example, intention, structuralism and literature, new criticism and the contemporary scene, language and literature.

Wi Qtr. 5 cl. Repeatable to a maximum of 10 cr hrs.

**577 Studies in Folklore U G 5**

Topic varies; examples: children's folklore; folklore theory; Appalachian folklore; folk song; native American folklore; folk narrative; folklore and popular culture.

Su, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**H590 Honors Seminar: Major Periods in Literary History U 5**

Intensive study of one of the major periods of English and American literature; periods vary quarterly.

Su, Au, Wi, Sp Qtrs. Prereq: Cumulative pt-hr ratio of 3.00 or better, with a 3.50 or better in English, and permission of dept.

**H590.01 The Middle Ages****H590.02 The Renaissance****H590.03 Neo-Classicism**

Fulfills in part the ASC advanced English composition requirement.

**H590.04 Romanticism****H590.05 The Later 19th Century****H590.06 The Modern Period**

Fulfills in part the ASC advanced English composition requirement.

**592 Women in Literature U G 5**

Close examination from feminist perspectives of literature by or about women; central topic varies, for example, biography or autobiography, women as artists, images, and stereotypes.

Sp Qtr. Offered in cooperation with Women's Studies. Fulfills in part the ASC advanced English composition requirement.

**H598 Honors Seminar: Selected Topics in Literature and Literary Interpretation U 5**

Selected problems (themes, movements, genres, and styles) emphasizing continuity and development in English and American literary and linguistic history; topic varies quarterly.

Wi Qtr. Prereq: Cumulative pt-hr ratio of 3.00 or better with a 3.50 or better in English, and permission of dept. Not open to students with credit for H695.

**600-level courses may provide graduate credit in all depts.****General Prerequisite for Courses Numbered 600**

Unless otherwise indicated, the prerequisites for all 500- and 600-level courses are 10 credit hours of English courses at the 200 or 300 level or the equivalent work in allied departments or permission of the instructor.

**664 The Writing of Non-Fiction U G 5**

Practice in writing and marketing the contemporary essay, with some attention to writing the non-fiction book.

Su, Au Qtrs. 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**665 Writing of Fiction II U G 5**

Practice in the writing of fiction; continuation of 265 at an advanced level.

Wi, Sp Qtrs. Prereq: 265 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**666 Writing of Poetry II U G 5**

Practice in the writing of poetry; continuation of 266 at an advanced level.

Au, Sp Qtrs. Prereq: 266 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**676 History of Literary Criticism U G 5**

Intensive study of the basic texts in literary criticism from Plato to T. S. Eliot.

Sp Qtr.

**692 Workshop U G 1-8**

Arr. Repeatable to a maximum of 12 cr hrs.

W—This alphabetical subdivision is graded S/U.

**693 Individual Studies U G 1-5**

Students may register for individual directed study under this number for work not normally offered in courses.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing and permission of instructor and of dept undergrad or grad committee. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**General Prerequisites for Courses Numbered 700**

*Unless otherwise indicated, the prerequisites for 700-level courses are 15 credit hours of English courses at the 300 or 500 or 600 levels or the equivalent work in allied departments or permission of the instructor.*

**710 Introduction to Old English Language and Literature U G 5**

The reading of Old English prose with special attention to the language and to cultural background.

Au Qtr.

**713 Introduction to Middle English Language U G 5**

An intensive study of Middle English phonology, morphology, syntax, and dialectology from 1100-1500, with selected readings in the literature.

Sp Qtr.

**716 The Middle Ages U G 5**

A lecture-survey of Late Middle English literature concentrating on the period 1300-1500.

Wi Qtr.

**726 The Renaissance U G 5**

A lecture-survey of literature of the English Renaissance, 1500-1660.

Sp Qtr.

**736 The Restoration and 18th Century U G 5**

A lecture-survey of English literature between 1660 and 1798.

Au Qtr.

**746 19th-Century English Literature U G 5**

A lecture-survey of 19th-century English literature, 1798-1900.

Wi Qtr.

**756 19th-Century American Literature U G 5**

A lecture-survey of American literature between 1820 and 1900.

Su, Sp Qtrs.

**762 Forms of Drama U G 5**

A lecture-survey of the theory and practice of tragic, comic, and tragicomic forms in the history of drama.

Sp Qtr. 5 cl.

**763 The Writing of Poetry III U G 5**

An advanced course in the writing of poetry.

Wi Qtr. 3 cl, indiv conf. Prereq: 666 or equiv and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**764 Seminar in the Writing of Non-Fiction U G 5**

An advanced course in the writing of non-fiction.

Sp Qtr. 2 2-hr cl, indiv conf. Prereq: 664 or equiv or doctoral standing; and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**765 Writing of Fiction III U G 5**

An advanced course in the writing of fiction.

Au Qtr. 3 cl, indiv conf. Prereq: 665 or grad standing, and permission of instructor. Designed for advanced undergrads and grad students. Repeatable to a maximum of 10 cr hrs.

**766 20th-Century English and American Literature G 5**

A lecture-survey of 20th-century English and American literature.

Wi Qtr.

**770 Approaches and Research Methods in Folklore U G 5**

Bibliography, research, and fieldwork methods, and critical approaches for the advanced study of folklore.

Au Qtr. Prereq: 15 cr hrs of English courses at the 500 level, or 10 cr hrs in English and 10 cr hrs at the 300-500 level in specified allied depts.

**771† Introduction to the English Language U G 5**

Introduction to the structure of and variation in the English language, with emphasis on both oral and written English.

**772 English Syntax U G 5**

A study of various systems of English grammar, with emphasis on their application to writing and teaching.

Au Qtr. Prereq: 271 or 771, or Linguist 201 or 601. Not open to students with credit for 671.

**773 Applied English Phonology U G 5**

A study of English phonology and its application to a variety of literary and non-literary resources.

Sp Qtr. Prereq: 271, or Linguist 201 or 601. Not open to students with credit for 669.

**774 History of the English Language U G 5**

The historical development of English and its place among the world's languages; emphasis on inner history and outer matrix.

**777† American English U G 5**

Introduction to various aspects of the English language as it is used, and has been used in the continental United States.

5 cl or 2 2-hr cl. Prereq: 271 or 771 or equiv with permission of instructor.

**779 History of Rhetoric U G 5**

History and theory of rhetoric from Aristotle to the 20th century.

Au Qtr. 2 2-hr cl. Prereq: Grad standing or permission of instructor.

**780 Current Theory and Practice in the Teaching of Writing U G 5**

Modern theories of composition; topics include: invention, style, sentence combining, evaluation, the composing process.

Wi Qtr. 2 2-hr cl. Prereq: Grad standing or permission of instructor.

**H783 Honors Research U 3-5**

A program of reading arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the English courses taken and an average of B in the remainder; permission of professor under whose supervision the work is to be completed. Open only to candidates for distinction in English who have in their jr yr completed with high grades a program approved by the undergraduate committee. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**790† Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in Comparative Studies in the Humanities, French, German, Italian, and Spanish.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**General Prerequisites for Courses Numbered 800**

*30 hrs of courses in English, or 20 hrs in English and 25 hrs in specified allied disciplines. Topics may not be taken which were formerly taken as courses under a different number. Admission to 800-level courses is by permission of a Department of English graduate adviser only.*

**800 Introduction to Graduate Study G 5**

Bibliography, research methods, and principles of literary criticism for the advanced study of literature.

Au Qtr. 2 2-hr cl, 1 cl. Required of all MA candidates.

**803 Techniques of Literary Discussion G 2 or 3**

Practical and theoretical aspects of leading and participating in discussion of literary texts.

Wi Qtr. This course is graded S/U.

**817 Studies in Early Medieval English Literature G 5**

Topics include: Beowulf and its background; Old English poetry exclusive of Beowulf.

Wi Qtr. 2 2-hr cl. Prereq: 710 or equiv. Repeatable to a maximum of 10 cr hrs.

**818 Studies in Later Medieval English Literature G 5**

Topics include: Chaucer; poetry of the alliterative revival; medieval English drama; 15th-century non-dramatic literature.

Au Qtr. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**820 Studies in Shakespeare G 5**

An intensive consideration of selected problems in the scholarly study of Shakespeare.

Au Qtr. Repeatable to a maximum of 10 cr hrs.

**827† Studies in English Renaissance Literature G 5**

Topics include: Renaissance and early 17th-century poetry; Spenser; Renaissance drama; Milton; Renaissance prose.

2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**837 Studies in Restoration and 18th-Century Literature G 5**

Topics include: Age of Dryden; Age of Swift and Pope; Age of Johnson; 18th-century novel; Restoration and 18th-century drama.

Wi Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 25 cr hrs.

**840 Studies in English Romantic Literature G 5**

Literary romanticism, as represented by one or more of the poets (Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats), in relation to contemporary intellectual and political movements; topic varies from year to year.

Au, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**844 Studies in Victorian Literature G 5**

Topics include: Victorian poetry; 19th-century non-fictional prose; 19th-century novel.

Su, Wi Qtrs. 2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**850 Studies in 19th-Century American Literature G 5**

Topics include: American literature 1865-1914; individual American writers, 1800-1900; the American Renaissance.

Au, Wi Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**854 Studies in 20th-Century American Literature G 5**

Topics include: 20th-century American fiction; individual 20th-century American writers; 20th-century poetry; 20th-century drama.

Au, Wi, Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**863 Studies in 20th-Century British Literature G 5**

Topics include: 20th-century British fiction; individual 20th-century British writers; modern drama; 20th-century British poetry.

Au, Wi, Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**870 Studies in Folklore G 5**

Intensive study of some particular aspect of folklore.

Su, Sp Qtrs. Prereq: 770 or equiv with written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**871 Studies in the Forms of Literature G 5**

Problems in the criticism of fiction, poetry, or drama.

Su, Wi Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**872 Studies in the English Language G 5**

Advanced English language study; topics vary.

Au Qtr. 2 2-hr cl. Prereq: 771 or Linguist 601 or equiv with permission of instructor. Repeatable to a maximum of 10 cr hrs.

**876 Studies in Critical Theory G 5**

A review of theory and practice in some of the principal forms of literary analysis; focus on a single theoretical movement or a single critical problem.

Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**879 Studies in Rhetoric G 5**

Rhetoric of a particular period; major figures in rhetoric; rhetorical analysis of literature.

Su, Au, Wi Qtrs. 2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**880† Studies in Composition G 5**

Invention; the composing process and revision; evaluating and responding to writing; discourse analysis.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**881 Studies in the Teaching of College Composition****881.01 Teaching of Freshman Composition G 3**

Theory and practice in the teaching of freshman composition. O'Hare.

Au Qtr. Required of new GTA's in English. This course is graded S/U.

**881.02 Teaching of Remedial College Composition G 5**

Theory and practice in the teaching of remedial college composition.

Su Qtr.

**881.03 Teaching of College Composition in English as a Second Language G 5**

Research in teaching English as a second language at the college level; materials and pedagogical techniques to use in English as a second language courses.

Sp Qtr. 2 2-hr cl and arr tutorial time. Prereq: 671 or Linguist 602.01 or permission of instructor. Not open to students with credit for 894 taken Sp Qtr 1982 or Wi Qtr 1983.

**881.04 Teaching Business and Professional Communication G 5**

Theoretical foundations of and teaching techniques for major units in business communication, designed to prepare graduate students to do research in and to teach business and professional writing. Locker.

Wi Qtr. Prereq: 881.01 or permission of instructor.

**890 Interdepartmental Studies in Critical Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.) in literary theory.

2 2-hr or 5 cl. Prereq: Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs. Cross-listed in Comparative Studies in the Humanities, French, German, Spanish, and Women's Studies.

**894 Group Studies G 2-5**

Repeatable to a maximum of 15 cr hrs.

**895 Research Methods in Rhetoric and Composition G 5**

Introduction to different types of research designs in composition, culminating with experience in planning a research design.

Sp Qtr. 2 2-hr cl. Prereq: 10 hrs of grad course work in rhetoric and composition or permission of instructor.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**General Prerequisites for Courses Numbered 900**

15 hrs of English at the 800 level. Topics may not be taken which were formerly taken as courses under a different number. Admission to 900-level courses is by permission of an English department graduate adviser only.

**900 The Long Seminar: Research in Literary History, Theory, and Forms I G 5**

Reading and research in literature, its theory and forms, and its intellectual and social backgrounds.

Wi Qtr. Prereq: At least 25 cr hrs of grad instruction. Repeatable to a maximum of 10 cr hrs. 900 must be followed by 901. Progress graded, credit awarded upon completion of 901.

**901 The Long Seminar: Research in Literary History, Theory, and Forms II G 5**

Continuation of 900.

Sp Qtr. 2 2-hr cl. Prereq: 900. Repeatable to a maximum of 10 cr hrs.

**976 Problems and Methods of Literary Theory G 5**

A study of the basic methodologies and theoretical problems involved in the interpretation and evaluation of literature. Davis. 2 2-hr cl. Prereq: 800.

**980 Bibliography and Method G 5**

For advanced grad students in the methods and tools of literary research.

Wi Qtr.

**982 Textual Criticism and Editing G 5**

Evaluation of literary editorial methods, past and present; training in skills requisite to the textual critic and scholarly editor; practice in textual editing.

Prereq: 980.

**993 Individual Studies G 1-15**

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept grad committee. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**997 The Dissertation Seminar G 3**

Doctoral candidates present their research-in-progress to faculty and each other.

Sp Qtr. 1 3-hr cl. Prereq: Successful completion of the General Exam. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

**998 Research in English: Thesis G Arr**

Research for the master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in English: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Entomology

103 Botany and Zoology Building, 1735 Neil Avenue, 292-8209

**100 Insect Studies I: The Biology of Human/Insect Interactions U 5**

Biology: heredity, reproduction, life cycles, and behavior; historical and contemporary impacts of insects on humans: famines, epidemics, ancient-modern history, aesthetics, ethical issues, and humanities. Wrensch.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. BER course.

**200 Insect Studies II: Diversity, Sociality, Ecology, and Control U 5**

Natural history of insects, including form and function, social interactions, communication, diversity, adaptations, ecology, population regulation and methods of control; designed for non-biology majors. Briggs and Foster.

Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 100; or Biology 108, 110, 113, or H115; or permission of instructor. Credit does not count toward a major in entomol. BER/LAC/LAR course. NS Admis Cond course.

**294 Group Studies U 1-5**

Group studies in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**330 Ecology for Landscape Architects U 5**

An integrated study of natural systems involving environmentally relevant physical, chemical, and biological topics, emphasizing ecological concepts pertinent to sound patterns of landscape design. King.

Au Qtr. 4 cl, 1 3-hr lab, 2 Sat or Sun field trips. Prereq: Botany 112 and Geol&Min 100 or 100.03, or permission of instructor. Not open to majors in biological sciences. Subsistence costs for the field trips will be borne by the students.



**361 Apiculture U 5**

The principles of management of honeybees in the production of honey, wax, package-bees, and queens and in pollinating crops of economic importance. Page.

Sp Qtr. 3 cl, 2 2-hr labs. NS Admis Cond course.

**460 Economic Entomology and Insect Pest Management****460.01 Lecture U 3**

Survey of insects and relatives that affect public health, crops, livestock, and the home; control methods, including principles of integrated pest management. Horn, Hall, Hink, and Needham.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Biology 110 or 113 or H115. Not open to students with credit for 460. BER/LAC course.

**460.02 Laboratory, General U 2**

Examination of specimens of main economic orders, and important pest species.

Au, Wi, Sp Qtrs. 2 2-hr labs. Prereq or concur: 460.01. Not open to students with credit for 460. BER/LAC course.

**460.03 Laboratory, Horticultural Insects U 2**

Examination of major arthropod pests of horticultural crops; emphasis on identification and control.

Wi Qtr. 2 2-hr labs. Prereq or concur: 460.01 or equiv with written permission of instructor. Not open to students with credit for 561. BER/LAC course.

**461 Forest Entomology U 3**

Insects and other arthropods in the forest as they relate to effective management for maximum production of wood products and sustained preservation of forests and parklands. Stairs.

Wi Qtr. 3 cl. Prereq: Biology 110 or 113 or H115, and Botany 112; Forestry 223 recommended.

**500 General Entomology U G 5**

Structure, function, development, ecology, and insect human interactions in an evolutionary context; lab stresses classification and identification of insects; insect collection required. Hink, Johnston, and Stairs.

Su, Au Qtrs. 3 cl, 2 2-hr labs, field trip. Prereq: 15 or hrs in biological sciences. For students at the jr or sr level in biological and agricultural sciences and grad students in biological sciences. BER/LAC/LAR course.

**531 Pesticides, the Environment, and Society U G 3**

The chemical, physical, and toxicological properties of pesticides are related to movement in the environment, and to their biological and ecological effects. Fisher.

Au Qtr. 3 cl. Prereq: 5 or hrs in organic chem and 10 or hrs in biological sciences at the 200 level or above.

**532 Pesticide Regulations U G 2**

Study and discussion of Ohio and U.S. pesticide regulations; rationale of the regulations will be correlated with the biological and environmental effects of pesticides.

Au Qtr. 2 cl. Prereq or concur: 531.

**592 Workshop U G 1-6**

Intensive study of a topic in entomology; the format will depend upon the topic.

Su, Au, Wi, Sp Qtrs. Arr, lecs, labs, or lecs/labs. Prereq: Written permission of workshop director. Repeatable to a maximum of 6 or hrs.

**596 Plant Protection Seminar U G 1**

Current topics relative to plant pest management research, technology, and employment.

Wi Qtr. Arr. Repeatable to a maximum of 2 or hrs, including or hrs earned in Agronomy 596, Hort 596, and Plant Path 596.

Cross-listed in Agronomy, Horticulture, and Plant Pathology. This course is graded S/U.

**611 Field Entomology U G 5**

Emphasis on collection, identification, and field methods; field trips are made to various islands of Lake Erie and the mainland. Horn and Nault.

Su Qtr (2nd term), given only at Franz Theodore Stone Laboratory. 3 all-day cl.

**612 Aquatic Entomology U G 5**

Designed for preparation in the teaching of biology or for research on aquatic resources; emphasis on taxonomy and ecology of immature and adult aquatic insects.

Su Qtr, given only at Franz Theodore Stone Laboratory, 3 all-day cl. Prereq: 500 or 611 or equiv.

**623 Insect Morphology U G 5**

Comparative external and internal anatomy of insects and other arthropods; organ systems in developmental, functional, and evolutionary contexts; individual histological projects. Johnston.

Wi Qtr. 2 cl, 3 2-hr labs. Prereq: 500 or equiv.

**631 Insect Physiology U G 5**

The general physiology of insects and other arthropods; labs stress the use of insects to demonstrate fundamental physiological processes. Denlinger.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 500, and Chem 251 and 254; or equivalents.

**640\* Genetical Bases of Population Control U G 3**

In-depth study of the genetical bases of the dynamics and control of biological populations, especially insects.

Sp Qtr. 3 cl. Prereq: 5 or hrs in entomol and Mol Gen 140 or 500, or permission of instructor.

**641\* Insect Ecology U G 5**

The distribution, abundance, population regulation, plant-insect interactions, and species survival patterns of insects are analyzed in relation to microenvironment and ecosystems. Stairs and Stinner.

Sp Qtr. 3 2-hr lec/labs. Prereq: 500, and Zoology 313 or 313.01; or equivalents.

**642\* Insect Behavior G 4**

Introduction to mechanisms of insect behavior, behavioral physiology and ecology, and social behavior. Page and Phelan.

Wi Qtr. 2 2-hr cl. Prereq: 500 or permission of instructor.

**660 Advanced Economic Entomology U G 5**

Theory and practice of pest population management, emphasizing current research, population modelling, sampling, and data analysis. Horn.

Au Qtr. 3 cl, 2 2-hr labs, field trips. Prereq: 460.02, and Zoology 313 or 313.01; or equivs with written permission of instructor.

**661\* Medical Entomology U G 5**

Arthropod agents and vectors of vertebrate disease: life cycles, behavior, pathogenesis, identification, control; arthropod-pathogen and arthropod vertebrate relationships; arthropod-borne disease systems. Foster.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 500 and Zoology 610 recommended.

**662†\* Principles of Insect Toxicology U G 5**

The properties of insecticides, modes of action, metabolism, toxicity factors, joint action, resistance, experimental procedures and interpretation of data. Fisher.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 631 or equiv or permission of instructor.

**664†\* Host Plant Resistance to Insects U G 3**

Introduction to the theory and application of host plant resistance as a means of insect control and its integration with other insect control strategies. Hammond.

Sp Qtr. 2 1½-hr cl. Prereq: 5 or hrs in entomol or Plant path; or permission of instructor; 5 or hrs of botany recommended. Not open to students with credit for this topic under 694.

**670 General Acarology U G 4**

An introduction to the morphology, development, and general biology of mites; laboratory consists of a taxonomic review of the families of Acari. Johnston, Needham, and Wrensch.

Su Qtr. 1 cl, 1 4-hr lab.

**693 Individual Studies U 1-5 G 1-10**

Individual work in the field of the chosen problems.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs for undergrads and to a maximum of 30 cr hrs for grads. No more than 5 cr hrs may be counted toward an undergrad entomol major. This course is graded S/U.

**694 Group Studies U G 2-5**

Group work in the field of the chosen problems.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs for undergrads and to a maximum of 20 cr hrs for grads.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****751\* Systematic Entomology U G 5**

A survey of all orders except Diptera, Lepidoptera, and Hymenoptera, with emphasis on the determination of insects to family and beyond; collecting and preserving insects. Triplehorn.

Wi Qtr. 2 cl, 6 lab hrs. Prereq: 623.

**752†\* Systematic Entomology U G 5**

Continuation of 751, covering the Diptera, Lepidoptera, and Hymenoptera. Triplehorn.

Wi Qtr. 2 cl, 6 lab hrs. Prereq: 623.

**753†\* Immature Insects U G 5**

A survey of immature stages of insects with emphasis on the anatomy and taxonomy of holometabolous larvae. Triplehorn.

Sp Qtr. 1 cl, 4 2-hr labs. Prereq: 751 and 752, or equivs and permission of instructor.

**762 Environmental Toxicology and Chemistry U G 5**

Technical examination of the environmental behavior of organic, inorganic, and microbial xenobiotics; emphasis on chemistry of interactions with physical environment, fugacity models, risk assessment, and predictive toxicology.

Sp Qtr. 3 cl, 2 labs. Prereq: Chem 251 and 252.

**H783 Honors Research U 3-5**

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BA or BS *with distinction* in entomol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**795 Special Topics in Entomology U G 1-3**

Seminar on publications, current research, or research techniques in the following topics:

- A— Acarology
- B— Apiculture
- C— Behavior
- D— Biological Control
- E— Ecology
- F— Economic Entomology
- G— Genetics

- H— Medical Entomology
- I— Pathology
- J— Physiology-Toxicology
- K— Research methods (data analysis)
- L— Systematics (evolution)

Su, Au, Wi, Sp Qtrs. 1, 2, or 3 cl. Prereq: 25 cr hrs in biological sciences at 200 level or above. Repeatable to a maximum of 10 cr hrs.

**800 Entomology Seminar G 1**

Faculty, graduate students, and outside speakers will participate; topics: recent advances in various entomological fields.

Au, Wi, Sp Qtrs. 1 1½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**831\* Advanced Insect Physiology G 5**

Insect biochemistry and recent advances in insect physiology; lab consists of a term project. Denlinger.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 631 or Zoology 432, or equiv.

**840\* Insect Chemical Ecology G 3**

Chemical strategies used by insects for defense, mate finding, and host selection; techniques used for the characterization of semiochemicals.

Sp Qtr. 1 2-hr cl, 1 2-hr lab. Given at OARDC, Wooster, Ohio. Prereq: 642 and Chem 251 and 254; or equivs; or permission of instructor. Biochem 511 recommended.

**841\* Biological Control G 5**

Reports and discussions on the predators, parasitoids, and microbial pathogens affecting plants and invertebrates, particularly insects. Briggs.

Wi Qtr. 3 cl, 2-hr lab. Prereq: 631; 641 and 660 recommended.

**842†\* Population, Quantitative, and Evolutionary Genetics G 3**

An advanced course in population, quantitative and evolutionary genetics, including the genetical bases for the evolution of social behavior.

Sp Qtr. 3 cl. Prereq: Math 152 and Mol Gen 500, or permission of instructor.

**850 Theoretical and Experimental Population Genetics G 5**

Discussion of mathematical theories in population genetics and experimental works on natural and laboratory populations. Young.

Wi Qtr. 5 cl. Prereq: 12 cr hrs of college-level math, 5 cr hrs of applied or mathematical statistics, and one course in general genetics. Not open to students with credit for Genetics 850. This course is graded S/U.

**870 Medical-Veterinary Acarology G 4**

The mites associated with man, domestic animals, and wildlife, stressing their ecology and behavior in relation to transmission of viral, rickettsial, bacterial, and protozoan diseases. Johnston and Needham.

Su Qtr. 1 cl, 1 4-hr lab; 3 hrs cl/lab daily for 3 wks.

**871 Agricultural Acarology G 4**

An intensive review of the mites associated with crops, ornamental plants, and stored food products with emphasis on taxonomy and ecology of these animals. Johnston.

Su Qtr. 1 cl, 1 4-hr lab, 8 hrs cl/lab daily for 3 wks.

**891 Interdepartmental Seminar in Environmental Biology G 2**

Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomology, Microbiology, and Zoology. This course is graded S/U.

**999 Research in Entomology G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Environmental Biology

25 Botany and Zoology Building, 1735 Neil Avenue, 292-5306

### 694 Group Studies U G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay OSU fees and any fees in excess of OSU tuition, as well as all travel and subsistence costs.

### Interdepartmental Seminar in Environmental Biology

See Botany, Entomol, Micrbiol, and Zoology 891.

### 999 Research in Environmental Biology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Family Medicine

1110 University Hospitals Clinic, 456 West 10th Avenue, 293-8007

### 793 Individual Studies in Family Practice P 4, 8, 16, or 24

Experience with family physician-preceptor or family practice residency programs; student must achieve objectives which fall within the curriculum objectives of the Dept of Family Medicine. Fahey.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Med Coll 663 and written permission of instructor. Repeatable to a maximum of 24 cr hrs. This course is graded S/U.

## Family Relations and Human Development

315 Campbell Hall, 1787 Neil Avenue, 292-7705

### 294 Group Studies U 2, 3 or 5

Selected topics in family relations and human development.

Prereq: Open to students who meet dept's stated prereqs. Not open to students with maximum allowable credit for 294.10 or 294.12. Repeatable to a maximum of 10 cr hrs.

### 360 Family Development U 5

The dynamics of family interaction at each stage of the life cycle; emphasis on developmental tasks, socio-economic and cultural influences and other family differences.

Au, Sp Qtrs. 4 cl, 1 hr arr. Prereq: 5 cr hrs of social science.

### 361 Introduction to Child Development U 5

Study of the nature, nurture, and development of children from conception through the beginning school years. Kantor.

Au, Sp Qtrs. 3 cl, 2 hrs arr. Prereq: Psych 100 or equiv with written permission of instructor and 2nd yr standing.

### 363 Infant Guidance and Care U 4

Considerations in planning for children (conception through age two) at home and in groups. Curriculum content and environment organization to meet developmental needs.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl, 2 hrs arr. Prereq: 360 and 361 or 364 or equiv with written permission of instructor.

### 364 Applied Life Span Analysis U 4

Survey of human development across the life span directed toward an applied understanding of the individual and forces that shape development.

Au, Wi Qtrs. 3 cl, 2 hrs arr. Prereq: Psych 100 or 300, and 2nd yr standing.

### 461 Guidance of Young Children in Groups U 3

Application of principles of development to guidance of children in groups; modification of experiences for age level, ability, group, and individual needs. Bolig.

Au, Wi Qtr. 3 cl. Prereq: 361 or 364 or Psych 550 or Ed-E&M C 460.

### 464 Constructing a Curriculum Model for Young Children U 3

In-depth examination of the Campbell Hall curriculum model from theory to practice.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 461; concur: 465.

### 465 Nursery School Practicum

Participation in the nursery school as a student teacher. Staff.

Su, Au, Wi, Sp Qtrs. Prereq: 361 or 364; and 461, and Ed-S&R 271 and 289.02 or H Ec Edu 289, or written permission of instructor. Pre-register one quarter in advance.

#### 465.01 Preschool/Day Care Practicum U 5

Application of theory included in 461 and 464.

2 4-hr labs, 1½-hr cl, Concur: 464. Open only to Fm&Hu Dv child development option students.

#### 465.02 Child and Family Studies Practicum U 3

Application of theory included in 461.

1½-hr cl, 4-hr lab. Open only to Fm&Hu Dv child and family studies option students.

#### 465.03 Group Care Practicum U 2

4-hr lab, 1 cl. Open to all H Ec Ed majors; open to other Ohio State students with permission of instructor.

### 466 Seminar: Human Service Organizations U 3

Application of principles of family development to program planning; discussion of family needs and design of techniques to assess needs and ways to provide services.

Au Qtr. 2 cl, 1 hr arr. Prereq: 360; concur: 467. Open only to dept majors in child and family studies option.

### 468 Individual and Family Helping Skills U 3

The study of various strategies and techniques used in working with individuals and families in the context of family service organizations.

Wi, Sp Qtrs. 1 3-hr cl.

### 565 Supervised Preschool/Day Care Teaching U 10, 12, or 15

Guided participation of students in the responsibilities and activities of preschool and day care teachers.

Au, Wi, Sp Qtrs. Full-time teacher's schedule. Prereq: 464, 465.01, 4th yr standing in child development option, 2.50 cumulative pt-hr ratio, and written permission of instructor. Dept application must be filed 2 qtrs in advance.

### 589 Field Work

Planned professional experience with children, youth, or adults in a program or community agency.

Au, Wi, Sp Qtrs. Prereq: 466, 4th yr standing, 2.50 cumulative pt-hr ratio, and written permission of instructor. Dept application must be filed 2 qtrs in advance. Repeatable to a maximum of 10 cr hrs. Students must enroll in 2 consecutive qtrs of field work. Not open to students with maximum allowable credit for 589.10 or 589.12. Open only to dept majors in child and family studies option.

#### 589.01 Introduction to Field Work U 5 or 10

First quarter planned participation in community agency learning roles and responsibilities.

Au, Wi, Sp Qtrs. 15 hrs/week at human service agency, 1 hr cl. If taken for 10 cr hrs, 589.02 cannot be scheduled.

#### 589.02 Advanced Field Work U 5

Second quarter planned participation in community agency with increased responsibility for program development and evaluation.

Wi, Sp Qtrs. 15 hrs/week at human service agency, 1 hr cl. Prereq: 589.01.

**593 Individual Studies U 1-5**

Problems in various phases of family relations and human development chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in college honors program or eligible for enrollment. Prereq: Written permission of instructor and completion of individual study plan form. Not open to students with maximum allowable credit for 593.10. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Professional Development U 2**

The professional: organizations, and continuing development. Su, Wi Qtrs. 1 ½-hr cl. Prereq: 4th year standing in Fm&HuDv and completion of a minimum of 20 cr hrs in major in dept. Not open to students with credit for Home Ec 595.

**663 Infant Development U G 3**

Infant development during first two years of life with special consideration of bases of support for provision of effective care.

Wi Qtr. 1 2-hr cl, 1 2-hr lab arr. Prereq: 363, Psych 550, and Sociol 434.

**665 Parenting U G 3**

Identification and examination of the theoretical approaches applicable to child rearing in families; emphasis on developing practical skills for working with parents and children.

Su, Au Qtrs. 2 1½-hr cl. Prereq: 360 or Sociol 430; 361, 364 or Psych 550, or equiv with written permission of instructor.

**666 Children and Their Families Under Stress U G 3**

Examination of normative and developmental stressors and crises that impact on the development of children; implications for practitioners drawn from conceptual frameworks and recent research.

Au, Sp Qtrs. 2 1½-hr. cl. Prereq: 465.01 or 467 or permission of instructor or grad standing.

**667 Administration of Agencies Serving Children and Families U G 3**

Study of the administration of day care centers and other family serviced agencies; topics include program objectives, regulations, program development and evaluation, staff development and training, and budget and funding.

Au Qtr. 1 2½-hr cl, 1 hr arr. Prereq: 465.01 or 465.02 or equiv and written permission of instructor.

**669 Comparing Program Philosophies for Young Children U G 3**

Exploration of a variety of philosophies and resultant practices in caring for and educating young children in day care and nursery school situations.

Wi Qtr. 2 1½-hr cl. Prereq: 465.01 or 465.02 and sr standing or equiv with written permission of instructor; or grad standing.

**689 Practicum in Family Relations and Human Development**

An opportunity for putting professional research and theory into practice by teaching, administrative, and agency experiences under supervision in university or agency settings. Prereq: 3rd or 4th yr standing, 2.25 cumulative pt-hr ratio, and written permission of instructor. Application must be approved by instructor the quarter preceding registration.

**689.01 Advanced Child Development Practicum U G 3-5**

Special advanced supervised teaching experience with children ages three to five; emphasis on analysis of relationships among teacher behaviors, child characteristics, environmental factors, and learning outcomes.

Au, Wi, Sp Qtrs. Arr. Prereq: 465.01, 465.02, 465.03, or permission of instructor. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**689.02 Curriculum Planning and Interdisciplinary Strategies for Serving Moderately, Severely, and Profoundly Delayed Young Children U G 5**

Practicum experience for students who are interested in working with young developmentally delayed children and their families in an educational setting.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 361 or equiv and Psych 571 or Ed-HuSer 651. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**689.03 Advanced Family Services Practicum U G 3-5**

Special field experience in family service agencies for students with unique interests, such as hospitalized children or the elderly.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 360, 477, 467, and permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**690 Workshop U G 1-5**

Intensive study of a topic common to the participants for the purpose of developing related principles and practices.

Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**694 Group Studies U G 2, 3, or 5**

Selected topics in family relations and human development.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**695 Seminar in Child and Family Studies U G 3**

Review, interpretation, and evaluation of current literature and research in defined areas.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 360, 361, and sr or grad standing. Repeatable to a maximum of 4 cr hrs.

**695.01 Special Topics in Child Development**

Special topics seminar with a content focus on child development.

**695.02 Special Topics in Family Development**

Special topics seminar with a content focus on family development.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instruction. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****701 Issues and Problems in Family and Human Development U G 1**

Issues and problems in research, teaching, and professional development in fields of family relations and human development.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Jr, sr, or grad standing in Fm&Hu Dv or permission of instructor.

**701.01 Professional Development**

The disciplinary boundaries, professional organizations, and future directions of the field.

**701.02 Program Development**

Current issues and trends and methods in the interdisciplinary curricula and instructional resources in the field of family relations and human development.

**701.03 Research**

Current research trends and methods in the interdisciplinary field of family relations and human development.

**760 Family Relations and Human Development Research Process Analysis U G 3**

Historical overview of research methods and related conceptual issues relevant to study of family relations and human development; creative approaches to research problems. Hock.

Au Qtr. 1 2½-hr cl. Prereq: 361 or 363, Psych 550, and Sociol 434 or equiv with written permission of instructor.

**761\* Observing and Recording Child and Family Behavior U G 3**

Examination of the value of observation skills and methods of observing and recording child and family behavior.

Sp Qtr. 1 2½-hr cl, 2 hrs arr. Prereq: 361 or 362, or Psych 550, or Ed-E&M C 460 or Ed-T&P 460, or equiv with written permission of instructor.

**764 Advanced Family Development U G 5**

Theory, research, and methods used to study family development; individual and family developmental task over the life span; personal and social context of family development.

Au Qtr. 2 2-hr cl. Prereq: 360 and 364, or equivs with written permission of instructor.

**765 Advanced Child Development G 4**

Growth and development of children through adolescence with emphasis on maturation patterns and individual differences. Davis.

Wi Qtr. 2 1½-hr cl, 2 hrs arr. Prereq: 360, and 361 or Psych 550, or equiv with written permission of instructor.

**770 Professional Issues in Marital and Family Therapy G 4**

A preclinical introduction to the central issues and resources in professional development, including personal growth, legal responsibilities, regulation, ethics, and special areas of practice.

Au Qtr. 3 ½-hr. cl.

**793 Individual Studies U G 1-5**

Problems in various phases of family relations and human development.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**797 Interdepartmental Seminar U G 2-4**

Two or more departments may collaborate in presenting seminars in subjects of mutual interests; topics to be announced.

Repeatable to a maximum of 6 cr hrs with permission.

**810 Divorce and Remarriage G 3**

Analysis of research and theory pertaining to the process of marital dissolution, adjustment, and remarriage.

Su Qtr. 1 3-hr cl. Prereq: 764 and 765 or equiv and permission of instructor, 6 cr hrs in research methods, design, or statistics.

**860 The Family: The Early Years G 3**

Relationships and adjustments in family living with emphasis on the early and expanding stages of the family life cycle.

Wi Qtr. 1 2½-hr cl. Prereq: 25 cr hrs in social and psych, or equiv with written permission of instructor.

**861 The Family: Middle and Later Years G 4**

The interrelationship and adjustment of families with emphasis on the middle and later years of the life cycle. O'Bryant.

Sp Qtr. 2 2-hr cl. Prereq: 660 or 764 or equiv with written permission of instructor, and 6 cr hrs in research methods, design, or stat.

**862 Seminar in Family Relations and Human Development G 3 or 5**

Topics to be announced.

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Grad standing in home ec and/or written permission of instructor, and 6 cr hrs in research methods, design or stats. Repeatable to a maximum of 24 cr hrs.

A—Human Development

B—Families

**863 Infant Caregiving Contexts G 3**

Review and critical analysis of recent theoretical and research literature relevant to the design and evaluation of infant care settings.

Sp Qtr. 1 2½-hr cl. Prereq: 663 or equiv with permission of instructor, and 6 cr hrs in research methods, design, or stat.

**864 Contemporary Issues in Group Experiences for Young Children G 3**

Identification and examination of current practices in group experiences for children under five; emphasis on current issues, relevant research and theory as related to curriculum design.

Sp Qtr. 1 2½-hr cl. Prereq: 15 cr hrs of child development and/or child psychology, supervised student teaching or experience in nursery schools or day care centers, and 3 cr hrs in research methods, design, or stat.

**865 Seminar in Imagination and Play G 3**

Examination of research on imagination and play; topics include development and functions of these cognitive and personality areas and ways of encouraging their expression.

Su Qtr. 1 2½-hr cl. Prereq: 765 or equiv grad course in human development or play, or permission of instructor.

**866 Practicum in Supervision of Preschool/Day Care Student Teachers G 3**

Guided supervision of undergrad student teachers in preschool/day care settings.

Wi Qtr. Arr. Prereq: Grad standing in home ec specializing in Fm&Hu Dv; training and experience as a preschool/day care teacher; H Ec Edu 745 or Ed-E&M C 768 or Ed-F & R 861 or Ed-P&L 861 or Ed-T&P 861; permission of instructor.

**867 Current Trends and Issues in Family Relations and Human Development G 3**

An analysis and assessment of the empirical and theoretical literature on selected family science topics.

1 2½-hr cl. Prereq: 764 and 765 or equiv; 6 cr hrs in research methods, design or stats, or permission of instructor. Repeatable to a maximum of 12 cr hrs.

**867.01 Adolescents and Their Families**

A multidisciplinary analysis of theory and research bearing on the topic of changing parent-child relationships during the period when children are adolescents.

Au Qtr.

**867.02\* Men in Families**

A developmental analysis and assessment of the empirical and theoretical literature on male role performance in family systems with implications derived for research and social policy.

Sp Qtr.

**867.03 Women in Families**

An analysis and assessment of the theoretical and empirical literature on women's roles in family systems.

Au Qtr.

**870 Family Systems Assessment G 4**

A survey of issues and techniques used in assessment of families for purposes of research and practice, including issues and design for family therapy research.

Wi Qtr. 3 cl. Prereq: 760 and 770.

**874 Family Therapy Techniques I G 4**

An emphasis on the theoretical orientation and intervention techniques of the structural, strategic, MRI, and Milan approaches to family therapy.

Au Qtr. 3 cl. Prereq: An introductory course in family therapy.

**875 Family Therapy Techniques II G 4**

An emphasis on the theoretical orientation and intervention techniques of the intergenerational, behavioral, and experimental approaches to family therapy.

Wi Qtr. 3 cl. Prereq: An introductory course in family therapy.

**876 Marital Therapy Techniques G 4**

An emphasis on theoretical approaches, intervention techniques, and basic issues or problems of application for marital therapy.

Sp Qtr. 3 cl. Prereq: 874 or 875.

**880 Seminar in Marital and Family Therapy G 3**

Topics to be announced.

Su Qtr. 2 ½-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**889 Practicum in Marital and Family Therapy G 1-5**

Supervised practice in marital and family assessment and intervention in the department's marital and family therapy clinic.

Su, Au, Wi, Sp Qtrs. 3-4 client contact hrs and 1-2 supervision hrs per cr hr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**894 Group Studies G 2, 3, or 5**

Selected topics in family relations and human development.

Prereq: 6 cr hrs in research methods, design or stat; and stated prereqs for specific topics. Repeatable to a maximum of 10 cr hrs.

**899 Interdepartmental Seminar G 1-5**

See Interdepartmental Seminars.

Prereq: 6 cr hrs in research methods, design, or stat.

**989 Supervised Field Experience in Family Therapy G 1-5**

Supervised practice in marital and family assessment and intervention in an agency setting.

3-4 client contact hrs and 1-2 supervision hrs per cr hr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**993 Individual Studies G 1-5**

Problems in various phases of family relations and human development.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Family Resource Management

174 Campbell Hall, 1787 Neil Avenue, 292-4389

**251† Residential Interiors: Market U 3**

Economic factors and trends in materials, construction, finishes, and marketing of furnishings.

Sp Qtr. 2 cl, 1 2-hr lab.

**260 Family Financial Management U 3**

The management of family financial resources; topics include financial planning and budgeting, insurance, credit, and savings and investments.

Su, Au, Wi, Sp Qtrs. 3 cl. This course is available for EM credit. SS Admis Cond course.

**261 Consumer Behavior in an Ecological Context U 3**

Interrelationships between the family and its natural environment; consumption patterns and strategies for family resource management in relation to natural resources.

Au Qtr. 3 cl. SS Admis Cond course.

**294 Group Studies U 2-5**

Selected topics in family resource management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**330 Introduction to Home Equipment U 5**

Principles involved in the selection, construction, operation, and care of home equipment and their relation to the well-being of the family.

Wi Qtr. 2 1½-hr cl, 2-hr lab.

**341 Family Resource Management**

Management process of utilizing specific resources for families' well-being with consideration of the interdependence and interrelationships with the environment and associated organizational systems.

Au, Wi Qtrs.

**341.01 Family Resource Management Theory U 3**

2 1¼-hr cl. Prereq: 3rd yr standing. This course is available for EM credit.

**341.02 Family Resource Management Application U 2**

Application and integration of management principles in varying household situations.

2 2-hr cl. Prereq: 3rd yr standing and concur: 341.01.

**351 Residential Interiors: Principles U 5**

Application of art principles to furnishing a home with consideration of aesthetic, economic, and social factors affecting choice.

Au, Wi Qtrs. 3 cl, 2-hr. lab. Prereq: 3 cr hrs in an area of art or equivs with written permission of instructor.

**362 Resource Management Issues for Women U 3**

Issues and choices faced by women in their employment and resource management, as well as policies affecting women in these roles.

Sp Qtr. 3 cl. Prereq: Agr Econ 100 or Econ 100 or 200.

**372 Consumer and the Market I U 3**

The interrelationships of the consumer with public and private providers of goods and services and with the physical and political systems.

Au, Sp Qtrs. 3 cl. Prereq: Econ 100 or 200 and 10 cr hrs of social science.

**411 Housing: Social and Economic Environment U 3**

Application of selected social science research to individual and family housing needs.

Su, Au Qtrs. 3 cl. Prereq: 3 cr hrs in econ, 3 cr hrs in social, and 3 cr hrs in psych.

**425 Housing: Physical Environment U 3**

The physical aspects of both housing and the housing environment with concern for their relationships to individual and family satisfactions with housing choices.

Au, Wi, Qtrs. 2 cl, 2-hr. lab. Prereq: Fm&Hu Dv 360 or 10 cr hrs in social science.

**451†\* Residential Interiors: Problems in Conceptual Visualization U 5**

Exploration toward the solution of interior, environmental, and spatial problems based on space analysis and planning; emphasis on the functional spatial relationships of residential interior space to furnishings.

Sp Qtr. 2 cl, 3 2-hr labs.

**551 Residential Interiors: History of Design and Decoration U 3**

Analysis of furniture styles from antiquity through the present with emphasis on aesthetic, economic, and social implications as well as influencing philosophies.

Sp Qtr. 2 cl, 1 2-hr lab.

**560 Family Financial Management II U G 4**

Analyze and evaluate financial decisions by families at various points in family life cycle and apply economic principles to development of aids used by families facing financial decisions.

Sp Qtr. 3 1-hr cl, 1 2-hr lab. Prereq: 260 or permission of instructor.

**589 Field Work U 3-5**

Observation and application of concepts and principles learned in Family Resource Management coursework to a professional setting.

Prereq: 110 earned cr hrs, 2.00 cumulative pt-hr ratio, 372, credit for 3 other graded courses in Fm Res M, and written permission of instructor.

**593 Individual Studies U 2-5**

Problems in various phases of family resource management.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in college honors program or eligible for enrollment. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Professional Development U 2**

The professional: performance, role in society, and position securement; trends in profession.

Au, Wi Qtrs. 1 1½-hr cl. Prereq: 372 and 3rd yr standing. This course is graded S/U.

**611 Housing Issues U G 3**

Examination of housing problems from viewpoints of varying family types.

Wi Qtr. 3 cl. Prereq: 411.

**631 Food Related Home Equipment U G 5**

Experimental techniques and investigations dealing with the major types of home equipment used in food preparation and refrigeration.

Wi Qtr. 4 2-hr cl. Prereq: 330 and Humn Ntr 314.

**632 Home Laundering: Principles and Equipment U G 5**

Experience in the techniques and reporting of experimental investigations dealing with home equipment used in laundering and other cleaning processes.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 330 and Txtl&Clo 371.

**662 Household Economic Status I U G 3**

Living arrangements and characteristics of American population, distribution of income, and government policy as determinants of the economic status of households.

Au Qtr. 2 1½-hr cl. Prereq: 372 and Econ 400. Graduate students must enroll in 762 concurrently.

**671 Consumer Choice U G 3**

The social, cultural, and psychological factors which underlie the choices made by nations and individuals with respect to consumption and living patterns.

Sp Qtr. 2 1½-hr cl. Prereq: Psych 100 or equiv, Social 101 or equiv, 5 additional cr hrs in social science.

**672 Consumer and the Market II U G 3**

The effect of consumers on the marketplace and on the allocation of resources in the public sector; consumer welfare as affected by human capital, regulation, and voluntary sellers' activities.

Wi Qtr. 3 cl. Prereq: 372 and Econ 400.

**690 Workshop U G 1-4**

Intensive study of a topic of common concern to participants; may include off-campus study tour within the United States.

Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs. Travel and subsistence costs for off-campus study tours will be borne by the student.

**694 Group Studies U G 2-5**

Selected topics in family resource management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****711 Housing: Social and Economic Aspects for Families U G 3**

Review of multidisciplinary literature with emphasis on interaction between users of housing and selected social, psychological and economic environments.

Sp Qtr. 2 1½-hr cl. Prereq: 411 or equiv with written permission of instructor.

**740 Theories and Models of Family Resource Management G 4**

Aspects of family life are analyzed from the perspective of family resource management theories; emphasis is placed on empirical implications of the theories.

Wi Qtr. 2 1½-hr cl. Prereq: 662, 762 or equiv, and Econ 501 or 705 or equiv.

**741 Managerial Concepts and Their Measurement G 4**

Tools and techniques which are applicable to resource allocation decisions in a specific household.

Sp Qtr. 2 1¼-hr cl, 1 2-hr lab. Prereq: 762 and 740.

**762 Household Economic Status: Research and Policy G 1**

Discussion and analysis of research needs and policy issues related to household economic status.

Au Qtr. 1 cl. Concur: 662

**793 Individual Studies U G 2-5**

Problems in various phases of family resource management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**825\* Family Resource Management: Activity Analysis G 3**

Advanced study in application of work principles to design of appliances, work space areas, and methods of work in the home. Hunt.

Wi Qtr. 1 2½-hr cl. Prereq: 10 cr hrs in family resource management and home equipment or equiv with written permission of instructor.

**841\* Family Resource Management: Development and Theory G 3**

Historical development and present trends in family resource management with emphasis on theory and practices.

Wi Qtr. 2 1½-hr cl. Prereq: 662, 740, 741, 762 or written permission of instructor.

**862\* Household Economic Status II G 3**

Interpretation of theory and research related to household economic status.

Su Qtr. 3-hr cl. Prereq: 662, Econ 705 and 706 or equivalents, and 3 cr hrs in stat.

**872\* The Consumer in American Society G 3**

Analysis of the elements involved in the consumer interest, interrelationships of the elements, cost effectiveness of these methods, and distributional impacts of the alternatives.

Au Qtr. 2 1½-hr cl. Prereq: Econ 705 and 706 or equivalents; and 3 cr hrs of stat.

**894 Group Studies G 2-5**

Selected topics in family resource management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**895 Seminar in Family Resource Management G 3 or 5**

3 cl. Prereq: 30 or hrs in home ec, including 622 or 623 or 631 or 632 or 825 or 826 depending on emphasis of topic, and written permission of instructor. Repeatable to a maximum of 15 or hrs including or hrs in 822. Not open to students with maximum allowable credit for 822.

A—Home Furnishings and Housing  
B—Family Resource Management  
C—Home Equipment  
D—Consumer and Market

**993 Individual Studies G 1-5**

Problems in various phases of family resource management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Food Science and Nutrition

122 Vivian Hall, 2121 Fyffe Road, 292-6281

**100 Food and Mankind U 5**

Food and nutrition in modern civilization; role of science, industry, and government in meeting domestic and world needs; elements of food acceptance, quality, processing, and protection. Chism and Mangino.

Au, Sp Qtrs. 5 cl.

**289 Food Industries Field Experience U 3**

Ten weeks practical experience or equivalent in an approved food plant or laboratory; written report required.

Su, Au, Wi, Sp Qtrs. Open only to students majoring in food science and nutrition.

**Introduction to Food Process Engineering**

See Ag M&Sys 381. Offered in cooperation with Agricultural Engineering (Agricultural Mechanization and Systems).

**Marketing Dairy Products**

See Agr Econ 426. Offered in cooperation with Agricultural Economics.

**493 Individual Studies U 1-5**

Individual study course to permit undergraduate students to explore in-depth selected areas of food science and nutrition.

Su, Au, Wi, Sp Qtrs. 3-, 6-, 9-, 12-, or 15-hr lab. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

**494 Group Studies U 3-5**

Group studies on selected topics in Food Science and Nutrition.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. H494 (honors) may be available to students enrolled in an honors program or by written permission of instructor. Repeatable to a maximum of 15 or hrs.

**521 Food Components and Analysis U G 4**

Composition and chemical properties of foods and food components; evaluation and utilization of analytical methods; effect of processing; regulations, laws, and agencies. Min.

Au Qtr. 4 cl. Prereq: Chem 252.

**522 Food Components and Analysis: Laboratory U G 4**

Application of modern analytical methods to foods and food components; determination of chemical phenomena and properties of foods; project studies, data interpretation, and report writing. Min.

Wi Qtr. 1 cl, 2 3-hr lab, 1 conf. Prereq: 521.

**531 Sensory Properties of Foods U G 3**

Fundamentals of sensory perception, taste, and odor classification and threshold values; subjective and objective evaluation of foods; panel selection and interpretation of results; industrial applications. Dzurec.

Sp Qtr. 2 cl, 2 1-hr lab. Prereq: 3-5 or hrs. in organic chemistry and statistics.

**537 Laboratory Introduction to Food Systems U G 3**

Unit processes in fundamentals of food systems and food fabrication and development; equipment use; chemical, physical, and microbiological measurements of product control and storage changes. Dzurec.

Au Qtr. 1 cl, 2 3-hr labs. Prereq: 522.

**541 Physical Properties of Foods U G 4**

Elements of identification and measurement of physical properties of foods and application to food systems. Bhowmik.

Au Qtr. 3 cl, 2-hr lab, 1-hr workshop. Prereq: Ag M&Sys 381 or permission of instructor.

**551 Technologies of Dairy Foods U G 5**

Scope, trends, and practices of industrial dairying; dairy foods formulation and processing; composition, quality, and materials control; distribution; health and nutritional aspects. Lindamood.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 5 or hrs. microbiol and food processing. Not open to students with credit for 537.

**589 Professional Experience U 5**

Ten weeks of supervised structured in-depth industrial experience in selected food related subjects.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 20 or hrs of 500-level courses or above in major field, and permission of instructor. Open only to students majoring in food science and nutrition. Repeatable to a maximum of 10 or hrs. Experience must be obtained with organization approved by the dept.

**Food Process Controls and Instrumentation**

See Ag M&Sys 583. Offered in cooperation with Agricultural Engineering (Agricultural Mechanization and Systems).

**621 Food Additives U G 3**

Chemical and physical nature of food additives; functions and effects on chemical, rheological, microbiological, and nutritional properties of foods. Chism.

Au Qtr. 3 cl. Prereq: 15 or hrs in food science or related area.

**622 Food Sanitation and Protection U G 5**

Principles of sanitation applicable in the production, processing, distribution, and handling of food; relationship to food quality and safety. Richter.

Au, Sp Qtrs. 3 cl, 2 2-hr lab. Prereq: Micrbiol 509 or 601.

**631 Food Systems I: Fluid Foods U G 3**

Integration of science and engineering principles to fluid foods and their unit operations, with emphasis on protein-lipid fluid food systems. Bhowmik.

Wi Qtr. 3 cl. Prereq: One course in each of food analysis, microbiology and food physics or food engineering.

**633\* Food Systems II: Concentrated and Frozen Foods U G 3**

Principles of science and engineering of concentrated and frozen foods and their unit operations. Hansen.

Sp Qtr. 3 cl. Prereq: 631 or permission of instructor.

**634†\* Food Systems III: Fermented and Lipid Foods U G 3**

Chemical, physical, and microbiological phenomena of fermented and lipid foods as related to manufacturing and storage practices and products characteristics.

Sp Qtr. 3 cl. Prereq: 521 or equiv, Micrbiol 509 or 601.



**641 Chemical Reactivity of Food Components U G 5**

Intensive coverage of the chemical reactions of food components with emphasis on the reaction mechanisms responsible for changes in food products. Mangino.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 522 and Chem 252, or permission of instructor.

**H683 Honors Projects U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**Advanced Food Process Engineering**

See Agri Eng 684. Offered in cooperation with Agricultural Engineering.

**692 Workshop in Milk and Food Sanitation U G 1-2**

Five day in-depth program on fundamentals of milk and food protection; designed for individuals interested in food processing, distribution; quality control, public health, and regulatory activities. Lindamood.

Sp Qtr. 15 or 30 hrs of contact during the week between winter and spring qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 3 cr hrs.

**693 Individual Studies U G 3-5**

Individual project studies of current problems; planning, conducting, and reporting research.

Su, Au, Wi, Sp Qtrs. 9-, 12-, or 15-hr lab. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**695 Seminar U G 3**

Analysis of technical problems in food science; fostering of creative thinking to the approach and solution of problems; preparation and oral presentation of papers. Hansen.

Sp Qtr. 3 cl. Prereq: Fd Sc&Nu 4th yr standing.

**701†\* Food Contaminants and Toxicants U G 4**

Biological and chemical contaminants and naturally occurring toxicants in foods of public health significance; protection of foods.

Wi Qtr. 4 cl. Prereq: Microbiol 509 or 601.

**702\* Spore-Forming Bacteria in Food G 5**

Aerobic and anaerobic spore-forming bacteria in food; fundamentals of sporulation and germination processes; significance to food industry; control.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 622 or Microbiol 636.

**723 Food Structure and Interactions U G 5**

Microstructure and texture of foods; relationship to food components and interactions, and physical properties of foods; application of light and electron microscopy. Hansen.

Su Qtr. 3 cl, 2 3-hr labs. Prereq: 15 cr hrs in food science or related areas.

**733 Nutrition in the Support of Growth U G 5**

A functional approach to the study of nutrition for support of growth and maintenance in animals and humans.

Au Qtr. Prereq: Animl Sc 630, 631 or 632, or Dairy Sc 631 or Poultry Sc 630 or Humn Ntr 610; prereq or concur: Biochem 511 or Physchem 611 and permission of instructor. Not open to students with credit for Animl Sc 733 or Dairy Sc 733 or Poultry Sc 733. Cross-listed in Animal Science, Dairy Science, and Poultry Science.

**761 Advanced Nutrient Utilization I U G 5**

In-depth treatment of digestion, absorption, transport, and utilization of dietary carbohydrates and fat for energy production and fat deposition in man and other higher animals. Allred.

Wi Qtr. 5 cl. Prereq: Biochem 511 or equiv and Humn Ntr 310 or Animl, Dairy, Poultry Sc 430 or equiv.

**762 Advanced Nutrient Utilization II U G 5**

In-depth treatment of digestion, absorption, transport, and utilization of proteins, amino acids, and vitamins in man and other higher animals; energy reactions and requirements. McCune.

Sp Qtr. 5 cl. Prereq: 761.

**821†\* Food Lipids G 3**

Chemical, physical, and biological properties of food lipids. Min.

Au Qtr. 3 cl. Prereq: 634 or permission of instructor.

**822†\* Food Proteins G 3**

Sources of chemical, physical, and biological properties of food proteins; effect of food composition, handling, and processing of protein characteristics and functionalities. Mangino.

Wi Qtr. 3 cl. Prereq: one course in physical chemistry or permission of instructor.

**830 Advanced Studies in Nutrition G 3**

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 761, 762; Animl Sc 630 or 631 or Dairy Sc 630 or 631 or Humn Ntr 610; 10 grad cr hrs in physiology. Not open to students with credit for Animl Sc 830, Dairy Sc 830, Humn Ntr 830, or Poultry Sc 830. Cross-listed in Animal Science, Dairy Science, Human Nutrition and Food Management, and Poultry Science.

**830.01 Energy****830.02 Minerals****830.03 Protein and Amino Acids****830.04 Vitamins****830.05 Lipids****830.06 Carbohydrates****833 Research Methods in Food Science G 5**

Principles and application of selected instrumental methods of analysis of food systems; visual, ultraviolet, and infrared spectroscopy; partition, absorption, gel permeation, gas liquid chromatography, electrophoresis, and radioisotopes. Chism.

Wi Qtr. 3 cl, 2 3-hr lab. Prereq: Permission of instructor.

**850 Seminar G 1**

Graduate student-staff participation in a study of teaching and research trends and opportunities; critical analysis of research approaches, findings, and publications.

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 6 cr hrs.

**850.01 Food Science****850.02 Nutrition****861 Topics in Advanced Nutrition G 3**

Systematic treatment and evaluation of areas of publications of current interest in nutrition; topics will be announced quarterly. Allred and Roehrig.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 762. Repeatable to a maximum of 9 cr hrs.

**892 Interdepartmental Seminar in Plant Physiology G 1**

Students will present seminars on their research or related topics in plant physiology and/or attend seminars by local and visiting researchers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Not open to students with 12 cr hrs in Agronomy 892, Biochem 892, Botany 892, or Hort 892. Repeatable to a maximum of 12 cr hrs, including cr hrs earned in Agronomy 892, Biochem 892, Botany 892, and Hort 892. Cross listed in Agronomy, Biochemistry, Botany, and Horticulture. This course is graded S/U.

**898 Interdepartmental Seminar in Nutrition G 1**

A seminar in nutrition and in related fields of food technology.

Sp Qtr. Given cooperatively by Animal Science, Dairy Science, and Food Science and Nutrition. This course is graded S/U.

**993 Individual Studies G 1-5**

Research experience and preparation of technical paper.

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of grad level courses in food science or nutrition. For Plan B, MS degree students only. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for thesis purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for dissertation purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Food Technology

152 Howlett Hall, 2001 Fyffe Court, 292-3850

**241 Introduction to the Food Industries U 5**

Principles and operations involved in the assembling, processing, and distribution of food and food products with emphasis on the role of the food technologist. Weise.  
Sp Qtr. 5 cl. Not open to students with credit for Hort 241.

**489 Food Industries Experience U 1-2**

Ten weeks of planned and supervised experience in an approved food industry operation; written report required.  
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Declared major in food technology and permission of instructor. Open only to dept majors.

**595 Seminar U 1**

Preparation and oral presentation of papers analyzing technical problems in food technology; emphasis on creative problem solving.  
Sp Qtr. 1 cl. Prereq: Sr standing in food technology.

**694 Group Studies U G 1-5**

Special group studies in food technology not provided in other courses and appropriate to the needs of students.  
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Sr standing in food area. Repeatable to a maximum of 10 cr hrs.

## Forestry

School of Natural Resources

210 Kottman Hall, 2021 Coffey Road, 292-2265

**General Prerequisites for Courses  
Numbered 200**

*Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-199.*

**221 Conifer-Hardwood Dendrology U 5**

Study of principal forest tree species in the United States with emphasis on identification, range, habitat, reproductive characteristics, silvical characteristics, and importance.  
Au Qtr. 3 cl, 2 2-hr labs.

**223 Silvics U 5**

A study of the individual and interacting effects of genetic and environmental factors on tree and forest structure, composition, and growth.  
Wi Qtr. 5 cl. Prereq or concur: Botany 112.

**General Prerequisites for Courses  
Numbered 300 and 400**

*Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.*

**321 Silviculture U 3**

A study of manipulation of the forest ecosystems to assure establishment, growth, composition, and quality of forest stands in accordance with ownership objectives.  
Au Qtr. 3 cl. Prereq or concur: 221 and 223.

**323 Forest Biometry U 5**

A study of the quantitative decision tools necessary to measure the forest resource; confidence and probability measures of land area, timber, water, wildlife, and recreation.  
Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Stat 125 or equiv.

**324 Forest Photointerpretation U 3**

Principles and methods of mapping, photointerpretation, aerial typing, and inventory. Measurement and classification of the forest using maps, photos, and remote sensing data.  
Wi Qtr. 2 cl, 1 3-hr lab. Prereq: Stat 125 or equiv.

**431 Forest Industries I U 5**

Identification of the important timber species based upon wood structure and properties; defects in wood; moisture relationships and drying techniques; the principles of gluing.  
Au Qtr. 5 cl. Prereq: 221.

**432 Forest Industries II U 5**

A detailed study of the harvesting and manufacturing processes used to produce forest products; laws governing workshop safety and environmental pollution; transportation of forest products.  
Wi Qtr. 5 cl.

**433 Analysis of Forest Industry Management U 5**

A survey of the common problems encountered by managers of the wood-using industries; emphasis on sources of information and methods of solution.  
Wi Qtr. 5 cl.

**General Prerequisites for Courses  
Numbered 500**

*Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.*

**525 Forest Economics and Management U G 5**

Application of micro-economic theory to management of woodlands and mills and development of timber management plans which integrate economic and biological considerations.  
Wi Qtr. 3 2 hr cl. Prereq: 321 and 323 and one course in economics, or written permission of instructor.

**533 Forest Field Laboratory U 6**

An intensive field course stressing compilation, analysis, and interpretation of mensurational and ecological data in the preparation of alternative silvicultural prescriptions for forested areas.  
Au Qtr. Arr. Prereq: 321 and 323. Offered at Barnebey Center between Labor Day and first day of Autumn Quarter classes.

**593 Individual Studies U G 2-5**

Special problems in the field of forestry and forest products.  
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

# French

Cunz Hall, 1841 Millikin Road, 292-5842

Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 (including the decimal subdivisions such as 101.51, etc.) and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.

## 101 Elementary French I

Introduction to French; development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 100.02 or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 101.01 Classroom Track U 5

Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 101.51 Individualized Track U 1-5

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hours before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

## 102 Elementary French II

Continuation of 101, further development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 102.01 Classroom Track U 5

Prereq: 100.02 or 101.01 or 5 cr hrs of 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 102.51 Individualized Track U 1-5

Prereq: Grade of B- or above in 100.02 or 101.01, or 5 cr hrs in 101.51, or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Students who complete 5 hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

## 103 Intermediate French I

Continued study of French; development of listening, reading, speaking, and writing skills; readings based on contemporary French culture and literature.

Su, Au, Wi, Sp Qtrs. Not open to native speakers of this language through regular course enrollment or EM credit.

### 103.01 Classroom Track U 5

Prereq: 102.01 or 5 cr hrs of 102.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 103.51 Individualized Track U 1-5

Prereq: Grade of B- or above in 102.01 or 5 cr hrs of 102.07 or 102.51 or permission of instructor. Students may register for 102.51 and 103.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

## 104 Intermediate French II

Prereq: 103 or 103.01 or 5 cr hrs of 103.51 or 112. Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit. Only one of the decimal subdivisions may be taken for credit.

### 104.01 Basic Course U 5

Reading of French short stories, plays, and novels with attention to literary appreciation; development of basic language skills.

Su, Au, Wi, Sp Qtrs. 5 cl. H104.01 (honors) may be available to students enrolled in an honors program or by permission of dept honors committee chairperson. Students not planning to continue in French may substitute any one of the following decimal subdivisions for 104.01. Course conducted in French. This course is available for EM credit.

## 104.02 Conversation U 5

Emphasis on speaking and aural comprehension with special attention to practical situations.

Au, Wi, Sp Qtrs. 5 cl.

## 104.03 Contemporary French Society U 5

Emphasis on various aspects of contemporary French cultures; readings and discussion in French.

Su, Au, Wi, Sp Qtrs. 5 cl.

## 104.04 Civilization U 5

Aspects of French civilization: geography, history, social developments, and the arts; readings and discussion in French.

Au, Wi, Sp Qtrs. 5 cl.

## 104.06 Readings in the Physical, Social, and Behavioral Sciences U 5

Development of reading skills through intensive reading of materials from the physical, biological, social, and behavioral sciences; readings in French.

Sp Qtr. 5 cl.

## 104.51 Individualized Track U 1-5

Readings from short stories, novels, poetry, drama, and nonfiction; development of speaking and aural comprehension.

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 103.01, or 5 cr hrs in 103.51, or permission of instructor. Not open to students with 5 credit hrs in 104.07. Students register for and complete from 1 to 5 cr hrs during the qtr. Proficiency at the level of 80% is required for advancement from 1 cr hr to the next.

## 105 Elementary French Conversation and Composition U 5

Intensive practice in oral and written French, based on texts and periodicals concerned with French life of today; grammar and idiom review.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104. Not open to students with credit for 206. Course conducted in French. This course is available for EM credit.

## 112 Intensive French U 5, 10, or 15

Elementary and intermediate French; intensive drill in form, syntax, vocabulary, and idiom; reading of short stories, novels, and plays.

Su Qtr. 15 cl. Enrollment limited to 20 students. Prereq: Permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, and 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in French will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. No audit. FL Admis Cond course.

## 150 Introduction to French Culture U 5

Study of the French cultural heritage with special emphasis on the interrelatedness of society, the arts, philosophy, and writings in the social and human sciences.

Wi, Sp Qtrs. 5 cl. Not open to French majors. BER/LAC/LAR course.

## 151 Masterpieces of French Literature in Translation U 5

Introduction to the French novel, drama, and poetry by major modern writers.

4-5 cl. Not open to students with credit for 273. BER/LAC/LAR course.

## 162 Elementary-Intermediate French for Selected Students U 5

Wi Qtr. 5 cl. Prereq: Grade of A in 101 and permission of dept. Not open to native speakers of this language through regular course enrollment or EM credit. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

**163 Elementary-Intermediate French for Selected Students U 5**

Sp Qtr. 5 cl. Prereq: 162. Not open to native speakers of this language through regular course enrollment or EM credit. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

**206 Introduction to Business French U 5**

A preparatory course to the study of business French, focusing on the development of language skills within a business context.

Au Qtr. 5 cl. Prereq: 104. Not open to students with credit for 105. Credit does not count toward the minimum number of hrs required for the French major. May be taken as an alternative to 105. Intended for students pursuing the business French sequence (206, 406, and 706). Conducted in French.

**293 Individual Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**294 Group Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 or hrs.

**401 French Grammar Review U 5**

Oral and written review of French grammar.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 105.

**402 Intermediate French Conversation U 3**

Practice in speaking French, building of practical vocabulary; emphasis on comprehension and oral expression.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 105. Not open to native speakers of this language through regular course enrollment or EM credit. Conducted in French.

**403 Intermediate French Composition U 3**

Basic kinds of French prose and techniques of composition; practice in writing letters, essays; descriptive, narrative, and personal compositions.

Au, Sp Qtrs. 4 cl. Prereq: 401. Not open to native speakers of this language through regular course enrollment or EM credit. Conducted in French.

**404 French Pronunciation U 5**

Formation of French sounds, rules of pronunciation and diction; lectures and practical exercises; use of phonetic symbols.

Wi, Sp Qtrs. 5 cl. Prereq: 105.

**406 Business French I U 5**

An introduction to business French with emphasis on basic business terminology, commercial correspondence, similarities and differences in business transactions, and international procedures.

Wi Qtr. 5 cl. Prereq: 206 or any 400-level course or permission of instructor. Students who successfully complete this course may take the test for the *certificat* from the Paris Chambre de Commerce. Taught in French.

**420 Introduction to the Study of Literature in French U 5**

Development of the ability to read critically and analyze literary texts in French through the study of representative examples of poems, plays, and fiction.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 105.

**421 Masterpieces of French Literature: 19th and 20th Centuries U 5**

Reading and analysis of representative works of the 19th and 20th centuries.

Au, Wi Qtrs. 5 cl. H421 (honors) may be available to students enrolled in an honors program; others by permission of dept. Prereq: 420. This course is available for EM credit.

**422 Masterpieces of French Literature: 17th and 18th Centuries U 5**

Reading and analysis of representative works of the 17th and 18th centuries.

Sp Qtr. 5 cl. H422 (honors) may be available to students enrolled in an honors program; others by permission of dept. Prereq: 420. Not open to students with credit for 423 prior to Wi Qtr 1986.

**423 Masterpieces of French Literature: Middle Ages and Renaissance U 5**

Reading and analysis of representative works of the Middle Ages and Renaissance.

Wi, Sp Qtrs. 5 cl. H423 (honors) may be available to students enrolled in an honors program; others by permission of dept. Prereq: 420. Not open to students with credit for 422 prior to Wi Qtr 1986.

**498 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**498.01 Domestic**

**498.02 Foreign**

**571 Basic French for Graduate Students G 5**

Designed primarily for students who have no formal preparation in French; covers basic grammar and vocabulary.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit.

**572 French for Research I G 3**

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of C or above in 571, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

**573 French for Research II G 3**

Su, Wi, Sp Qtrs. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hours required for the master's or doctoral degrees. No audit. Repeatable twice. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

**601 Advanced French Grammar U G 5**

Systematic review of French grammar with composition and other exercises based on contemporary authors; modern tendencies in syntactic analysis.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 401 and another 400-level language or literature course other than 404.

**602 French Translating U G 3**

An introduction to the theory of translation and practical exercises (French to English and English to French) based mostly on literary texts.

Au Qtr. 3 cl. Prereq: 601 or equiv.

**603 Advanced Spoken and Written French U G 3**

Intensive practice in speaking and writing French; based on contemporary usage.

Wi Qtr. 3 cl. Prereq: 402, 403, and 601 or equiv. Not open to native speakers of this language through regular course enrollment or EM credit.

**604 Advanced French Pronunciation and Phonostylistics U G 3**

Training in auditory and oral aspects of French pronunciation; special emphasis on analysis of different types of spoken French.

Sp Qtr. 2 cl, 1 lab hr. Prereq: 404 or permission of instructor.

**631 French Literature U G 2-5**

Topic varies.

Su Qtr. 3 cl. Prereq: 421 and either 422 or 423. Repeatable to a maximum of 15 cr hrs.

**640 *Les origines de la civilisation française* U G 5**

Major developments of French culture and civilization from its beginning to 1900.

Au Qtr. 5 cl. Prereq: 401 and 402 or 403. Conducted in French.

**641 *La civilisation française contemporaine* U G 5**

Life, institutions, and culture of contemporary France.

Wi Qtr. 3 cl. Prereq: 401 and 402 or 403. Conducted in French.

**651 French Literature of the Renaissance U G 5**

Selections from Marot, Rabelais, the Pléiade and Montaigne; the age of humanism and the transition from medieval to modern forms and ideas.

Au Qtr. 5 cl. Prereq: 421 and either 422 or 423.

**652 French Literature of the 17th Century U G 5**

The formation of the classic spirit; the perfection of dramatic form and the 17th-century portrait of human life.

Sp Qtr. 5 cl. Prereq: 421 and either 422 or 423.

**653 French Literature of the Enlightenment U G 5**

The ideas of the 18th century in their relation to modern times; emphasis on Montesquieu, Voltaire, Diderot, and Rousseau.

Wi Qtr. 5 cl. Prereq: 421 and either 422 or 423.

**654 From Romanticism to Naturalism U G 5**

The principal currents in French literature from the early 19th to the late 19th century.

Au Qtr. 4 cl. Prereq: 421 and either 422 or 423.

**655 From Symbolism to Surrealism U G 5**

The symbolist school, its significance, and the reaction to it; the various literary currents that culminated in surrealism.

Sp Qtr. 4 cl. Prereq: 421 and either 422 or 423.

**660† Studies in Genre U G 5**

Intensive study of the history and aesthetics of a specific literary form or genre such as drama, poetry, and narrative; topic varies.

Sp Qtr. 5 cl. Prereq: 420, and either 421, 422 or 423. Repeatable to a maximum of 15 cr hrs.

**671 French Cinema to 1945 U G 5**

The history and esthetics of French cinema from its beginnings to 1945.

Wi Qtr. 2 2-hr cl. Prereq: 10 cr hrs in literature and/or cinema above 200 level or permission of instructor. Taught in English.

**672† French Cinema, 1945 to Present U G 5**

The history and esthetics of French cinema from 1945 to the present.

Sp Qtr. 2 2-hr cl. Prereq: 10 cr hrs in literature and/or cinema above 200 level or permission of instructor. Taught in English.

**693 Individual Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**702 Advanced Translation and Comparative Stylistics U G 3**

A comparative study, through intensive translation, of the stylistic resources of French and English.

Sp Qtr. 3 cl. Prereq: 602 or permission of instructor.

**706 Business French II U G 5**

A study of the French economic, social, political, and cultural environment as it relates to business; parallel emphasis on advanced language skills.

Sp Qtr. Prereq: 406 or permission of instructor. Students who successfully complete this course may take the test for the *diplome* from the Paris Chambre de Commerce. Taught in French.

**710\* Contrastive Structures of French and English U G 5**

Comparison of the linguistic structures (phonology, morphology, syntax, and semantics) of French and English with special emphasis on the problems of English-speaking students.

Au Qtr. 2 2-hr cl. Prereq: 601 or permission of instructor.

**712 French Phonology and Morphophonemics U G 5**

The organization of the French sound system, its evolutionary tendencies, and its role in the articulation of the morphemes of the language.

Wi Qtr. 2 2-hr cl. Prereq: 601 or permission of instructor.

**714 Aspects of Morphology, Syntax, and Semantics of French U G 5**

Selected aspects of the morphological, syntactic, and lexical organization of modern French and the role of these subsystems in the communication of meaning.

Sp Qtr. 2 2-hr cl. Prereq: 712 or permission of instructor. Not open to students with credit for 818.

**741 Topics in French Culture and Civilization U G 5**

Analysis of French culture through the study of selected topics in literatures, film, and social thought; topic varies.

Sp Qtr. 2 2-hr cl. Prereq: 640 or 641 or permission of instructor. Repeatable to a maximum of 15 cr hrs. Taught in French.

**H783 Honors Research U 3-5**

Offers undergraduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course; work in conference, library, or phonetics laboratory.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the French courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

Wi Qtr. 2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in Comparative Studies in the Humanities, English, German, Italian, and Spanish.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Sp Qtr. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**801 Teaching French at the College Level G 5**

Methods and techniques for teaching French language at the college level.

Au Qtr. Two wks intensive workshop previous to qtr followed by a 2-hr wkly cl. Prereq: Teaching associate in the Dept of Romance Languages and Literatures or permission of instructor. Not open to students with credit for Ed-Hum 801.01 or Ed-T&P 801.01. For students enrolled in this course, the minimum number of credit hours required for graduation is increased by 5 hrs. Cross-listed in Educational Theory and Practice as 801.01.

**811†\* The French Language: Introduction G 5**

A brief external history of the language along with an introduction to linguistic concepts based on modern French materials.

Au Qtr. 4-5 cl. Prereq: MA candidates in French; others by permission of instructor.

**812\* Historical Aspects of the French Language G 5**

Linguistic study of old, classical, and modern French from the 13th century to the present.

Wi Qtr. 3 cl. Prereq: 811 or permission of instructor. Not open to students with credit for 816, 817, or 818.

**821 Medieval French Literature G 5**

Survey of French literature of the Middle Ages from its conception to Villon, with emphasis on different literary genres (epics, narrative fiction, poetry, theatre).

Wi Qtr. 3 cl.

**822 Topics and Problems in Medieval French Literature G 5**

Intensive exploration of a special topic or problem, with readings in relevant criticism and scholarship.

Sp Qtr. 3 cl. Prereq: 821. Repeatable to a maximum of 15 cr hrs.

**823 Topics and Problems in 16th-Century French Literature G 5**

Intensive exploration of a special topic or problem, with readings in relevant criticism and scholarship.

Wi Qtr. 3 cl. Prereq: 651 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**824 Topics and Problems in 17th-Century French Literature G 5**

Intensive exploration of a special topic or problem, with readings in literary works and in relevant criticism and scholarship.

Au Qtr. 3 cl. Prereq: 652 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**825 Topics and Problems in 18th-Century French Literature G 5**

Intensive exploration of a special topic or problem, with readings in literary works and in relevant criticism and scholarship.

Sp Qtr. 3 cl. Prereq: 653 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**826 Topics and Problems in 19th-Century French Literature G 5**

Intensive exploration of special topics or problems with readings in literary works in relevant criticism and scholarship.

Au Qtr. 3 cl. Prereq: 654, 655, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**827 Topics and Problems in 20th-Century French Literature G 5**

Intensive study of a specific topic or problem with readings of selected literary and critical works.

Wi Qtr. 3 cl. Prereq: 656 or equiv. Repeatable to a maximum of 15 cr hrs.

**831 Seminar in French Literature G 2-5**

Su (2-3 cr hrs), Wi (3-5 cr hrs) Qtrs. Prereq: Permission of instructor.

**832 Seminar in French Literature G 2-5**

Su (2-3 cr hrs) Qtr. Prereq: Permission of instructor.

**833 Seminar in French Literature G 3-5**

Wi Qtr. Prereq: Permission of instructor.

**850 Seminar in French Linguistics G 5**

Detailed exploration of selected topics in French linguistics with extensive analysis of French language data relevant to the topic.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**870† Seminar in French Cinema G 3-5**

Detailed exploration of particular topics or periods in French cinema with extensive analysis of individual films and readings in relevant theory and criticism.

Sp Qtr. 2 2-hr cl. Prereq: 671 or 672 or permission of instructor. PhD candidates may repeat to a maximum of 15 cr hrs.

**883\* Bibliography and Method G 3**

A course to acquaint graduate students with tools, problems, and methods of linguistic and literary research.

Au Qtr. 3 cl. Not open to students with credit for 886.

**885 Introduction to Contemporary Critical Theory G 5**

Selected readings covering the range of critical approaches to literature.

Wi Qtr. 2 2-hr cl.

**887 Problems of Textual Analysis G 5**

Intensive work in literary and linguistic analysis of texts from various periods and genres.

Sp Qtr. 2 1½-hr cl. Repeatable to a maximum of 15 cr hrs, including cr hrs earned in 884.

**890 Interdepartmental Studies in Critical Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.) in literary theory.

Sp Qtr. 2 2-hr or 5 cl. Prereq: Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs.

Cross-listed in Comparative Studies in the Humanities, English, German, Spanish, and Women's Studies.

**893 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-15**

Investigation of minor problems in the various fields of French literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**999 Research in French Language or Literature G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**Geodetic Science**

404 Cockins Hall, 1958 Neil Avenue, 292-6753

**294 Group Studies U 2-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**General Prerequisites for all 600-Level Courses**

Prerequisite for all 600-level courses is Math 153.

**603 Remote Sensing of Environment U G 4**

The energies of the natural and cultural environment, current remote sensing systems, and case histories of applications in measuring the environment.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: Civil En 405 or Survey 450 or equiv with written permission of instructor. Not open to students with credit for Civil En 603. Cross-listed in Civil Engineering.

**604 Terrain Analysis U G 4**

Principles and applications of photo pattern analysis, geologic and geomorphologic patterns, terrain studies, and land use suitability and capability mapping.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Civil En 405 or Survey 450 or equiv with written permission of instructor. Not open to students with credit for Civil En 604. Cross-listed in Civil Engineering.

**612 Topics in Geodesy U G 4**

Geometry of the ellipsoid; geodetic coordinates computations for short and medium lines; geodetic datums; Earth's gravity field; artificial geodetic Earth satellites; and figure of the Earth.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Survey 511 or permission of instructor. Not open to students with credit for Survey 612 or for grad credit to students with credit for 658, 776 or 777, or Survey 612.

**623 Topics in Photogrammetry U G 4**

Techniques, equipment for mapping and point determination; concept, methods, results of block adjustment; image based maps; computer-assisted and controlled-data processing; terrestrial and space photogrammetry.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 651 and Survey 506; or permission of instructor. Not open to students with credit for 628, 725, 726, 727, or 728.

**626 Land Information Management U G 4**

Concepts, systems (LIS), and issues involved in land information management.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: Permission of instructor.

**628 Elements of Analytical Photogrammetry U G 4**

Basic concept of analytical photogrammetry; resection; intersection; relative; absolute and simultaneous orientations of a stereo-pair; comparators; transfer devices; coordinate refinements.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 650 and Survey 506. Not open to students with credit for 623.

**630 Fundamentals of Computer-Assisted Cartography U G 5**

Basic principles of cartographic methods as applied to computer-assisted topographic mapping systems and their use in land information management.

Au Qtr. 3 cl, 2 3-hr labs. Prereq: Grad standing in geod sci or written permission of instructor.

**632 Large Scale and Topographic Mapping U G 4**

The concepts, theories, and principles of large scale mapping with emphasis on design, production, and use of digital maps.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 630 or permission of instructor.

**633 Digital Surface Models U G 4**

Principles of digital surface modeling and their application with the aid of computer-based techniques.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 630 and 632, or permission of instructor; and 650 or prereq or concur Geog 883.02. Not open to students with credit for 631.

**634 Digital Mapping Systems U G 4**

Survey and evaluation of digital mapping systems with respect to components, accuracy, and efficiency.

Au Qtr. 1 cl, 3 3-hr labs. Prereq: 633 or permission of instructor.

**636 Map Projections U G 4**

The principal map projections of the sphere; their distortions, properties, and usage.

Sp Qtr. 3 cl, 1 3-hr lab.

**637 Topics in Mapping U G 4**

A survey of cartographic fundamentals in the context of contemporary developments.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 630 or equiv. Not open for grad credit to students with credit for 631, 632, 633, 644, or 732.

**638 Topics in Land Information Management U G 3**

Overview of topics in geographic and land information systems (GIS/LIS) and land information management (LIM).

Sp Qtr. 3 cl. Prereq or concur: 630 and 650 or written permission of instructor. Not open to students with credit for 626 or Survey 625.

**650 Adjustment Computations I U G 4**

Classification of errors; measures of dispersion; variance; covariance; propagation of errors; weights; observation; condition and normal equations; examples.

Au Qtr. 3 cl, 1 3-hr lab.

**651 Adjustment Computations II U G 4**

A posteriori variances, representation of residuals; combination of observation and condition equations; generalized minimum variance solution for hybrid measuring systems; statistical tests; empirical fitting of polynomials.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 650 or equiv.

**658 Geometric Geodesy U G 4**

Historical development; geometry of the reference ellipsoid; reductions/use of ellipsoid as a reference surface; major geodetic control; introduction to advanced geometric geodesy principal conformal projections.

Wi Qtr. 4 cl. Prereq: Survey 511 or equiv.

**664 Geodetic Astronomy U G 4**

Stellar coordinate systems; stellar positions and motions; time; star catalogues; principles of position determination.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 650 or equiv.

**693 Individual Studies U G 2-9**

Assigned reading laboratory or field work, under the guidance of a staff member, arranged to meet the requirements of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-9**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**725 Photogrammetric Triangulation U G 3**

Concepts and procedures of triangulation; purpose and preparation; block adjustment with independent models and bundles; matrix structures; self-calibration; auxiliary data; precision and reliability of networks; applications.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 628 and 651. Not open to students with credit for 622 and 724.

**726 Photogrammetric Mapping U G 4**

Analog, semi-analytical, computer-controlled data processing; analog, digital differential rectification; interactive photogrammetric mapping; photogrammetric mapping from space; data acquisition, data processing for terrestrial applications.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 628 or permission of instructor. Not open to students with credit for 723.

**728 Digital Photogrammetry U G 4**

Overview of methods, techniques, and systems in digital photogrammetry; image acquisition and enhancement, stereopsis, feature recognition, and interpretation.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 726 and permission of instructor. Not open to students with credit for 829, 830, or 831.

**732 Generalization of Topographic Maps U G 4**

Principles and advanced applications of the generalization of topographic maps.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 633 and 651; or written permission of instructor.

**760 Advanced Geometric Geodesy U G 4**

Solution of long line problems on the ellipsoid; datum transformations; determination of the size and shape of the reference ellipsoid; fundamentals of three-dimensional geodesy.

Au Qtr. 4 cl. Prereq or concur: 658, 776, and 777.

**762 Advanced Adjustment Computations U G 4**

Large patterned systems, Gauss-Markoff model and Collocation technique; ranks and generalized matrices in geodetic science; error ellipsoids.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 651 or equiv.

**774 Spectral Methods and Raster Geometry in Digital Mapping G 4**

Spectral analysis techniques and raster geometry as applied in digital photogrammetry and digital cartography; pattern recognition theories.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: Geol&Min 642.

**776 Gravimetric Geodesy U G 4**

The gravity and its potential; the disturbing potential and its representation; applications and current methods.

Sp Qtr. 4 cl. Prereq: 651 and 658; or equivs.

**777 Satellite Geodesy U G 4**

Geometric and dynamic applications of artificial satellites in geodesy; determination of station positions and the gravity field of the earth.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 664 and 776; or equivs.

**781\* Topics in Geodynamics U G 3**

Theory of Earth rotation; determination of Earth orientation parameters; precession; nutation, polar motion and time, and radio interferometry of extragalactic radio sources; and Earth tides.

Wi Qtr. 3 cl. Prereq: 664.

**828 Advanced Photogrammetric Applications G 4**

Design, application, and analysis of advanced analytical photogrammetric techniques to a variety of measurement tasks.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 728 or permission of instructor.

**829 Advanced Digital Image Acquisition in Photogrammetry G 3**

Methods and systems of acquiring digital imagery; theory and applications of error corrections; assessment of image quality.

Au Qtr. 2 cl, 1 3-hr lab. Prereq: 774.

**830 Advanced Methods of Processing Digital Imagery in Photogrammetry G 3**

Utilization of advanced methods of image processing and computer vision techniques as it pertains to digital photogrammetry.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 829 or written permission of instructor.

**831 Advanced Pattern Recognition and Interpretation Methods in Digital Mapping G 3**

Methods of pattern recognition, feature extraction, feature and object classification, as it pertains to digital photogrammetry and digital cartography.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 830.

**835\* Advanced Cartography G 4**

A review and examination of current research development and thinking in cartography with particular attention to mapping from space platforms.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: 732 or written permission of instructor.

**871\* Advanced Gravimetric Geodesy G 4**

Boundary-value problem; use of spherical harmonics; statistical application; appropriate representations; computations in space; combination of gravimetric and satellite data.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 762 and 777; or equivs.

**873\* Advanced Satellite Geodesy G 4**

Dynamics of earth orbiting satellites; equations of motion and their solutions; advanced data acquisition method; analysis for the gravity field and station positions.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 762 and 777; or equivs.

**875 Spectral Methods in Gravimetric Geodesy G 3**

Spectral analysis theory and techniques in gravimetric geodesy.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: Geol&Min 642.

**885 Research Principles and Techniques G 2-9**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**887 Seminar G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 30 or hrs.

**894 Group Studies G 2-9**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

Repeatable to a maximum of 30 or hrs.

**899 Interdepartmental Seminar G 1-5**

Topics to be announced each quarter offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

Repeatable to a maximum of 10 or hrs.

**998 Research in Geodetic Science: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. This course is graded S/U.

**999 Research in Geodetic Science: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Geography

103 Bricker Hall, 190 North Oval Mall, 292-2514

**200 World Regional Geography U 5**

An examination of the human and physical geographic structure of all world regions; defined primarily at the continental scale and classified by their level of development.

Su, Au, Wi, Sp Qtrs. 5 cl. H200 (honors) may be available Au Qtr to students enrolled in an honors program or those approved by the UVC or ASC Honors Offices. BER/LAC/LAR course. SS Admis Cond course.

**220 Introduction to Physical Geography U 5**

The elements and processes of the natural environment, their characteristics, distribution, and implications in the human habitat.

Su, Au, Wi, Sp Qtrs. 5 cl. H220 (honors) may be available Sp Qtr to students enrolled in an honors program; others with permission of dept. BER/LAC/LAR course. NS Admis Cond course.

**240 Economic and Social Geography U 5**

Introduction to geographic concepts and theories; their application to the location of human activity, urban trends, world population, and environmental issues.

Su, Au, Wi, Sp Qtrs. 5 cl. H240 (honors) may be available Wi Qtr to students enrolled in an honors program; others with permission of dept. BER/LAC/LAR course. SS Admis Cond course.



**280 Map Reading and Interpretation U 5**

An introduction to reading topographic and thematic maps; map interpretation, analysis, and use.

Sp Qtr. 3 cl, 2 labs.

**294† Group Studies U 3-5**

Students are given the opportunity to pursue special studies not otherwise offered.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs.

**400 Geography of United States and Canada U 3**

A geographical analysis of the United States and Canada; the correlation of their natural resources and other environmental factors with their economic and cultural development.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Either 200, 220, or 240, or equiv. BER course.

**401 Geography of Ohio U 3**

An appraisal of geographic factors in the settlement and development of Ohio; an overview of the evolution of the Ohio economy.

Sp Qtr. 3 cl. Prereq: Either 200, 220, or 240, or equiv.

**450 World Urbanization U 5**

An examination of geographic aspects of the urbanization process in the world's major regions; interrelationships between urbanization and economic development.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences.

**505 Geography of Latin America U G 4**

Geographic analysis of Middle and South America emphasizing the interrelationships of the resource base, cultural characteristics, and outside influences upon economic development.

Au, Wi Qtrs. 3 cl. Prereq: Either 200, 220, or 240, or equiv; or permission of instructor.

**505.01† Middle America**

Au Qtr.

**505.02† South America**

Wi Qtr.

**508† Geography of Africa U G 4**

The African environment and the development of culture and economic life; impact of alien culture in Africa; Islamic and western influences in creating geographic regions.

Wi Qtr. 3 cl. Prereq: Either 200, 220, or 240, or equiv; or permission of instructor.

**510† Geography of Western Europe U G 4**

Geographic factors in the economic, social, and political progress of the nations of Western Europe; major problems of the area in the light of their geographic background.

Sp Qtr. 3 cl. Prereq: Either 200, 220, 240, or equiv; or permission of instructor.

**511† Geography of Eastern Europe U G 4**

Resources, their assessment, and development, and related problems in Eastern Europe; the geographic significance of each state to the Communist bloc and to the West.

Wi Qtr. 3 cl. Prereq: Either 200, 220, or 240, or equiv; or permission of instructor.

**512 Geography of the Soviet Union U G 4**

The major regional divisions of the Soviet Union; the resource base in relation to the economic and political aims of the Soviet state.

Au Qtr. 3 cl. Prereq: Either 200, 220, or 240, or equiv; or permission of instructor.

**520 Climatology U G 5**

The elements and the controls of climate; types of climate and their distribution; climates and their effects on the economic and other activities of man.

Au, Wi Qtrs. 5 cl.

**530 Conservation of Natural Resources U G 5**

Philosophy of resource use; appraisal of resource base; costs of resource development and conservation; resource perception, utilization, and alternatives.

Wi Qtr. 3 cl.

**560 Political Geography U G 5**

The global economy, spatial integration, and uneven development; states, spatial fragmentation, and uneven development; and the politics of space of nations, regions, and localities.

Au Qtr. 3 cl. Prereq: Permission of instructor. BER/LAC/LAR course.

**580 Elements of Cartography U G 5**

A study of the cartographic techniques of map compilation and presentation including generalization, symbolization, reproduction, and simple computer mapping with an emphasis on thematic mapping.

Au, Sp Qtrs. 2 cl, 2 2-hr labs.

**605 Special Problems in the Geography of Latin America U G 5**

The analysis of selected topical problems in Latin American geography; typical problem areas are urbanization, industrialization, transportation, agricultural development, and regional development.

Wi Qtr. 3 cl. Prereq: 505 or permission of instructor.

Repeatable to a maximum of 10 cr hrs.

**612 Special Problems in the Geography of the U.S.S.R. U G 5**

Spatial analysis of selected topical problems in Soviet geography.

Wi Qtr. 4 cl. Prereq: 512 or permission of instructor.

Repeatable to a maximum of 10 cr hrs.

**622 Microclimatology U G 5****622.01 Boundary Layer Climatology**

Theory of exchanges of energy and mass at the earth-atmosphere interface as it relates to microclimates with particular emphasis upon radiation and climate.

Wi Qtr. 5 cl. Prereq: 520 or permission of instructor, and Physics 132.

**622.02\* Microclimatological Measurements**

Practical experience in the fabrication of instruments, deployment of measurement systems in the field, and recording of data related to microclimates.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 622.01.

**623 Synoptic Meteorology U G 5**

The theory and practice of weather forecasting.

**623.01 Synoptic Analysis and Forecasting.**

Theory and practice in synoptic weather analysis and forecasting.

Wi Qtr. 5 cl. Prereq: 520 or Physics 503; and prereq or concur: Physics 132. Not open to students with credit for 623.

**623.02 Severe Storm Forecasting by Radar and Satellite**

The theory and application of radar and satellite imagery in weather forecasting; emphasis on severe thunderstorms, tornadoes, and hurricanes; analysis of their evolution and structure.

Sp Qtr. 2 2-hr cl. Prereq: 623 or 623.01.

**640 Location of Manufacturing U G 5**

Industrial location theory and its application to spatial patterns of manufacturing and to problems of industrial development.

Au Qtr. 3 cl. Prereq: Permission of instructor.

**642 Geography of Development U G 5**

Spatial aspects of economic development; spatial analysis of traditional economics, industrial regions, transport linkages, and migration patterns in developing countries.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**645 Geography of Transportation U G 5**

Relation between transportation and spatial organization; selected analytical models dealing with traffic demand, network configuration, and allocation of transport facilities; application to selected problems.

Au, Wi, Sp Qtrs. 3 cl.

**647 Locational Analysis U G 5**

Historical review of major location theories and evaluation of application of such theories to geographic problems.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**650 Urban Geography U G 5**

Origin and growth of cities; structure and function of urban centers, their areal expansion, and intertrade center relations, each examined in relation to city planning.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor.

**660 Urban Political Geography U G 5**

The changing politics of space in cities: class, neighborhood, and workplace in the industrial and the post-industrial city.

Wi Qtr. 3 cl. Prereq: 660 or equiv and permission of instructor.

**670 Population Geography U G 5**

Analysis of population distributions, locational arrangements of growth, densities, and migration flows; spatial relationships between population variables and social, economic, and environmental factors.

Wi Qtr. 3 cl. Prereq: 240.

**680 Numerical Cartography U G 5**

An examination of the theory and methods of machine-oriented numerical cartography.

Wi Qtr. 2 2-hr cl. Prereq: 580 and Math 150; or equivalents.

**682 Individual Studies in Cartography U G 3-5**

Individual study of cartographic subjects; map compilation, cartographic classification, regionalization, and multi-dimensional representation, computer mapping and real-time computer cartographics.

Au, Wi, Sp Qtrs. Conf and lab. Prereq: Permission of instructor. This course is graded S/U.

**684† Geographic and Land Information Systems U G 4**

An introduction to the principles and operations of geographic and land information systems.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 580 or Geod Sci 630 or written permission of instructor. Not open to students with credit for Geod Sci 684. Cross-listed in Geodetic Science.

**693 Individual Studies U G 1-15**

Individual study of a special problem or of a particular region.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable with permission of instructor. This course is graded S/U.

**694 Group Studies U G 3-5**

Group study of special topics in various fields of geography.

Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**695 Undergraduate Seminar in Applied Geography U 5**

The practical application of theoretical geographical concepts to problems in the local area.

Sp Qtr. 2 2-hr cl. Prereq: 20 cr hrs in geog.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Student will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**Advanced Topics in National Security**

See NSP Stds 702.

**740 Advanced Locational Analysis U G 5**

Advanced problems in location analysis, application of programming techniques and spatial equilibrium analysis.

Sp Qtr. 3 cl. Prereq: 647 or permission of instructor.

**780 Analytical Cartography U G 5**

An examination of the theory and methods of analytical cartography.

Sp Qtr. 2 2-hr cl. Prereq: 680, 795 or equiv, and Math 152 or equiv; or prereq or concur: Geod Sci 631.

**782 Interactive Cartographic Systems U G 5**

An examination of the theory and methods of developing, building, and implementing interactive cartographic systems.

Au Qtr. 2 2-hr cl. Prereq: 780. Not open to students with 20 cr hrs of 880 taken prior to Au Qtr 1985.

**H783 Honors Research U 3-5**

A program of individual study arranged for students enrolled in the honors program with individual conferences and reports; requires presentation and oral defense of an honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the geog courses taken and an average of at least B in the remainder; written permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. At least 2 qtrs are required of candidates for the degree BA *with distinction* in geog. Failure to receive a mark of S in this course is a disqualification for special honors. This course is graded S/U.

**784 Geographic Information Systems U G 5**

An examination of the theories and methods of the design, building, and implementation of geographic information systems.

Sp Qtr. 2 2-hr cl. Prereq: 684 or Geod Sci 684, and 780. Not open to students with 20 cr hrs of 880 taken prior to Au Qtr 1985.

**795 Seminar in Geography U G 5**

Introduction to research procedures, problem formulation, and application of research techniques in geography.

Au, Wi, Sp Qtrs. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

**Studies in National Security Policy**

See NSP Std 795.

**800 Seminars in Regional Geography G 3-5**

The development of theory in regional development and its application to selected problems.

Each decimal subdivision repeatable to a maximum of 20 cr hrs.

**800.01 Theory of Regional Development**

Wi Qtr. 2 cl.

**800.02 Problems in Regional Development**

Sp Qtr. 2 cl.

**820 Seminars in Physical Geography G 3-5**

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

**820.01 Problems in Climatology****820.03 Special Problems****821 Dynamic Climatology G 5**

Dynamics, thermodynamics, energy conservation, flows, conversion processes; large scale circulation patterns with particular emphasis upon turbulence at the synoptic scale; weather processes; regional climates.

Wi Qtr. 2 2-hr cl. Prereq: 622.01 or permission of instructor.

**822 Microclimatology G 5**

Radiation and turbulence processes, conduction; variation in wind, temperature, humidity, soil moisture, evaporation, soil temperature; influence of vegetation and artificial structures.

Sp Qtr. 2 2-hr cl. Prereq: 620 or 622.01 or permission of instructor.

**823 Applied Climatology G 5**

Analysis of climatic and environmental change on various time scales; man's impact on climate; theory and application of long-range and climate forecasting.

Sp Qtr. 2 2-hr cl. Prereq: 623.01 or permission of instructor.

**840 Seminars in Location Analysis G 3-5**

The development of theory in location analysis and its application to selected problems.

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 20 cr hrs.

**840.01 Location Theory****840.02 Problems****845 Seminars in Transportation Geography G 3-5**

The development of theory in transportation geography and its application to selected problems.

Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

**845.01 Theory of Transportation Geography****845.02 Problems in Transportation Geography****850 Seminars in Urban Geography G 3-5**

The development of theory in urban geography and its application to selected problems.

Au, Wi, Sp Qtrs. 2 cl. Each decimal subdivision repeatable to a maximum of 10 cr hrs.

**850.01 Spatial Organization of the City**

Intra-urban analysis, density and land value gradients, residential differentiation, neighborhood and community, and the urban development process.

**850.02 Urban Systems Analysis**

Inter-urban analysis; theory of the evolution of urban systems, structural characteristics of sets of cities, recent processes of change, notably deconcentration.

**850.03 Third World Urbanization**

Examination of role of cities in development processes and their characteristics, historical evolution, related policies, and other aspects such as migration, innovation diffusion, and labor markets.

**860 Seminars in Political Geography G 3-5**

The development of theory in political geography and its application to selected problems.

Sp Qtr. Prereq: 660 or permission of instructor. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

**860.01 Theory of Political Geography****860.02 Problems in Political Geography****870 Seminars in Population and Social Geography G 3-5**

The development of theory in population and social geography and its application to selected problems.

Au, Wi, Sp Qtrs. Each decimal subdivision repeatable to a maximum of 30 cr hrs.

**870.01 Theory of Population and Social Geography****870.02 Problems in Population and Social Geography****880 Seminars in Cartography G 3-5**

Readings and research in cartography.

Au Qtr. Prereq: 780 or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**882 Development of Geographic Thought G 4**

The evolution of concepts concerning the nature, scope, and methodology of geography; present focus and trends as reflected in current literature.

Au Qtr. 3 cl.

**883 Application of Quantitative Methods in Geography G 4**

Application of quantitative methods to geographic problems; spatial statistics, area sampling, maps of residuals, regionalization methods, and simulation maps.

Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: Course in introductory statistics and permission of instructor. Decimal subdivisions to be taken in sequence.

**883.01 Applications I****883.02 Applications II****889 Seminars in Geography G 1**

Topics to be announced each quarter.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

**Atmospheric Sciences Seminar**

See Atmos Sc 881.

**896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3**

A seminar on selected topics involving anthropology, biology, climatology, exploration, geology, glaciology, microbiology, and soils.

Sp Qtr. 1-3 hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs. Given cooperatively by the Institute of Polar Studies, the College of Biological Sciences, and the departments of Botany, Geography, Geology and Mineralogy, and Zoology.

**899 Interdepartmental Seminars G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interests; topics to be announced each quarter.

**983 Special Topics in Quantitative Geography G 5**

Applications of advanced mathematical and statistical models to problems in geographical analysis.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: 883.01 and 883.02. Repeatable to a maximum of 15 cr hrs.

**999 Research in Geography: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Geology and Mineralogy

107 Mendenhall Laboratory, 125 South Oval Mall, 292-2721

**100 Introduction to Geology U 5**

The materials of the Earth's crust, the processes that produce and modify them, and the development of the Earth and its life forms through time.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab, 1 half-day field trip. Not open to students with credit for 100.01, 100.02, 100.03, 100.20, 101, 102, 121, or 122. Not intended for ASC BS students. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**121 Physical Geology U 5**

Minerals and rocks and their origin; land forms and how they are produced; structural features of the Earth's crust.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. H121 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Math 075 or 076 or 102, or Math Placement Level R. Recommended first course in geol&min for science majors. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**122 Historical Geology U 5**

The history of the Earth and its inhabitants through geologic time.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. H122 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 121. Recommended second course in geol&min for science majors. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**201 Introduction to Paleontology U 5**

An introduction to animal and plant groups significant in the geologic record. Ausich and Bergstrom.

Sp Qtr. 4 cl, 1 2-hr lab, 1 all-day field trip. Prereq: 122 and 10 cr hrs in biological sciences.

**203 Geology and the Environment U 5**

Application of basic geologic knowledge to problems resulting from man's use of the Earth and its resources. McKenzie and Utgard.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 100 or 121. Not open to students with credit for 103. BER/LAC/LAR course. NS Admis Cond course.

**204 Water Resources U 5**

Occurrence, movement, and behavior of water in the hydrologic cycle with reference to scientific and technological problems relating to water-resources development and conservation. Bair.

Wi Qtr. 5 cl. Prereq: 121. BER/LAC/LAR course. NS Admis Cond course.

**206 Physical Oceanography and Marine Geology U 5**

The origin, development, and structure of ocean basins and their contents; contemporary oceanic processes of geologic significance. Kriesek.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 100 or 106. BER/LAC/LAR course. NS Admis Cond course.

**210 Energy, Mineral Resources, and Man U 5**

Geological origin, world distribution, and uses of mineral resources critical to man; topics include mineral and fossil fuels, metallic ores, and industrial minerals. Pride and Utgard.

Wi Qtr. 5 cl. Prereq: 100 or 121. Not open to students with credit for 294 Wi Qtr 1982. NS Admis Cond course.

**212 Common Minerals and Rocks U 3**

A study of the common minerals and rocks, their associations, occurrences, identifying properties, and origin. Utgard.

Wi Qtr. 3 2-hr labs. Prereq: 121 and Chem 121. Not open to students with credit for 223. BER/LAC/LAR course.

**221 Elementary Mineralogy and Crystallography U 5**

Crystal systems, symmetry, common forms and cleavage of crystals; chemical bonding and mineral structures; selected phase diagrams; sight identification of about 80 common minerals using physical and chemical properties. Tetttenhorst.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Chem 122. Not open to students with credit for 214.

**222 Elementary Optical Mineralogy U 5**

Elements of optical mineralogy; mineral properties in plane and cross-polarized light; mineral identification in powders and thin-sections; X-ray diffraction in mineral identification and mineral-mixture analysis. Downs.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 221.

**223 Elementary Petrology U 5**

Origin, occurrence, association, and mineral composition of the common rocks; laboratory includes work by megascopic and microscopic methods. Barton.

Sp Qtr. 2 cl, 3 2-hr labs. Prereq: 121 and 222. Not open to students with credit for 212.

**280 Introduction to Geophysics U 5**

Introduction to principles of seismic, electrical, gravity, magnetic, and radiometric methods for subsurface investigation; applications to petroleum and mineral exploration, groundwater, and engineering investigations. Daniels and Whillans.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 121.

**293 Individual Studies U 1-3**

Special problems in geology and mineralogy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Group study of special topics in various fields of geology and mineralogy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

**414 Crystallography U 3**

Periodicity and symmetry in crystalline materials, coordinate systems and lattices, crystallographic notation and calculations, group concepts, graphical methods, and selected applications. Tetttenhorst.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Math 153. Not open to students with credit for 214.

**502 Stratigraphy and Sedimentation U G 5**

Principles of, and procedures in, stratigraphy and sedimentation, illustrated by field and laboratory studies of sedimentary rocks. Collinson, James, and Kriesek.

Au Qtr. 4 cl, 1 2-hr lab, and weekend field trips. Prereq: 201 and 223.

**530 Structural Geology U G 5**

An introduction to the principles of rock deformation, the classification and physical origin of rock structures, and crustal tectonic processes. Wilson.

Sp Qtr. 3 cl, 2 2-hr labs, 1 3-to-4 day field trip. Prereq: 121 and Physics 132; or written permission of instructor.

**550 Geomorphology U G 5**

Detailed study of processes that shape the land surface and the forms produced under diverse climates. McKenzie.

Au, Sp Qtrs. 4 cl, 1 2-hr lab, field trips. Prereq: 122 and Chem 122, or permission of instructor.

**570 Senior Thesis U G 1**

The preparation of a report of professional quality, based on a research project.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing in geol&min and permission of instructor. To be taken during the qtr the student intends to hand in the thesis.

**580 Field Work and Laboratory Work in Earth Science U G 5**

Essentials of field and laboratory observation, mapping and data accumulation in the solution of earth-science problems. Utgard.

Su Qtr. Prereq: 30 qtr hrs in geol&min, geog, astron or meteor, with a minimum of 15 qtr hrs in geol&min; Ed-T&P 551 and permission of instructor; Geol&Min 201, 212, and 550 recommended. Repeatable to a maximum of 10 cr hrs. May not be used to satisfy BS degree requirements in geology.

**581 Field Geology I U G 5**

Concentrated training in the basic essentials of field observation and mapping; the work is done in central Utah, with headquarters in Ephraim. Collinson, Noltimier, Tetttenhorst, Utgard, and Wilson.

Su (1st term) Qtr. Requires full time of student. Prereq: 223, 530, and written permission of instructor.

**582 Field Geology II U G 4**

Continuation of 581.

Su (2nd term) Qtr. Requires full time of student. Prereq: 581.

**583\* Field Geology for Science Teachers U G 3**

Application of geological principles in the field; interpretation of earth features observable on a traverse crossing the Appalachian Mountain system. McKenzie and Utgard.

Sp Qtr. 5 days between Wi and Sp; pre-trip meeting and post-trip report. Prereq: 100 or equiv and permission of instructor. Intended primarily for in-service teachers. May not be used to satisfy BS degree requirements in geology.

**600 Sedimentation and Sedimentary Rocks U G 5**

Source, dispersal, and accumulation of sediments; the interpretation of the environmental distribution of sedimentary rocks. Kriesek.

Au Qtr. 2 2-hr cl, 1 3-hr lab arr. Prereq: 502.

**601 Sedimentary Petrology U G 5**

Identification and interpretation of sedimentary rocks based on mineralogic and textural study of thin sections and hand specimens. Collinson and James.

Prereq: 600 or permission of instructor.

**601.01 Sedimentary Petrology of Sandstones**

Wi Qtr. 3 cl, 2 2-hr labs.

**601.02 Sedimentary Petrology of Carbonate Rocks and Shales**

Sp Qtr. 3 cl, 2 2-hr labs.

**602 Carbonate Depositional Systems****602.01 Carbonate Depositional Systems U G 3**

The study of carbonates in modern settings including the origin, composition, and identification of constituents and cement, and depositional environments. Collinson.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 502 or 600, or equiv.

**602.02 Carbonate Depositional Systems II U G 2**

The field study of carbonates in a modern setting such as the Bahamas or southern Florida.

Sp Qtr. 7-day field trip preceding the qtr. Prereq: 602.01 and permission of instructor.

**603 Stratigraphy U G 5**

Advanced study of the principles and procedures of stratigraphic nomenclature, subdivision, correlation, and interpretation, with examples from the international stratigraphic record. Ausich, Bergstrom, and Collinson.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 502.

**613 Micropaleontology U G 5**

Advanced consideration of the preservation, collection, morphology, development, interrelations, and stratigraphic distribution of major groups of animal microfossils. Bergstrom and Webb.

Au Qtr. 2 cl, 3 2-hr labs. Prereq: 201 or equiv. Not open to students with credit for 614 taken in Au Qtr.

**614 Paleobiology U G 5**

Advanced consideration of the preservation, morphology, development, and interrelations of major groups of animal megafossils. Ausich and Bergstrom.

Wi Qtr. 2 cl, 3 2-hr labs. Prereq: 201 or equiv.

**615 Paleocology U G 5**

Advanced treatment of autecology and benthic marine community paleocology from both conceptual and procedural viewpoints. Ausich.

Sp Qtr. 4 cl, 1 2-hr lab, 1 wkend field trip. Prereq: 614 or permission of instructor.

**617 Petrology U G 5**

Major rock-forming processes; hand specimen and microscopic examination, distribution, and tectonic significance of igneous, sedimentary, and metamorphic rocks. Barton.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 223 or 623 or equiv with permission of instructor.

**618 Advanced Historical Geology U G 5**

Principles of historical analysis, with emphasis on the geologic history of North America in the Paleozoic, Mesozoic, and Cenozoic eras. Ausich, Collinson, and Krissek.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 502 or equiv.

**620 Principles of Isotope Geology U G 5**

Theory of natural isotope abundance variations and applications to problems in the earth sciences. Foland.

Au Qtr. 5 cl. Prereq: Sr standing in geol or related fields.

**621 Introduction to Geochemistry U G 5**

Applications of the law of mass action and chemical thermodynamics to mineral equilibria of geological and geochemical interest. Faure.

Au Qtr. 5 cl. Prereq: Sr standing in geol or related fields; Chem 123 or permission of instructor.

**622† Applied Geochemistry U G 5**

Applications of low-temperature aqueous geochemistry to chemical weathering, mineral stability, groundwater quality, and geochemical prospecting. Faure.

Sp Qtr. 5 cl. Prereq: 621.

**624\* Microscopy of Opaque Minerals U G 3**

Application of the petrographic microscope to the study of opaque minerals and ores, their identification, textures, and paragenesis; polished section preparation, etch tests, and micro-chemical tests. Pride.

Wi Qtr. 3 2-hr labs. Prereq: 623 or equiv.

**625 Igneous Petrology U G 5**

Petrography, petrogenesis, and occurrence of igneous rocks, with special emphasis on phase equilibria; macroscopic and microscopic examination of igneous and petrographic suites in the laboratory. Barton and Elliot.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 223 and permission of instructor, or 623.

**Paleobotany**

See Botany 625. Offered in cooperation with Geology and Mineralogy.

**626 Metamorphic Petrology U G 5**

Petrography, petrogenesis, and occurrence of metamorphic rocks; macroscopic and microscopic examination of metamorphic rocks and selected petrographic suites in the laboratory. Barton.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 223 and permission of instructor, or 623.

**Palynology**

See Botany 626. Offered in cooperation with Geology and Mineralogy.

**629† Petrologic Phase Equilibria U G 5**

Application of phase equilibrium diagrams to problems of igneous and metamorphic petrology. Foland.

Au Qtr. 5 cl. Prereq: Sr standing in geology or related fields or permission of instructor.

**635\* Advanced Crystallography U G 4**

Point isometries, derivation of crystallographic point groups, space-lattice types, and crystallographic space-group types; crystallographic calculations emphasizing the metric matrix and changes of basis. Downs.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 221 or 414 or equiv.

**636† Advanced Mineralogy U G 4**

Crystallography and crystal chemistry of the rock-forming silicate minerals. Downs.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 221 or 414 or equiv.

**637 X-Ray Diffraction U G 3**

Emphasis on diffraction by crystalline powders; factors affecting the position and intensity of diffraction maxima; applications include qualitative and quantitative analysis. Tietjenhorst.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 414 or permission of instructor.

**639\* Clay Mineralogy U G 3**

Relationship of structures and chemical composition of clay minerals to properties, origin, occurrence, and applications; evaluating of X-ray, differential thermal, infrared, and electron microscope data. Tietjenhorst.

Sp Qtr. 3 cl. Prereq: 637 or permission of instructor.

**641 Geostatistics Laboratory U G 2**

Computer-oriented application of statistical methods to geodata analysis; topics include error analysis, applied geodata probability and statistics, sampling, least squares, and linear regression. von Frese.

Wi Qtr. 2 cl. Prereq: Stat 528, prereq or concur: Stat 529, or written permission of instructor.

**642 Geomathematical Methods U G 4**

Computer-oriented application of numerical methods to geodata analysis; topics include dimensional analysis, similitude, geodata modeling, profile and map analysis, multivariate geodata analysis, and graphics. von Frese.

Sp Qtr. 4 cl. Prereq: 641 and Math 153, or written permission of instructor.

**644 Geotectonic Evolution of the Continents U G 4**

Survey of lithotectonic assemblages and structural associations in Archean, Proterozoic, and Phanerozoic orogenic terranes in relation to tectonic models for crustal evolution. Wilson.

Wi Qtr. 4 cl. Prereq: 223, 502, and 530; or written permission of instructor.

**645 Advanced Structural Geology U G 5**

Mechanisms of deformation; dynamic and kinematic analysis of rock structures; field and laboratory methods of structural analysis. Wilson.

Sp Qtr. 4 cl, 1 2-hr lab, 1 4-day field trip. Prereq: 530.

**646 Geodynamics U G 5**

Application of mathematical and physical methods to the solution of geologic problems in heat flow, plate tectonics, mountain building, ground-water flow, and river mechanics. Whillans.

Au Qtr. 5 cl. Prereq: 530 and written permission of instructor.

**650 Glacial and Pleistocene Geology U G 5**

The features produced by glaciers, present and past, and the history of glaciation during the Pleistocene. Whillans.

Sp Qtr. 5 cl, field trips. Prereq: 550.

**651 Hydrogeology U G 5**

Geologic and hydrologic factors controlling the occurrence, movement, storage, and chemical quality of ground water; exploration, evaluation, development, and management of ground-water resources. Bair.

Au Qtr. 4 cl, 1 2-hr lab, 1 all-day field trip. Prereq: 121 and Math 153.

**652 Hydrogeologic Field Studies U G 5**

Field study of various hydrogeologic terranes incorporating the use of hydrologic field equipment and testing procedures. Bair.

Sp Qtr. 3 cl, 3 ½-day field trips, 2 3-day field trips. Prereq: 651.

**660 Geology of Mineral Deposits U G 5****660.01 Geology of Metallic Deposits**

The occurrence, origin, distribution, properties, and uses of the metallic minerals. Pride.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 223.

**660.02 Geology of Nonmetallic Mineral Deposits**

The occurrence, origin, distribution, properties, and uses of the nonmetallic minerals. Utgard.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 223.

**670 General and Economic Geology of Selected Areas U G 3 or 5**

Concentrated field study of the stratigraphy, structural geology, tectonics, petrology, and geomorphology of a selected region, with special attention to the economic utilization of earth materials. Elliot, Pride, and Utgard.

Au Qtr. 5 or 10-day field trip preceding the qtr. Post-trip readings and report required. Prereq: 502, 530, and 550; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**675 Use of the Scanning Electron Microscope U G 1**

Instruction in the use of the scanning electron microscope. Webb.

Au, Sp Qtrs. lab, arr. Prereq: Written permission of instructor. This course is graded S/U.

**680 Earth Physics U G 5**

Physics of the solid Earth: the internal structure, density, seismic velocities, gravity and geomagnetic fields; thermal history and surface heat flux, mantle convection; crustal evolution and tectonic models of the crust and lithosphere. Daniels, Noltimier, and von Frese.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 530, Math 153, and Physics 133. Not open to students with credit for 640.

**681 Geophysical Exploration: Gravity and Magnetism U G 3**

Gravity and magnetic exploration principles applied to subsurface investigations; field exercises involve computer processing of data collected using professional instruments. Noltimier and von Frese.

Sp Qtr. 2 cl, 1 2-hr lab, field trip. Prereq: Math 153 and Physics 133, or permission of instructor.

**682 Geophysical Exploration: Seismic Methods U G 3**

Seismic refraction and reflection exploration principles applied to subsurface investigations; field exercises involve computer processing of data collected using professional instruments. Daniels and von Frese.

Au Qtr. 2 cl, 1 2-hr lab, field trip. Prereq: Math 153 and Physics 133, or permission of instructor.

**683 Geophysical Exploration: Electrical Methods U G 3**

Resistivity, self-potential, telluric, magnetotelluric and induced polarization exploration principles applied to subsurface investigations; field exercises involve computer processing of data collected using professional instruments. Daniels and von Frese.

Wi Qtr. 2 cl, 1 2-hr lab, field trip. Prereq: Math 153 and Physics 133, or permission of instructor.

**684\* Geophysical Exploration: Borehole Methods U G 3**

Principles of nuclear, electrical, potential field, and acoustic borehole geophysical techniques; operation and interpretation of geophysical well logging measurements for petroleum, mining, engineering, and ground-water investigations. Daniels.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**693 Individual Studies U G 1-5**

Special problems in any branch of geology and mineralogy for which the student has the proper qualifications.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

**693.01 Economic Geology****693.02 Engineering Geology****693.03 Extraterrestrial Studies****693.04 Field Geology****693.05 Geochemistry****693.06 Geomorphology****693.07 Geophysics****693.08 Glaciology and Glacial Geology****693.09 History of Geology and Mineralogy****693.10 Hydrogeology****693.11 Marine Geology, Limnology, and Oceanography****693.12 Paleontology****693.13 Petrology and Petrography****693.14 Photogeology****693.15 Sedimentation****693.16 Stratigraphy****693.17 Structural Geology****693.18 Earth Science Education****693.19 Unspecified****693.20 Thermochemical Mineralogy****693.21 Crystallochemical Mineralogy****693.22 X-Ray Mineralogy****693.23 Clay Mineralogy****693.24 Physical Properties of Crystals****694 Group Studies U G 1-5**

Group study of special topics in various fields of geology and mineralogy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs.

**703†\* Principles of Biostratigraphy U G 3**

Principles of zonal and azonal biostratigraphy; definition, identification, and correlation of standard biostratigraphic units; quantitative development of chronostratigraphically significant azonal frameworks.

Sp Qtr. 3 cl. Prereq: 201 or 613 or 614, and 603 or equiv; or written permission of instructor.

**713†\* Taxonomy and Phylogeny in the Fossil Record U G 3**

Theory and practice of taxonomy and phylogenetic reconstruction as applied to organisms in the fossil record. Ausich.

Au Qtr. 3 cl. Prereq: 614 or permission of instructor.

**714†\* Biometry U G 3**

Biometric principles and methods as applied to the solution of taxonomic, ontogenetic, and evolutionary problems in the fossil record. Ausich.

Au Qtr. 3 cl. Prereq: 614 and 641 or equiv; or permission of instructor.

**720†\* Noble Gas Geochemistry U G 4**

Application of noble gas, K-Ar, and  $^{40}\text{Ar}/^{39}\text{Ar}$  research methods to geological and geochemical problems. Foland.

Sp Qtr. 4 cl. Prereq: 620 or equiv, or written permission of instructor.

**725\* Isotope Geochemistry of Igneous and Metamorphic Systems U G 4**

Advanced study of the principles, methods, and applications of isotope geochemistry to igneous and metamorphic processes and the origin and evolution of the Earth. Foland.

Sp Qtr. 4 cl. Prereq: 620 or equiv or written permission of instructor, 625 recommended.

**726\* Isotope Geology of Sedimentary Rocks U G 5**

Use of isotopic and geochemical concepts in the study of geological processes on the surface of the earth and of the origin of sedimentary rocks. Faure.

Sp Qtr. 4 cl, 1 2-hr sem. Prereq: Sr or grad standing in geology or related field, or written permission of instructor.

**737\* Crystal Structure Analysis U G 4**

Theory and practice of single crystal X-ray and elastic neutron diffraction, including four-circle diffractometry, profile analysis, data reduction, and least-squares structure refinement. Downs.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Math 153 and Physics 113 or 133; or equivalents.

**746†\* Rheological Properties of Rocks U G 3**

Principles of rock rheology and empirical studies of brittle and ductile deformation mechanisms, with special reference to applications to crustal and mantle problems. Whillans and Wilson.

Sp Qtr. 3 cl. Prereq: 530.

**747†\* Tectonics U G 5**

Mechanisms and problems in the development of large-scale features on earth: mountain belts, folds, basins, and faults. Whillans.

Sp Qtr. 5 cl. Prereq: 646 or equiv.

**751\* Quantitative Ground-Water Flow Modeling U G 5**

Principles of analytical and numerical techniques in modeling ground-water flow in porous media, use of two- and three-dimensional steady-state and transient flow codes. Bair.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 651; and En Graph 200, or 641 and previous FORTRAN training.

**752\* Contaminant Hydrogeology U G 5**

Fate and transport of contaminants in the subsurface; methods used to characterize, evaluate, and remediate sites contaminated by hazardous wastes and pollutants. Bair.

Wi Qtr. 4 cl, 1 2-hr lab, 2 all-day field trips. Prereq: 651; and En Graph 200, or 641 and previous FORTRAN training.

**760†\* Advanced Metallic Mineral Deposits U G 3**

Advanced-level examination of the geochemistry, mineralogy, and petrology of important models of metallic mineralization. Pride.

Wi Qtr. 2 2-hr cl. Prereq: 660.01. Not open to students with credit for 694B.

**779\* Physical Properties of Minerals and Rocks U G 3**

Quantitative survey of electrical, magnetic, elastic, inelastic, radioactive, thermal, density, and seismic properties and chemical compositions of rocks and minerals. Noltimier.

Wi Qtr. 3 cl. Prereq: 221, 600, and 617; or equivs; or written permission of instructor.

**780†\* Reflection Seismology U G 3**

Advanced principles of the seismic reflection method; field procedures, data processing, and interpretation for shallow and deep geologic investigations. Daniels.

Wi Qtr. 3 cl. Prereq: 682 or written permission of instructor.

**781†\* Gravimetry U G 3**

Analytical treatment of concepts and methods of gravimetry; introductory theory of gravitational potential; geological interpretation of gravity data. Noltimier and von Frese.

Au Qtr. 3 cl. Prereq: 681 or written permission of instructor. Not open to students with credit for 643.

**782\* Magnetometry U G 3**

Advanced magnetic theory and practice applied to investigations of the subsurface, including interpretation of surface, airborne, and satellite magnetic measurements. von Frese.

Au Qtr. 3 cl. Prereq: 681 or written permission of instructor.

**H783 Honors Research U 3-5**

A program of individual study arranged for students enrolled in the honors program, with individual conferences and reports; requires presentation and oral defense of an honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the geol&min courses taken and an average of at least B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS *with distinction* in geol. Failure to receive the mark of S in this course is a disqualification for departmental honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**784†\* Paleomagnetism U G 3**

Physical and mineralogical basis for permanent magnetization in rocks, physical basis of measurement, geological basis for sampling, and geological constraints on interpretation of results. Noltimier.

Sp Qtr. 3 cl. Prereq: 680 or equiv or written permission of instructor.

**800 Seminar in Stratigraphy G 3**

Consideration of current and classical problems and procedures in biostratigraphic and lithostratigraphic analysis and synthesis. Ausich, Bergstrom, Collinson, and Krissek.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**801 Seminar in Sedimentation and Sedimentary Rocks G 3**

Consideration of sedimentation, and the structures, petrography, depositional environments, and paleontologic interpretation of sedimentary rocks. Collinson, James, and Krissek.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**810 Seminar in Paleobiology G 3**

Advanced topics in paleozoologic and paleobotanic morphology, taxonomy, and procedure; current questions in biostratigraphy, paleoecology, and evolutionary development of fossil floras and faunas. Ausich, Bergstrom, and Webb.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**821 Seminar in Isotope Geology and Geochemistry G 3**

Discussion of selected topics in isotope geology, geochronology, geochemistry, and cosmochemistry. Faure and Foland.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**822 Seminar in Petrology and Optical Mineralogy G 3**

Selected topics in optical mineralogy and igneous, sedimentary, and metamorphic petrology. Barton, Downs, and Elliot.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**840 Seminar in Structural Geology G 3**

Selected topics in structural geology, rock deformation, and geotectonics. Wilson.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**850 Seminar in Geomorphology and Quaternary Geology G 3**

Current and classical problems in geomorphology and Quaternary geology, such as desert and coastal geomorphology, submarine topography, periglacial and karst morphology, volcanology, and Quaternary geochronology. McKenzie and Whillans.

Au, Wi Qtrs. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**851 Seminar in Hydrogeology and Oceanography G 3**

Topics in hydrogeology and oceanography, such as ground-water hydrology and hydraulics, basin management, reef and atoll development, or paleo-oceanography. Bair, Kressek, and Schwartz.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**874† Seminar in the History of Geology and Mineralogy G 3**

Discussion of the development of geology and mineralogy, intended to give the student a firm basis for comprehension of the science as it exists today.

Sp Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**880 Seminar in Geophysics G 3**

Investigation and discussion of recent developments in geophysics, including exploration geophysics, glaciology, solid-earth geophysics, paleomagnetism, tectonics, or engineering evaluation. Daniels, Noltimier, von Frese, and Whillans.

Sp Qtr. 2 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs.

**888 Colloquium in Geology G 1**

Discussion of current research in the geological sciences.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in geol. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**896 Interdepartmental Seminar in Polar and Alpine Studies G 1-3**

A seminar on selected topics involving anthropology, biology, climatology, exploration, geology, glaciology, microbiology, and soils.

Sp Qtr. 1-3 hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs. Given cooperatively by the Institute of Polar Studies, the College of Biological Sciences, and the departments of Botany, Geography, Geology and Mineralogy, and Zoology.

**999 Research in Geology and Mineralogy G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## German

314 Cunz Hall, 1841 Millikin Road, 292-6985

**Placement and Proficiency Examinations**

*In order to insure proper registration, placement tests are required of all students who continue their study of German in the dept after beginning their language in high school. Such tests are given during Summer Orientation and on the first day of instruction in each quarter. Consult the College of Humanities section of the Colleges of the Arts and Sciences Bulletin or the dept.*

*Students who are given advanced standing in the dept as a result of the placement and proficiency examination become eligible for University credit.*

**Excess Entrance Credits in German**

*Freshmen who have excess credits in a foreign language are eligible for examination for advanced standing. The examination is given at the same time as the placement tests mentioned above.*

*Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 (including the decimal subdivisions such as 101.51, etc.) and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.*

**101 Elementary German I**

Development of aural comprehension, speaking, reading, and writing skills.

Not open to students with credit for 100.01 or 100.02; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

Su, Au, Wi, Sp Qtrs. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**101.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs in 101.02.

**102 Elementary German II**

Development of aural comprehension, speaking, reading, and writing skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 100.02, or 101.01, or 5 cr hrs in 101.51 or 101.02. This course is available for EM credit.

**102.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: 100.02, or grade of B- or above in 101.01, or 5 cr hrs in 101.02 or 101.51, or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs in 102.02.



**103 Intermediate German I**

Reading; oral and written practice; grammar review; students may select from among the following subdivisions which emphasize specific skills and subject matter.

Su, Au, Wi, Sp Qtrs. (Not all decimal subdivisions offered every qtr.) 5 cl. Prereq: 102.01, or 5 cr hrs in 102.51, or 102.02, or 110, or equiv. Not open to native speakers of this language through regular course enrollment or EM credit.

**103.01 Basic U 5**

Balanced use of the basic language skills: reading, aural comprehension, speaking, and writing.

H103.01 (honors) may be available to students in an honors program or by permission of instructor. Prereq for H103.01: 102.01 with a grade of A or permission of instructor. Not open to students with credit for 103. This course is available for EM credit.

**103.05 Science U 5**

Introductory readings in scientific German.

Not open to students with credit for 103 or 113.

**103.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

Su, Au, Wi, Sp Qtrs. Prereq: 102.01, or 5 cr hrs in 102.51, or 110, or equiv. Not open to students with credit for any decimal subdivision of 103.

**104 Intermediate German II U 5**

Reading; oral and written practice; vocabulary building; students may select from among the following subdivisions which emphasize specific skills and subject matter.

Su, Au, Wi, Sp Qtrs. (Not all decimal subdivisions offered every qtr.) 5 cl. Prereq: 103 or 112. Not open to native speakers of this language through regular course enrollment or EM credit.

**104.01 Basic**

Balanced use of the basic language skills: reading, aural comprehension, speaking, and writing.

H104.01 (honors) may be available to students in an honors program or by permission of instructor. Prereq for H104.01: H103.01 or 103.01 with a grade of A or permission of instructor. Not open to students with credit for 104. This course is available for EM credit.

**104.02 Conversation**

Emphasis on speaking and aural comprehension.

Not open to students with credit for 104.

**104.03 Readings in the Humanities**

Emphasis on readings in German literature, cultural history, and contemporary life.

Not open to students with credit for 104.

**104.05 Science**

Advanced readings in scientific German.

Not open to students with credit for 104 or 114.

**104.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 103.01 or 5 cr hrs in 103.51. Not open to students with credit for any decimal subdivision of 104. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from 1 cr hr to the next with proficiency at the level of 80% required for advancement.

**109 Elementary German Conversation U 3**

Wi Qtr. 3 cl. Prereq: 102 or 110; also open to students with grade of A in 101. Not open to native speakers of this language. No audit.

**112 Intensive German U 5, 10, or 15**

Elementary and intermediate German for students desiring comprehensive knowledge of German in the shortest possible time; students will devote their entire time to this course.

Su Qtr. Enrollment limited to 20 students. Prereq: Permission of dept. Not open to native speakers of this language through regular course enrollment or EM credit. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, and 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in German will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. No audit. FL Admis Cond course.

**162 Elementary-Intermediate German for Selected Students U 5**

Wi Qtr. 5 cl. Prereq: Grade of A in 101. Not open to native speakers of this language through regular course enrollment or EM credit.

**163 Elementary-Intermediate German for Selected Students U 5**

Continuation of 162.

Sp Qtr. 5 cl. Prereq: 162. Not open to native speakers of this language through regular course enrollment or EM credit. Successful completion of the sequence 101-162-163 fulfills the Arts and Sciences foreign language requirement and provides eligibility for 200-level courses.

**201 German Composition and Conversation U 5**

Practice in basic written and spoken German; emphasis on study of word forms and sentence structure; themes and oral presentations on topics of everyday life.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 104 or equiv. Not open to students with credit for 204 or 205; or to native speakers of this language through regular course enrollment or EM credit. No audit.

**202\* Business German I U 3**

Four-skill study and practice of general business German; introduction to current German commerce, business practices, terminology, business-related communication skills.

Wi Qtr. 3 cl. Prereq: 201 or equiv, or permission of instructor. No audit.

**203 Intermediate German Conversation U 3**

Practice in spoken everyday idiomatic German, based on texts concerning German life today.

Wi, Sp Qtrs. 3 cl. Prereq: 104.02, any other 104 course, or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**230 Introduction to German Prose U 5**

Reading and discussion of German literary texts representing significant prose types, authors, and periods including fairytale, fable, diary, short story, novella, essay, and novel.

Wi Qtr. 5 cl. Prereq: 104 or equiv or permission of instructor.

**231 Introduction to German Poetry U 5**

Reading and discussion of selected German poetry, introducing major German poets and poetic forms; these include the folksong, ballad, sonnet, and religious and political poetry.

Sp Qtr. 5 cl. Prereq: 104 or equiv or permission of instructor.

**232 Introduction to German Drama U 5**

Reading and discussion of German dramatic texts, representing influential forms, authors, and traditions: folk comedy, classical tragedy, the tragi-comedy, the radio play, and documentary theatre.

Au Qtr. 5 cl. Prereq: 104 or equiv or permission of instructor.

**260 Early German Literature in Translation U 3**

Trends in German literature of the Middle Ages, the Renaissance and the Reformation as reflected in representative literary monuments.

Au Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English. BER/LAC course.

**261 German Classics in Translation U 3**

Social and intellectual forces in Germany as reflected in German literature from the Enlightenment to the middle of the 19th century; masterpieces from Goethe to Gottfried Keller.

Wi Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English. BER/LAC course.

**262 Modern German Literature in Translation U 3**

Intellectual forces and literary trends in German literature from the end of the 19th century to the present; masterpieces from Gerhart Hauptmann to Bertolt Brecht.

Sp Qtr. 3 cl. Credit does not apply toward a major in German. Taught in English. BER/LAC course.

**291 Early German Literature in Cultural Context U 5**

Origins and highlights of German culture and life as reflected in literary and poetic works, Germanic mythology, religion, and the arts.

Au Qtr. 5 cl. Not open to students with credit for 361. Taught in English. Supplemented by audio-visual aids. BER/LAC/LAR course.

**292 Modern German Literature in Cultural Context U 5**

Two hundred years of German literature, arts, philosophy, and social thought, as they reflect cultural and social life in German-speaking countries.

Wi Qtr. 5 cl. Not open to students with credit for 362. Taught in English. Supplemented by audio-visual aids. BER/LAC/LAR course.

**293 Individual Studies U 2-5**

Individual investigation of minor problems in German language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairperson. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**294 Group Studies U 2-5**

Investigation of minor problems in German literature and language.

Au, Wi, Sp Qtrs. Prereq: Written permission of chairperson. Repeatable to a maximum of 10 cr hrs.

**298† Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

298.01 Domestic

298.02 Foreign

**299 Weimar and Fascism in German Literature and Film U 5**

Culture of the Weimar Republic and Nazi Germany in literature, film, the other arts; the roots of fascism and its echoes in postwar Germany.

Au, Sp Qtrs. 2 2-hr cl. Taught in English. BER/LAC/LAR course.

**301 Intermediate German Composition and Conversation U 5**

Practice in written and spoken German; emphasis on semantics, topical area studies, word families; essays and oral presentations on topics of general interest and current concern.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 201 or equiv or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**302\* Business German II U 3**

Four-skill study and practice of general business German; introduction to current German commerce, business practices, terminology, and business-related communication skills.

Sp Qtr. 3 cl. Prereq: 202 or equiv or permission of instructor. No audit.

**303 The Practice of Translation U 3**

German-English and English-German translation; texts from diverse areas; emphasis on improvement of German grammar, syntax, idiom, and style; discussion of common translation techniques.

Wi Qtr. 3 cl. Prereq: 201 or equiv or permission of instructor. No audit.

**399 The Holocaust Experience in German Literature and Culture U 5**

Literary texts and films reflecting the German Jewish literary tradition, German anti-Semitism, and the Holocaust; authors include Luther, Heine, Zweig, Celan, and Arendt.

Wi Qtr. 2 2½-hr cl. Taught in English.

**409 Advanced German Conversation U 3**

Practice in spoken German on topics of general interest and current events.

Au, Sp Qtrs. 3 cl. Prereq: 301 or equiv or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit.

**410 Advanced German Composition U 3**

Writing and discussion of compositions, practical review of grammar in context, and practice in translation.

Au, Wi Qtrs. 3 cl. Prereq: 301 or equiv or permission of instructor. Not open to students with credit for 630.

**420 Studies in German Literature I (750-1700) U 5**

Development of German literature in its historical, social, and philosophical context from earliest times to the Age of Enlightenment.

Au Qtr. 5 cl. Prereq: 201 or equiv, and one German literature course; or permission of instructor. Taught in German.

**421 Studies in German Literature II (1700-1870) U 5**

Development of German literature in its historical, social, and philosophical context from the Age of Enlightenment to German unification.

Wi Qtr. 5 cl. Prereq: 201 or equiv, and one German literature course; or permission of instructor.

**422 Studies in German Literature III (1870-Present) U 5**

Development of German literature in its historical, social, and philosophical context from 1870 to the present.

Sp Qtr. 5 cl. Prereq: 201 or equiv, and one German literature course; or permission of instructor.

**463 German Culture of the 19th and 20th Centuries U 5**

Intellectual, artistic, and social trends in the German-speaking countries from 1815 to the present.

Sp Qtr. 5 cl. Prereq: 10 cr hrs beyond 104 of courses taught in German or permission of instructor. Taught in German. BER/LAC course.

**540 Literature and Life in German-Speaking Countries U G 3**

Discussion of significant literary and cultural developments reflecting aspects of life in German-speaking countries: Austria, Switzerland, and the German Democratic Republic; topic varies.

Au Qtr. 3 cl. Prereq: 201, 301, and one German literature course; or permission of instructor. Repeatable to a maximum of 9 cr hrs. Taught in German.

**550 Current Events in German-Speaking Countries U G 3**

Studies and intensive discussion of current cultural and social issues in the German-speaking world; newspaper readings, guest lectures, films, music and student presentations; topic varies.

Sp Qtr. 3 cl. Prereq: 10 cr hrs of German at the 200 level and 301 or equiv, or permission of instructor. Repeatable to a maximum of 9 cr hrs. Taught in German.

**560 Senior Seminar in German Literature U 3**

Intensive study and discussion of selected important issues, themes, trends, or individual authors; topic varies.

Wi Qtr. 3 cl. Prereq: 201, 301, and one 400-level German literature course, or permission of instructor. Repeatable to a maximum of 9 cr hrs. Taught in German.

**571 Basic German for Graduate Students G 5**

The fundamentals of German grammar, as required for the reading of German texts in the sciences, social sciences, and humanities.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum hours required for the master's or doctoral degrees. No audit.

**572 German for Research I G 3**

Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of C or above in 571 or equiv preparation demonstrated by a placement test. Open only to grad students. Credit does not apply to the minimum hours required for the master's or doctoral degrees. No audit. Repeatable twice.

**573 German for Research II G 3**

Reading of difficult material at a reasonable rate of speed and with only infrequent use of dictionaries. Completion of this course with a grade of A or B may be accepted by the student's dept as evidence of a thorough reading knowledge of German.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test and permission of instructor. Open only to grad students. Credit does not apply to the minimum hours required for the master's or doctoral degrees. No audit. Repeatable twice.

**General Prerequisites for Courses Numbered 600**

Unless otherwise indicated, the prerequisites for all 600-level courses are: 201, 301, 410, and one German literature course at the 400 level (420, 421, 422). Exceptions may be allowed by instructors for students with special qualifications.

**630 Introduction to Stylistics U G 5**

Composition on assigned topics, intensive translation, and comparative study of usage designed to develop a sophisticated expository style in the writing of German.

Au, Sp Qtrs. 4 cl. Prereq: 410, or 301 and written permission of instructor.

**635†\* Practical German Pronunciation U G 5**

Standard German pronunciation; oral and written drill.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**660\* Masterpieces of German Literature U G 5**

Selections from works of major German writers; topic varies each year.

Su Qtr. 4 cl. Prereq: Permission of chairperson. Repeatable to a maximum of 15 cr hrs.

**693 Individual Studies U G 2-5**

Investigation of minor problems in the various fields of German literature and philology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-15**

Investigation of minor problems in the various fields of German literature and philology.

Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**General Prerequisites for Courses Numbered 700**

Prerequisites for 700-level courses are grad standing, or 4th yr standing with 10 cr hrs in German at the 600-level, and permission of chairperson.

**701 Introduction to Bibliography and the Tools of Research U G 3**

The tools, problems, and methods of literary, philological, linguistic, electronic, and pedagogical research in Germanics.

Au Qtr. 2 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 800.

**702 Introduction to Literary Forms and Styles U G 5**

History of literary genres, their textual forms, their theories; the terminology of genre, literary structures, and devices and practice in analysis of various texts.

Wi Qtr. 2 cl. Prereq: Grad standing or permission of instructor.

**703 Introduction to Contemporary Critical Approaches to Literature U G 3**

Primary current methodological and theoretical approaches to German literary study and brief consideration of their history: positivism, hermeneutics, formalism, Marxism, structuralism, post-structuralism.

Sp Qtr. 2 cl. Prereq: Grad standing or permission of instructor.

**705 Structure and Description of Modern Standard German U G 5**

Phonological, morphological, and syntactic systems of modern German; lexical changes, non-standard varieties of the language; differences between East and West German usage.

Au Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Taught in German.

**706\* Forms of Contemporary German Usage U G 5**

Analytical and practical study of the ways in which German is written and spoken today (colloquial speech, business and scholarly German, etc.); emphasis on oral and written practice.

Sp Qtr. 4 cl. Prereq: Grad standing or permission of instructor or 409 and 410 or 630. Taught in German.

**740 Development of German Narrative Prose U G 5**

The novel, *Novelle*, short story, and other forms of German prose: historical overview, theory, and selected primary texts as illustration.

Au Qtr. 4 cl. Prereq: Grad standing or equiv or permission of instructor.

**741 Development of German Drama U G 5**

History and theory of the drama in Germany; methods of drama analysis; interrelationship of drama, theatre, and audience; study of selected texts.

Wi Qtr. 4 cl. Prereq: Grad standing or permission of instructor.

**742 Development of German Poetry U G 5**

Elements of German poetry; close study of representative poets and poems since the Baroque.

Sp Qtr. 4 cl. Prereq: Grad standing or permission of instructor.

**750\* Periods of German Literary History: 800-1400 U G 5**

Study of major works chosen to present prominent themes and problems and/or important developments within the period; topic varies.

4 cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**751 Periods of German Literary History: 1400-1700 U G 5**

Study of major works chosen to present prominent themes and problems and/or important developments within the period; topic varies.

Au Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**752 Periods of German Literary History: 1700-1850 U G 5**

Study of major works chosen to present prominent themes and problems and/or important developments within the period; topic varies.

Wi Qtr. 4 cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**753 Periods of German Literary History: 1850-Present U G 5**

Study of major works chosen to present prominent themes and problems within the period; topic varies.

Sp Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**777 Colloquium in German Literature U G 2-5**

Selected topics, problems, and works in the various fields of German literature.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of chairperson. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**H783 Honors Research U 3-5**

Offers undergraduates with special aptitudes a greater opportunity for independent study than is possible in ordinary courses.

Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the German courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of the major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

Wi Qtr. 2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in Comparative Studies in the Humanities, English, French, Italian, and Spanish.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of instructor.

**General Prerequisites for Courses Numbered 800**

Prerequisites for 800-level courses are graduate standing and permission of chairperson.

**801\* Middle High German G 5**

Intensive introduction to Middle High German; comprehension and application of grammatical principles; selected texts for linguistic analysis.

Au Qtr. 4 cl.

**802\* Old Saxon and Old High German G 5**

Analysis of the structure of Old High German and Old Saxon and dialect differences, manuscript tradition, textual criticism, literary-cultural importance of major works.

Wi Qtr. 4 cl.

**803\* Gothic G 5**

Phonology and grammar of Gothic as a German dialect; selected passages from Wulfila's Bible; relationship of the Germanic languages to Old High German.

Sp Qtr. 4 cl.

**806\* History of the German Language G 5**

Basic concepts of historical linguistics; the major factors of change in the history of German from Proto-Germanic to the present.

Au Qtr. 4 cl. Prereq: 801.

**810\* German Literary Criticism and Theory G 5**

Historical overview and evaluation of critical methods; introduction to contemporary literary theories; the use-value of literary criticism.

Wi Qtr. 2 2-hr cl.

**840 College Teaching of German G 5**

Methods and techniques for teaching German at the college level.

Au Qtr. 4 cl. Prereq: Permission of instructor. Intended for grad students in German. Not open to students with credit for 700.

**850 German Proseminar G 5**

Selected topics in German literature, language, and culture; seminar discussion format with oral and written reports.

Su, Au, Wi, Sp Qtrs. 4 cl. Repeatable to a maximum of 20 cr hrs.

**890 Interdepartmental Studies in Critical Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.,) in literary theory.

Sp Qtr. 2 2-hr or 5 cl. Prereq: Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs. Cross-listed in Comparative Studies in the Humanities, English, French, Spanish, and Women's Studies.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs.

**960 Seminar in Modern German Literature: 1700 to the Present G 5**

Topics vary in focus and methodology; emphasis may range from individual authors, works, or themes to theoretical or interdisciplinary issues; major research papers.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl. Not open to students with credit for 860. Repeatable to a maximum of 45 cr hrs.

**970 Seminar in Older German Literature to 1700 G 5**

Topics vary in focus and methodology; emphasis may range from individual authors, works, or themes to theoretical or interdisciplinary issues.

Sp Qtr. 1 3-hr cl. Repeatable to a maximum of 45 cr hrs.

**980 Seminar in Germanic Philology G 5**

Topics from historical and comparative studies of older Germanic dialects; structure of New High German and contemporary German.

Wi Qtr. 1-3-hr cl. Not open to students with credit for 870. Repeatable to a maximum of 45 cr hrs.

**993 Individual Studies G 1-5**

With the approval of the department chairperson, doctoral students may register for individual study in areas normally not covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**998 Research in German: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**999 Research in German: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Graduate School

247 University Hall, 230 North Oval Mall, 292-6031

### 999 Research: Interdisciplinary G Arr

Thesis or dissertation research approved by Graduate School in one-of-a-kind programs.

## Greek

414 University Hall, 230 North Oval Mall, 292-2744

See also Classics.

### 101 Elementary Ancient Greek I U 5

Introduction to the language of the ancient Greek authors and the New Testament.

Au Qtr. 5 cl. This course is available for EM credit. FL Admis Cond course.

### 102 Elementary Ancient Greek II U 5

Wi Qtr. 5 cl. Prereq: 101. This course is available for EM credit. FL Admis Cond course.

### 103 Intermediate Ancient Greek I U 5

Sp Qtr. 5 cl. Prereq: 102. This course is available for EM credit.

### 104 Intermediate Ancient Greek II U 5

Au Qtr. 5 cl. Prereq: 103 or permission of instructor. This course is available for EM credit.

### 210 The Greek New Testament U 5

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

### 221 Attic Prose U 5

Au Qtr. 5 cl. Prereq: 104. BER/LAC course.

### 222† Euripides U 5

5 cl. Prereq: 104 or permission of instructor. BER/LAC course.

### 223 Homer U 5

Sp Qtr. 5 cl. Prereq: 104 or permission of instructor. BER/LAC course.

### 224† The Greek Historians U 5

5 cl. Prereq: 104. BER/LAC course.

### 225† Sophocles U 5

5 cl. Prereq: 104 or permission of instructor. BER/LAC course.

### 293 Individual Studies U 1-3

Intermediate readings in Greek literature.

Su, Au, Wi, Sp Qtrs. Prereq: 104 or equiv or written permission of dept. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

### 601\* Survey of Greek Literature: Epic/Archaic Eras U G 5

A survey of authors representative of the earliest period of Greek literature, with discussion of historical background and methods of criticism.

Au Qtr. 2 2-hr cl. Prereq: Two 200-level Greek courses and permission of instructor; or grad standing.

### 602\* Survey of Greek Literature: Classical Age U G 5

A survey of authors representative of the Classical period of Greek literature, with discussion of historical background and methods of criticism.

Wi Qtr. 2 2-hr cl. Prereq: Two 200-level Greek courses and permission of instructor; or grad standing.

### 603\* Survey of Greek Literature: Hellenistic Era U G 5

A survey of authors representative of the Hellenistic period of Greek literature, with discussion of historical background and methods of criticism.

Sp Qtr. 2 2-hr cl. Prereq: Two 200-level Greek courses and permission of instructor; or grad standing.

### 604† Herodotus U G 5

2 2-hr cl. Prereq: 2 courses at 200 level.

### 605† Euripides U G 5

2 2-hr cl. Prereq: 2 courses at 200 level.

### 606† Sophocles U G 5

5 cl. Prereq: 2 courses at 200 level.

### 607† Homer U G 5

Readings from the *Odyssey*.

5 cl. Prereq: 2 courses at 200 level.

### 608† Readings from Attic Prose U G 5

Readings from the Attic Orators or Xenophon or Thucydides.

2-2 hr cl. Prereq: 2 courses at the 200 level.

#### 608.01 The Orators

#### 608.02 The Historians, Thucydides and Xenophon

Au Qtr.

### 609† Readings in Plato U G 5

5 cl. Prereq: 2 courses at 200 level.

### 612†\* Attic Prose Composition U G 5

Review of elementary syntax leading to composition of sentences and short connected passages; concurrent readings from Lysias or Xenophon.

3 cl, 2 hr arr. Prereq: At least 1 course at 600 level.

### 660 Special Topics in Greek Literature U G 5

Extensive reading from masterpieces of Greek literature; topic varies.

Su Qtr. 2 2-hr cl. Prereq: Two courses at the 200 level. Repeatable to a maximum of 20 cr hrs.

### 693 Individual Studies U G 1-6

Passages for reading and topics for investigation will be selected to meet the needs of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: 2 courses at 600 level, or permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 694 Group Studies U G 1-6

Au, Sp Qtrs. Prereq: 4 courses more advanced than 104, or permission of chairperson. Repeatable to a maximum of 20 cr hrs.

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

### H783 Honors Research U 3-5

A program of study arranged for each student with individual conferences, reports, and an honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a grade of A in at least half of the Greek courses taken and with an average of B in the remainder; written permission of instructor under whose supervision the work is to be completed and the ASC Honors Committee; at least 2 qtrs are required of candidates for the degree BA *with distinction* in Greek. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### General Prerequisites for Courses Numbered 800 and Above

Prerequisites for admission to courses numbered 800 and above are graduate standing and permission of the chairperson.

#### 802†\* Advanced Greek Prose Composition G 5

Weekly exercises in continuous prose composition with concurrent readings from Greek prose authors.  
2 cl, tutorial arr. Prereq: 612 or permission of instructor.

#### 813† Studies in the Greek Orators G 5

Selected topics in Greek oratory: Lysias, Andocides, Isocrates, or Demosthenes.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

#### 818 Studies in the Greek Historians G 5

Selected topics in Greek historiography: Herodotus, Thucydides, Xenophon, or Polybius.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

#### 836† Studies in Hellenistic Literature G 5

Critical study of Greek authors of the third to first centuries B.C.

Repeatable to a maximum of 10 cr hrs.

#### 840† Studies in Greek Drama G 5

Critical study of one or more of the Greek dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, and Menander.

Wi Qtr. 2 2-hr cl. Repeatable to a maximum of 20 cr hrs.

#### 842† Studies in Greek Lyric and Elegiac Poetry G 5

Selected topics in the lyric and elegiac poets of the seventh through fifth centuries B.C.; the subject for 1988-89: Pindar.

Wi Qtr. 1 3-hr cl. Repeatable to a maximum of 15 cr hrs.

#### 844 Studies in the Greek Philosophers G 5

Selected topics in Greek philosophy: the pre-Socratics, Plato, Aristotle, and the Hellenistic philosophers.

Au Qtr. 2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

#### 845 Studies in Greek Epic G 5

Selected topics in Greek epic: Homer, Hesiod, or Apollonius.

1 3-hr cl. Repeatable to a maximum of 20 cr hrs.

#### 894 Group Studies G 1-6

Repeatable to a maximum of 20 cr hrs.

#### 993 Individual Studies G 1-4

Assigned readings; individual research in disciplines such as epigraphy, topography, papyrology, linguistics, etc.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

#### 995 Seminar G 5

The seminar completes a two-qtr sequence (Au/Wi, Wi/Sp) begun with an 800-level intensive study of an author or a genre, e.g., Aeschylus, Thucydides, Hellenistic poetry; subject for 1988-89: Pindar.

Wi Qtr. Repeatable to a maximum of 20 cr hrs.

#### 999 Research G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Health Education

School of Health, Physical Education, and Recreation  
215 Pomerene Hall, 1760 Neil Avenue, 292-6116

#### 101 Special Topics in Health and Survival U 1

Concentrated courses on specific health-related topics of interest and concern to students for survival and life-planning.  
Wi, Sp Qtrs. Arr. Repeatable (according to topic) to 10 cr hrs. Concurrent courses allowed; not a substitute for 103 or 200. This course is graded S/U.

#### 102 First Aid U 2

A consideration of first aid practices to the injured; designed to lead to Red Cross certification in first aid.

Au, Wi, Sp Qtrs. 2 hrs arr lab.

#### 103 Health and Well-Being in American Society U 3

A study of student health problems; designed to foster understandings and attitudes needed for intelligent decision-making related to present and future health needs.

Au, Wi, Sp Qtrs. 3 hrs arr. Not open to students with credit for 200.

#### 122 Techniques in Cardiopulmonary Resuscitation U 1

Development of skills and competency in recognizing and reacting to situations requiring cardiopulmonary resuscitation measures; completion leads to certification in CPR by American Red Cross.

Au, Wi, Sp Qtrs. 1 cl. This course is graded S/U.

#### 150 How to Avoid Dying from Cancer Now and Later U 2

Discussion of the latest findings on avoiding cancer through lifestyle choices and assessment of one's family health history.

Sp Qtr. 1 2-hr cl.

#### 200 Health and Behavior U 5

Designed to establish a basis for positive health and efficiency through a consideration of various conditions and factors which affect health.

Au, Wi, Sp Qtrs. 5 hrs arr. Not open to students with credit for 103. Open only to students in dent hyg ed, hith edu, phys ed, and rec educ curricula, or by written permission of instructor.

#### 201 Current Concepts in Community Health U 3

A study of community health programs, the need for them, the problems and issues involved, and how these problems can be solved.

Au, Wi, Sp Qtrs. 3 hrs arr.

#### 202 First Aid for Instructors U 2

A review of standard first aid; improvement of competencies; and preparation for instructor's certificate of the American Red Cross.

Sp Qtr. 1 2-hr cl. Prereq: 102 and Red Cross Certificate.

#### 204 Sexuality and Health U 3

The study of sexuality as an aspect of the healthy individual; the demythologizing of sexual beliefs and behaviors; sexual behavior and attitudes in young adults.

Au, Wi, Sp Qtrs. 3 hrs arr.

#### 212 Issues in Alcohol/Drug Use and Abuse U 3

Provides an understanding of the dynamics of substance abuse.

Sp Qtr. 1 2½-hr cl.

#### 214 AIDS: What Every College Student Should Know U 3

A review of the physiological, psychological, social, legal, and moral issues surrounding the disease AIDS with emphasis placed on responsible decision making about one's lifestyle.

Au, Wi, Sp Qtrs. 1 2½-hr cl.

#### 289 Seminar and Field Experience in Health Education U 2-5

Professional service in a school or community agency and seminar to discuss and analyze constructive experiences.

Au, Sp Qtrs. For students in hith edu curriculum. Repeatable to a maximum of 5 cr hrs. This course is graded S/U.

#### 300 Health Education for Elementary Teachers U 3

The teacher's responsibility for health of school child; screening, referral, vision and hearing, nutritional problems, instructional programs, emergency care, and teacher's health.

Su, Au, Wi, Sp Qtrs. 3 hrs arr. Prereq: 103 and Ed-T&P 451; admission to College of Education. Not open to undergrad minors or majors in phys ed or hith edu.

**401 Fundamentals of Epidemiology and Biostatistics U 3**

Introduction to factors affecting the distribution of health problems in populations and to disease causation.  
Wi Qtr. 3 cl. Prereq: 201 or permission of instructor.

**402 Safety Education U 3**

Study of epidemiology of accidents, development of preventive programs, and safety consciousness.  
Au, Sp Qtrs. 3 hrs arr.

**501 School Health Program U 3**

A consideration of the total school health program, including healthful school living, health services, and the teaching of health.

Wi Qtr. 3 hrs arr. Prereq: 200. For phys ed students not in hith edu major or minor.

**587 Student Teaching in Health Education U 3-15**

Observation, participation, and responsible teaching in a public school in the greater Columbus area; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing. Repeatable to the required 15 cr hrs. For additional information, see the *College of Education Bulletin*. This course is graded S/U.

**602 Personal Health Promotion U G 3**

An advanced study of personal health promotion; extensive reading and reporting in selected health areas.

Au Qtr. 3 hrs arr. Prereq: 200 or grad standing.

**603\* Current Progress in Disease Control U G 2**

Authorities in medicine and health sciences will interpret how current findings may affect disease prevention and control; newer knowledge of cancer, dental caries, etc., will be discussed.

Sp Qtr. 2 hrs arr. Prereq: 4th yr grad standing in a health science area.

**604 Education for Human Sexuality U G 3**

Review of current information on health and sexuality for educators and school personnel; consideration of the sex education curriculum, teaching methods, materials, and controversial issues.

Su, Au, Wi, Sp Qtrs. 3 hrs arr. Prereq: 200, 622 or equiv, Sociol 330, or permission of instructor.

**605 Health Counseling U G 3**

To provide educators and counselors opportunity to develop skills and knowledge to advise students and clients confronted with personal health concerns.

Wi Qtr. 3 hrs. arr. Prereq: 5 hrs of psych; admission to College of Education.

**612 Alcohol and Drug Education U G 3**

The study and development of techniques and programs to prevent or reduce psycho-social problems associated with drug misuse.

Au Qtr. 1 3-hr cl or 2 1½-hr cl. Prereq: 622 or permission of instructor.

**621 School Health Services U G 3**

Consideration of healthful school living and health services, including health appraisal, counseling, educational adjustments, communicable diseases, and emergency programs.

Su, Au, Sp Qtrs. 3 hrs arr. Prereq: 200 or equiv. For majors and minors in health sciences and health education.

**622 Teaching of Health U G 5**

Principles, methods, materials, and resources involved in teaching health; direct, correlated, and integrated curriculum patterns; individual teaching experience.

Su, Au, Wi Qtrs. 5 hrs ar. Prereq: 621. Not open to students with credit for 610.

**623 Organizational Relationships in Health Education U G 3**

The relation of health education to the community health program; organization and administration of official and nonofficial health agencies are studied.

Su, Wi Qtrs. 3 hrs arr. Prereq: 622 or permission of instructor.

**633\* Historical Perspectives on Health Education U G 3**

Traces the evolution of health education as a discipline by emphasizing the individuals and events that contributed to its development.

Wi Qtr. 3 hrs arr. Prereq: Sr standing or above.

**650 Health Promotion in the Workplace U G 3**

Theoretical and pragmatic aspects of conducting health promotion programs in the workplace; discussion of rationale and relative effectiveness of various health components.

Au Qtr. 1 2½-hr cl. Prereq: Sr standing or above.

**651 Health Program Planning U G 5**

Competency development in formulating and implementing health programs; includes understanding community organization and the health care system, administration, and sustaining programs.

Au, Sp Qtrs. 2 2½-hr cl. Prereq: 201 or permission of instructor.

**692 Workshop U G 1-8**

Intensive study of a health education topic of interest to the participants for the purpose of developing sound principles and practice relating to it.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: Teaching experience or written permission of workshop director. Repeatable with not more than 4 workshops to a maximum of 12 cr hrs.

**693 Individual Studies U G 1-4**

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr or grad standing and permission of adviser. A total of not more than 30 cr hrs of individual study (any 693) will apply toward graduation for undergrad students, 15 cr hrs for the master's degree and 30 cr hrs for the doctoral degree. This course is graded S/U.

**694 Group Studies in Health Education U G 1-5**

Group studies on special topics and proposed courses in health education.

Su, Au, Wi, Sp Qtrs. 3 hrs arr. Prereq: Advanced standing in professional hith edu program or written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 cr hrs, including cr hrs in ED-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions are not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work and theology. Cross-listed in Ed Policy & Leadership, Ed Theory & Practice, Human Services Ed, Physical Education and Recreation Education.

**700.01 Seminar on Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

**700.04 Interprofessional Practicum in Clinical Settings U G 3, 5**

Interprofessional teamwork in clinical settings.  
Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in Education, Law, Nursing, Psychology, Social Work, Allied Medicine, Medicine, and Theology through Columbus Cluster.

**701\* Comparative Study of World Health Problems U G 3**

A study of world health problems, their influences on all people, the variety and magnitude of problems, and the methods being used to solve them.

Wi Qtr. 3 hrs arr. Prereq: 103, or equiv.

**702 Health After 60 U G 3**

Designed to develop an awareness of the health concerns of the elderly and a willingness to help improve their quality of life.

Sp Qtr. 1 3-hr cl. Prereq: 4th yr standing in a health science or behavioral science area or permission of instructor.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**788 Practicum for School Nurses U G 3-15**

A supervised opportunity is provided to practice the school nursing specialty in a public school health services setting.

Au, Wi, Sp Qtrs. 1 conf per wk; hrs of field exp varies with cr hrs. Prereq: Written permission of area advisor. Limited to student nurses and RN's with courses required for school nurse certification. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**789 Practicum in Health Education U G 2-15**

Opportunity is provided for putting educational research and theory into practice by teaching, administration, and agency experience under supervision in university, school, and agency situations.

Su, Au, Wi, Sp Qtrs. 1 arr conf and arr field exp. Prereq: Written permission of instructor and departmental adviser based upon submitted evidence of appropriate knowledge and skill in the selected course. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**801\* Professional Preparation of Health Educators G 3**

Review and development of standards, guidelines, and evaluation of programs preparing health educators; innovative and future expectations for the profession are explored.

Sp Qtr. 3 hrs arr.

**802 Health Behavior Change in Adulthood and Later Years G 3**

Review of research on changing health behavior; includes smoking cessation, weight control, hypertension, stress, health promotion programs, and changing health behavior after 65.

Wi Qtr. 1 2½-hr cl. Prereq: BS or BA degree in Health Education or related field; advanced grad standing.

**821\* Survey of Research in Health Education G 3**

Through study and review of research literature in health education, the professional in education will analyze and synthesize existing and needed areas and topics for research.

Au Qtr. 3 hrs arr. Prereq: MS or MA degree in hlth edu or allied field; advanced grad standing.

**822†\* Curriculum in Health Education G 3**

A review and study of concepts and practices in school health curricula and development of current and proposed curriculum models and designs.

Wi Qtr. 3 hrs arr. Prereq: MSc or MA degree in hlth edu or allied field; advanced grad standing.

**823†\* Evaluation in Health Education G 3**

Identification and application of various techniques for evaluating, learning, processes, and programs in health education.

Sp Qtr. 3 hrs arr. Prereq: MSc or MA degree in hlth edu or allied field; advanced grad standing.

**894 Group Studies in Health Education G 1-5**

Advanced studies in special problems and issues in health education.

Au, Wi, Sp Qtrs.

**995 Seminar in Health Education G 3**

3 hrs arr. Prereq: Grad standing in hlth edu or health related profession, or permission of instructor. Repeatable to a maximum of 30 cr hrs.

- A— Philosophical Perspectives on School Health Education
- B— Philosophical Perspectives on Community Health Education
- C— Health Education Issues in Patient Education
- D— High-Level Wellness and Health Education
- E— Moral and Ethical Issues in Health Education
- F— International Perspectives of Health Education
- G— Health Education and Related Health Manpower
- H— Theories of Educational Technology in Health Education
- I— Theories of Behavioral Change in Health Education
- J— Administrative Issues in Health Education
- K— Writing for the Health Professional

**999 Research G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Hebrew

256 Cunz Hall, 1841 Millikin Road, 292-9255

**101 Elementary Hebrew I U 5**

Conversation, reading, writing, vocabulary building, phonetics, and grammar.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**102 Elementary Hebrew II U 5**

Reading of modified passages from modern Hebrew literature supplemented with additional study of grammar.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**103 Intermediate Hebrew I U 5**

Reading of passages from various periods of Hebrew literature; review of salient points of elementary grammar and introduction to elements of classical Hebrew.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 102 or 110. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.



**104 Intermediate Hebrew II U 5**

Reading of modern Hebrew short stories, poems, and essays; special emphasis on oral practice and Hebrew idioms.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 103 or 112. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**110† Intensive Elementary Hebrew U 5 or 10**

Elementary Hebrew for students wishing to acquire the basic language skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equiv to 101 and 102.

Au Qtr. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102. Students with credit for 101 or equiv may not register for more than 5 cr hrs.

**112† Intensive Modern Hebrew U 5, 10, or 15**

Su Qtr. 15 cl. Enrollment limited to 25 students. Prereq: Permission of instructor. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or the equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in Hebrew will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. No audit. FL Admis Cond course.

**241 Culture of Contemporary Israel U 5**

Introduction to the culture of modern Israel: historical roots, socio-political institutions and developments, and literary and artistic creations reflecting the realities of contemporary Israeli society.

Su, Au, Wi, Sp Qtrs. 5 cl. H241 (honors) may be available to students in an honors program or by permission of instructor. BER/LAC/LAR course.

**271 Modern Hebrew Literature in Translation U 5**

Modern Hebrew literature; works of major writers from the middle of the 18th century to the present; emphasis on European literary influences.

Au, Wi, Sp Qtrs. 5 cl. Prereq: English 110 or 111 or equiv. BER/LAC course.

**272†\* Medieval Hebrew Literature in Translation U 3**

Post-biblical and medieval Hebrew literature from the Near East, North Africa, and Europe.

Sp Qtr. 3 cl. Prereq: English 110 or 111 or equiv. BER/LAC course.

**273 Biblical and Post-Biblical Hebrew Literature in Translation U 5**

Reading and analysis of selected chapters from the Hebrew scriptures and post-biblical Hebrew writings representative of major historical, cultural, and literary trends.

Su, Au, Wi, Sp Qtrs. 5 cl. H273 (honors) may be available to students in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. BER/LAC/LAR course.

**274 Women in Biblical and Post-Biblical Hebrew Literature U 3**

An examination of the social, legal, and religious position of women as they appear in the Hebrew scriptures and Rabbinic writings.

Au, Wi, Sp Qtrs. 3 cl. Prereq: English 110 or 111 or equiv. Taught in English. BER/LAC course.

**293 Individual Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**294 Group Studies U 1-15**

Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

**373 Prophecy in the Bible and Post-Biblical Literature U 5**

The dynamics of Israelite prophecy and apocalyptic in the context of ancient Near Eastern culture.

Au Qtr. 5 cl. Prereq: 273.

**375 The Holocaust in Literature and Film U 5**

Holocaust through Hebrew literature and film focusing on artistic problems of representation and religious, psychological, and cultural implications.

Sp Qtr. 2 2-hr cl. Prereq: English 110 or 111 or equiv. Taught in English. Not open to students with credit for 275.

**401 Review of Grammar and Composition U 5**

Review of Hebrew grammar; composition on assigned topics and some practice in translation.

Wi Qtr. 5 cl. Prereq: 104.

**402 Intermediate Hebrew Conversation and Composition U 5**

Vocabulary building, practice in speaking Hebrew, conversation and composition dealing with social and everyday aspects of Israeli life.

Sp Qtr. 5 cl. Prereq: 104 or permission of instructor.

**403†\* Hebrew Syntax U 3**

Parts of speech, types of sentences, word order, and syntactic analysis.

Au Qtr. 3 cl. Prereq: 104 or permission of instructor.

**421 Modern Hebrew Short Story U 5**

Reading and discussion of masterpieces of modern Hebrew short stories in the 19th and 20th centuries.

Au Qtr. 5 cl. Prereq: 104 or permission of instructor. BER/LAC course.

**422 Modern Hebrew Poetry U 3**

Reading and discussion of masterpieces of modern Hebrew poetry in the 19th and 20th centuries.

Sp Qtr. 3 cl. Prereq: 104 or permission of instructor. BER/LAC course.

**425 Readings in the Mishnah U 3**

Reading and discussion of the ideas and teachings of the Mishnah as they are reflected in the unique Mishnaic language.

Au Qtr. 3 cl. Prereq: 104 or permission of instructor.

**601† Biblical Hebrew Grammar U G 5**

Introduction to the phonology, morphology, and syntax of the Biblical Hebrew idiom.

Au Qtr. 5 cl. Prereq: 104 or permission of instructor.

**604† Hebrew Phonetics and Vocalization U G 3**

Rules of Hebrew phonetics and vocalization; lectures and abundant practical exercises.

Au Qtr. 3 cl. Prereq: 104 or permission of instructor.

**605† Hebrew Morphology U G 5**

The morphological system of Hebrew; the interrelations between roots and forms.

Wi Qtr. 5 cl. Prereq: 604 or permission of instructor.

**611† Introduction to the History of the Hebrew Language U G 3**

Genealogical and typological relations within the Semitic family, a survey of Biblical, Mishnaic, and modern Hebrew.

Au Qtr. 3 cl. Prereq: 104 or permission of instructor.

**621† The Bible as Literature: Selected Readings U G 3**

Sp Qtr. 3 cl. Prereq: 421 or 422 or 423.

**671 The Problem of Evil in Biblical and Post-Biblical Literature U G 5**

Study of the vexing problem of evil; the seeming contradiction between tradition and experience; extensive readings and discussions of appropriate biblical and post-biblical materials.

Wi Qtr. 4-5 cl. Prereq: 273 or 274 or equiv or permission of instructor. Given in English, but grad students and undergrad Hebrew majors will read the texts in the original Hebrew.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr. hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**721 Studies in Hebrew Poetry U G 5**

Advanced study of specific poetic periods, figures, and/or topics involving extensive readings and discussions of appropriate primary and secondary materials.

Su, Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 10 hrs of Hebrew at the 400 level and above, or equiv. Repeatable to a maximum of 15 cr hrs.

**722 Studies in Hebrew Prose U G 5**

Advanced study of specific periods, authors, and/or genres of prose writing (literary or non-literary) involving extensive reading and discussion of primary and secondary materials.

Su, Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 10 hrs of Hebrew at the 400 level or above, or equiv. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

Offers students with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course; work in conference, library, or phonetics laboratory.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Hebrew courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**801† Teaching Hebrew at the College Level G 5**

Methods and techniques for teaching Hebrew at the college level.

Au Qtr. 2 wk intensive workshop followed by 1 2-hr wkly cl. Prereq: Teaching assoc in JANELL or permission of instructor. For students enrolled in this course, the minimum number of hrs required for graduation is increased by 5 cr hrs.

**811 Seminar in Hebrew Studies G 5**

Intensive investigation of a selected topic or problem in Hebrew linguistics, philology, literature, or literary culture.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**998 Research in Hebrew G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## History

106 Dulles Hall, 230 West 17th Avenue, 292-2674

**111 Western Civilization: Antiquity to the Seventeenth Century U 5**

Ancient civilizations (Near East, Greece, Rome); barbarian invasions; medieval civilizations (Byzantium, Islam, Europe); Renaissance and Reformation.

Su, Au, Wi, Sp Qtrs. 5 cl. H111 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 100.01. This course is available for EM credit. BER/LAC/LAR course. SS Admis Cond course.

**112 Western Civilization: Seventeenth Century through Modern Times U 5**

Political, scientific, and industrial revolutions; nationalism; the two world wars; decline of empires; the cold war.

Su, Au, Wi, Sp Qtrs. 5 cl. H112 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 100.01 or 111 or permission of dept. Not open to students with credit for 100.02 or 100.03. This course is available for EM credit. BER/LAC/LAR course. SS Admis Cond course.

**131 Asian Civilizations I U 5**

Comparative survey of development of Asian civilizations, Neolithic Age to 1500; includes ancient Near East, India, China, Japan; rise of Islam, Buddhism, Hinduism; Mongol domination.

5 cl. Not open to students with credit for 140.01 or 140.02 or 140.03. BER/LAC/LAR course. SS Admis Cond course.

**132 Asian Civilizations II U 5**

Comparative survey of Asian civilizations, 1500 to modern era; includes age of great dynasties (Ottoman, Safavid, Mughal, Ming, Ch'ing, Tokugawa); imperialism; nationalism; independence.

5 cl. Prereq: 131. Not open to students with credit for 140.01 or 140.02 or 140.03. BER/LAC/LAR course. SS Admis Cond course.

**151 American Civilization, 1607-1877 U 5**

The political, constitutional, social, and economic development of the United States from the colonial period through the era of Reconstruction.

Su, Au, Wi, Sp Qtrs. 5 cl. H151 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 150.01. This course is available for EM credit. BER/LAC/LAR course. SS Admis Cond course.

**152 American Civilization since 1877 U 5**

The political, constitutional, social, and economic development of the United States from the era of Reconstruction to the present.

Su, Au, Wi, Sp Qtrs. 5 cl. H152 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 150.01 or 151. Not open to students with credit for 150.02. This course is available for EM credit. BER/LAC/LAR course. SS Admis Cond course.

**171 Latin American Civilizations I U 5**

Latin American political, social, economic, and cultural history from Pre-Columbian times to independence (1825) focussing on imperialism, religion, minorities, war, and rebellion.

Au, Wi Qtrs. 5 cl. Not open to students with credit for 150.03 or 161. BER/LAC/LAR course.

**172 Latin American Civilizations II U 5**

Latin American political, social, economic, and cultural history from independence (1825) to the present focussing on neo-colonialism, instability, underdevelopment, militarism, and minorities.

Wi, Sp Qtrs. 5 cl. Not open to students with credit for 150.03 or 161 or 240. BER/LAC/LAR course.

**201 Ancient Mediterranean Civilizations U 5**

Comparative historical analysis of ancient Mediterranean civilizations: emphasis on Greek and Roman societies, urbanism, empires, literature, arts; from the Bronze Age to Fall of Rome. Balcer, Gregory, and Rosenstein.

5 cl. Not open to students with credit for 110.01. BER/LAC course. SS Admis Cond course.

**211 Great Figures of Modern Europe U 5**

Study of modern European history through an examination of the lives and times of great figures. Rule.

5 cl. BER/LAC course. SS Admis Cond course.

**212 Great Figures in British Civilization U 5**

British civilization as seen through the lives of men and women who illustrate the economic, social, political, cultural, and intellectual life of their times. Roberts.

5 cl. SS Admis Cond course.

**215 Contemporary Europe, 1914 to Present U 5**

World War I; political, social, and economic developments of the interwar period; Communism, Nazism; World War II; Europe between East and West; moves toward unification. Beyerchen.

5 cl. SS Admis Cond course.

**220 Russian Civilization U 5**

A survey of Russian civilization from earliest times to 1917; geography, peoples, culture, social, political, and religious institutions, and the impact of Westernization. Curran, Levin, and Wildman.

5 cl. BER/LAC course. SS Admis Cond course.

**223 History of Afro-Americans in the Age of Slavery U 5**

Origins of modern slavery; its development in the US: the evolution of Afro-American life and culture from 1619 to the end of the Civil War. Hamilton.

5 cl. Not open to students with credit for 260; or Black St 223 or 345. Cross-listed in Black Studies. BER course.

**224 History of Afro-Americans from Emancipation to the Present U 5**

The rise of debt peonage among blacks; the formation of the northern ghetto; the Civil Rights Movement and beyond. Hamilton.

5 cl. Not open to students with credit for 260; or Black St 224, or 238 and 345. Cross-listed in Black Studies. BER course.

**231 Great Figures in American History U 3**

Main trends of American development through the medium of biography; historical background, comparison and contrast of leading figures, and analysis of motivation and character. Bowers and Van Tine.

3 cl. SS Admis Cond course.

**233 Scientific Revolutions in Their Social Context U 5**

Models of scientific innovation and study of selected examples of the great scientific revolutions: Copernican, Chemical, Darwinian, Quantum, Genetic, and others. Burnham.

5 cl. BER/LAC course. SS Admis Cond course.

**235 Technology and Social Change in Historical Perspective U 5**

Human, cultural, philosophic impact and significance of technological revolutions; analysis of representative turning points in technology affecting technical creativity and its interrelation with human values.

5 cl. BER/LAC course. SS Admis Cond course.

**237 History of Women in the United States U 5**

American women and the economic, social, and political factors responsible for women's status in society from the colonial period to the present.

5 cl. BER/LAC course. SS Admis Cond course.

**251 Ancient and Medieval Jewish Civilization U 5**

Jewry and Judaism from remote antiquity to the 15th century A.D. Cohen and Raphael.

5 cl. BER/LAC course. SS Admis Cond course.

**252 Modern Jewish Civilization U 5**

Jewry and Judaism from the 15th century to the present. Cohen and Raphael.

5 cl. BER/LAC course. SS Admis Cond course.

**254 The Holocaust: Destruction of European Jewry, 1933-1945 U 5**

The historical background of the holocaust; dimensions of destruction; world response; post war trials; moral and philosophical issues. Raphael.

5 cl. SS Admis Cond course.

**258 Religion and Politics in the Islamic World U 5**

Elaboration of prophetic message of Islam into governing principles of classical Islamic polity; further evolution of these principles in later Islamic states. Findley and Waldman.

5 cl. BER/LAC course. SS Admis Cond course.

**265 Traditional East Asia to 1800 U 5**

East Asian history from the earliest times to 1800: Confucianism, Buddhism, Shinto; Chinese culture and its spread to Japan; the growth of indigenous Japanese culture. Bartholomew, Chang, and Chu.

5 cl. SS Admis Cond course.

**266 Modern East Asia since 1800 U 5**

Political, economic, cultural, and ideological change in East Asia; interregional and international relations; the feudal legacy, nationalism, and communism. Bartholomew, Chang, and Chu.

5 cl. BER/LAC course. SS Admis Cond course.

**268 History of Contemporary China U 5**

Origins of the Chinese revolution and the rise of Mao; problems of political integration, economic growth, and social transformation. Chu.

5 cl. SS Admis Cond course.

**270 History of Religions U 5**

An introduction to the academic study of religion through an historical overview and comparison of selected folk and world religious traditions. Chang and Waldman.

5 cl. BER/LAC course. SS Admis Cond course.

**272 American Religious History U 5**

American religious history from the colonial period to the present; emphasis on pluralism and ethnicity in American religion, especially Protestantism, Catholicism, and Judaism. Bowers and Roth.

5 cl. SS Admis Cond course.

**281 History of World War II U 3**

An examination of the background, diplomacy, course, strategy, and critical turning points of World War II. Guilmartin, Murray, and Millett.

3 cl. SS Admis Cond course.

**282 The Vietnam War U 3**

An examination of the causes, conduct, and effects of the revolutionary war in Vietnam from 1945 to 1975. Guilmartin, Millett, and Murray.

3 cl.

**285 Great Issues in American Constitutional History U 3**

A study of selected issues that have influenced the development of the federal Constitution. Benedict.

3 cl. SS Admis Cond course.

**286 History of American Criminal Justice U 3**

History of crime, criminal law, law enforcement agencies, prisons, and juvenile courts. Watts.

3 cl. SS Admis Cond course.

**290 Survey of American Intellectual History U 5**

American thought from colonial times to the present with emphasis on the relation between dominant ideas and the behavior and beliefs of the population. Burnham.

5 cl. SS Admis Cond course.

**294 Group Studies in History U 3-5**

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Repeatable to a maximum of 15 or hrs.

**295 History of Canada U 5**

Canada from exploration to the present: political, economic, social, and cultural development. Hopkins.

5 cl. SS Admis Cond course.

**302 The Historian's Craft U 5**

Problems and practice in historical research, analysis, and presentation. Dale, Rothney, and Waldman.  
5 cl.

**400 Critical Issues of the 20th-Century World U 5**

Contemporary global problems in historical perspectives; war and threat of war; intercontinental, racial, ideological, and economic conflicts; the search for a new world order.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 111 and 112, or 131 and 132, or 151 and 152; or 171 and 172; and 5 cr hrs in social and behavioral sciences. Not open to students with credit for 209. BER/LAC/LAR course.

**510 The Ancient City U G 5**

Cities in the ancient Near East, Greece, and Rome, with an emphasis on their physical form and historical importance.

Gregory.

5 cl.

**523 Women in the Western World: Ancient Civilization to the Industrial Revolution U G 5**

Women and the economic, social, and political factors responsible for their status in society. Robertson and Rupp.

5 cl.

**524 Women in the Western World: the Industrial Revolution to the Present U G 5**

A continuation of 523. Robertson and Rupp.

5 cl.

**529 Modern Greece U G 5**

Greece from 1453 to the present; Turkish rule, War of Independence, emergence of the modern state; focus on political, social, and cultural developments. Gregory.

5 cl.

**563 Emergence of Modern America, 1877-1917 U G 5**

Intensive study of political, economic, social, and cultural change in the U.S. from 1877 to 1917; industrialism, unionism, Populism, progressivism, immigration, and urbanization. Kerr and Van Tine.

5 cl.

**564 Business in American Life: Colonial Times to Present U G 5**

The strategy and structure of American business expansion colonial times to the present; the roles businesses have played in society and politics. Blackford, Childs, and Kerr.

Su, Au, Wi, Sp Qtrs. 5 cl.

**565 America in Crisis, 1917-1945 U G 5**

Intensive study of political, economic, social, and cultural change in the U.S. from 1917-1945; World War, isolationism, internationalism, prosperity, and depression. Childs, Kerr, and Van Tine.

5 cl.

**566 Contemporary America since 1945 U G 5**

Intensive study of political, economic, social, and cultural change in the U.S. since 1945; war, cold war, social pluralism, institutional conflicts, and domestic crises. Watts and Hogan.

5 cl.

**568 Business in the Age of Modernization U G 5**

A historical comparison of the development of modern forms of business and business management in Great Britain, the United States, and Japan. Bartholomew and Blackford.

5 cl.

**570 History of the Early Christian Church in the West U G 5**

Christian origins and expansion to 600 A.D.; conflict with Roman Empire; internal dissent; basic institutions; Christian intellectuals; the imperial established church; monasticism; papacy; the barbarians and Christianity. Lynch.

5 cl.

**571 History of the Medieval Church in the West U G 5**

The late ancient and early medieval church; the papacy and the Carolingians; the Cluniac reform; the new monasticism; heresy; the problems of late medieval Christianity. Pegues.

5 cl.

**585 History of American Law U G 3**

The development of American legal institutions, procedures, sanctions, and remedies in their social and political context in the formative era.

3 cl.

**598 Senior Colloquium U 5**

The nature of historical judgment and interpretation: the roles of evidence, approach, and presuppositions.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Sr history majors or written permission of instructor.

**H599 Honors Proseminar in History U 5**

Designed to give honors undergraduates experience in the analysis of historical problems through a reading and research program designed to meet their special needs.

1 2-hr cl. Prereq: 302, and 10 cr hrs of 100-200 level history courses, with a 3.20 cumulative pt-hr ratio.

**General Prerequisites for Courses Numbered 600 and 700**

*Unless otherwise indicated the prerequisites for 600- and 700-level courses are four quarter courses in the social science field, of which at least two must be in history. Not open to freshmen and sophomores except with permission of instructor.*

**600 The Ancient Near East U G 5**

The ancient history of Mesopotamia, Egypt, Anatolia, Persia, Israel, and the Levant to the establishment of the Persian Empire; readings from sources in translation. Balcer.

5 cl.

**601 Greek History U G 5****601.01 History of Archaic Greece**

History of Greece from the early Stone Age communities to the end of the Greek-Persian conflicts, 479 B.C.; readings in the sources in translation. Balcer.

5 cl.

**601.02 History of Classical Greece**

History of classical Greece from the foundation of the Delian Confederacy to the death of Alexander III; reading in the sources in translation. Balcer.

5 cl.

**601.03 History of the Eastern Mediterranean during the Bronze Age**

Studies in the civilizations of Minoan Crete and Helladic/Mycenaean Greece in relationship with the Trojans, Hittites, Philistines, Cypriotes, Syrians, and Egyptians. Balcer.

5 cl.

**602 Hellenistic Near East U G 5**

The cultural history of the Achaemenid and Hellenistic kingdoms from c. 600 to 31 B.C., with emphasis upon Greek and Persian interaction in the Near East. Balcer.

5 cl.

**603 Roman History U G 5****603.01 Roman Republic**

A history of Rome from the founding to the fall of the Roman Republic; readings in ancient sources in translation. Rosenstein.

5 cl.

**603.02 Early Roman Empire, 31 B.C.-A.D. 180**

The Roman Empire at its height; internal politics, imperial administration, and religion; readings from sources in translation. Rosenstein.

5 cl.

**603.03 Later Roman Empire, A.D. 180-476**

Decline and fall of the Empire in the West; military, social, economic problems; religious conflicts; emergence of Germanic kingdoms; readings from sources in translation. Gregory.  
5 cl.

**605 Jewish History****605.01 Second Commonwealth U G 3**

The restoration of Jewish statehood following the first Babylonian Exile and the history of Palestinian Jewry and of the Jewish Diaspora down to the 2nd Century A.D. Raphael.  
Au Qtr. 5 cl.

**605.04 Jews in the Western World in Modern Times U G 3**

Changing patterns of Jewish life since the Jews' struggle for Emancipation; migration movements and the shift of Jewish centers in Europe and the New World. Raphael.  
3 cl.

**605.05 Jewish Settlement in Palestine U G 5**

Jewish immigration to Palestine, rise of modern Zionism, the British Mandate, and the state of Israel. Raphael.  
5 cl.

**605.06 History of Ancient Israel U G 5**

The rise of the Jewish nation and religion in the Ancient Near East; settlement in Canaan; the Israelite and Judean monarchies until their conquest by Assyria and Babylonia. Raphael.  
5 cl.

**605.10 Messiahs and Messianism in Jewish History U G 5**

The history of the Jewish messianic idea and of Jewish messianic leadership, from ancient to modern times.  
5 cl.

**605.13 Judaism and Christianity in Conflict U G 5**

The conflict between church and synagogue from New Testament times to the high Middle Ages. Cohen.  
5 cl.

**606 Medieval History U G 5****606.04 Medieval Europe I**

Europe 300-1100; Roman decline, Christianization of Europe, barbarian invasions; Carolingian renaissance; early feudalism and manorialism; investiture contest; crusades; economic and intellectual revival. Lynch.  
5 cl.

**606.05 Medieval Europe II**

Europe 1100-1500; the 12th-century Renaissance; classical feudalism; rise of Christendom; the great economic revival; universities and scholasticism; religious dissent; and 14th-century crises. Pegues.  
5 cl.

**607 Byzantine History U G 5****607.01 Early Byzantine Empire**

History of Byzantium, A.D. 330-843, with emphasis on internal political and religious developments and the relationship between Byzantium and its neighbors. Gregory.  
5 cl.

**607.02 Later Byzantine Empire**

History of Byzantium, A.D. 843-1453, with emphasis on internal developments, the Crusades, the Fall of the City, and the legacy of Byzantium. Gregory.  
5 cl.

**609 The Renaissance U G 5**

The literary, artistic, and intellectual achievements primarily of Renaissance Italy against the background of economic, political, and social developments in western Europe. Kittelson and Pegues.  
5 cl.

**610 The Reformation U G 5**

The rise and growth of Protestantism and the Catholic Reformation of the 16th century against the background of economic, political, and social developments in western Europe. Kittelson.  
5 cl.

**History of Biology**

See Botany 601.

**612 Europe, 1600-1775 U G 5**

A study of the rise of the absolute state, the changing diplomatic alignments, and the Enlightenment. Rule.  
5 cl.

**613 French Revolution and Napoleon U G 5**

The background of the Revolution; the social bases and political schisms of the first three Revolutionary governments, 1789-1795; the program and role of Napoleon. Rule.  
5 cl.

**614 Europe, 1815-1914 U G 5**

Nationalism, the democratic movement, economic growth, imperialism, and cultural advance from the Congress of Vienna to World War I. Rogel.  
5 cl.

**615 France, 1815-1914 U G 5**

France's transformation from a rural, traditional society to a modern, industrial society, and the relation of this transformation to 19th-century political and intellectual movements. Rothney.  
5 cl.

**616 France in the 20th Century U G 5**

The impact on France of two world wars, the depression and decolonization, with emphasis on the breakdown of the political system and the emergence of a new society from the wreckage of the old. Rothney.  
5 cl.

**618 German History U G 5****618.01 Germany in the 19th Century**

Political, social, economic, and cultural developments from the Prussian reform movement to World War I, with emphasis on German unification and the origins of the war. Beyerchen.  
5 cl.

**618.02 Germany in the 20th Century**

World War I; the Weimar period; Hitler and the Third Reich; and the two Germanies after 1945. Beyerchen.  
5 cl.

**619 European Labor in the 20th Century U G 5**

History of European labor movements and of working class life from World War I to the present.  
Sp Qtr. 2 2-hr or 5 cl. Prereq: 112 or a course in 20th century European history recommended.

**622 Intellectual History of 19th-Century Europe U G 5**

Ideas and ideologies in their social and economic setting, including laissez-faire liberalism, Darwinism, and the various schools of socialism.

5 cl. Not open to students with credit for 622.01.

**625 History of European Warfare U G 5****625.01 History of European Warfare from the Renaissance to 1870**

An analysis of military affairs and of their interaction with political and diplomatic history. Murray.  
5 cl.

**625.02 History of European Warfare from 1870 through World War II**

A continuation of 625.01; an analysis of the military and diplomatic events which shaped the world in the 20th century. Murray.  
5 cl.

**626 East Central Europe U G 5****626.01 Habsburg Empire, 1740-1918**

A century and a half of Habsburg history with emphasis on Austria's responses to Enlightenment ideas, the French Revolution, social change, industrialization, and emerging nationalisms. Rogel.  
5 cl.

**626.02 Balkans from the Ottoman Conquest to World War I**

An historical survey of the Balkan peoples; political, social, economic, and cultural development; emphasis on the emergence and expression of Balkan nationalisms. Rogel.  
5 cl.

**626.03 East Central Europe since 1919**

A survey of East Central Europe from the end of World War I to the present. Rogel.  
5 cl.

**628 Revolutionary Russia, 1880-1914 U G 5**

The revolutions of 1905 and 1917 from the standpoint of the revolutionary movements of the 19th century and changing social and political forces.  
5 cl.

**630 Medieval England U G 5**

England from the Roman conquest to 1485; Anglo-Saxon society and institutions; the Norman conquest; law and Parliament; social, intellectual, and economic growth of the English people. Pegues.  
5 cl.

**631 Tudor and Stuart England U G 5**

The religious, political, economic, imperial, and intellectual development of the English people from 1485 to 1714, with special attention to the constitutional struggles of the 17th century. Roberts.  
5 cl.

**632 England in the 18th and 19th Centuries U G 5**

The course of political, social, and intellectual change, of industrial and commercial growth in Hanoverian and Victorian England. Garland.  
5 cl.

**633 England in the 20th Century U G 5**

A study of Britain since 1900 with special emphasis on the rise of the Labour party and the development of the social welfare state. Garland.  
5 cl.

**635 History of Russia to 1725 U G 5**

A survey from the origins of the Russian state to the end of the reign of Peter the Great. Levin.  
5 cl.

**636 History of Russia, 1725-1914 U G 5**

A survey from the end of the reign of Peter the Great to the outbreak of World War I. Curran.  
5 cl.

**637 Soviet Russia U G 5**

Beginning with the background and events of the revolution of 1917, analysis of developments in Russian history from World War I to the present. Curran, Levin, and Wildman.  
5 cl.

**638 Russian Intellectual History U G 5**

A survey of the main currents of Russian social, political, economic, and philosophical thought in the 19th century; liberalism, conservatism, and socialism. Curran.  
5 cl.

**640 Islamic Spain and North Africa U G 5**

Major problems in history and culture of Islamic Spain (712-1492) and North Africa (641-present), including Egypt; special emphasis on nomadism and revivalism. Waldman.  
5 cl.

**641 Early Islamic Institutions, 600-1258 U G 5**

Origins and early development of selected fundamental Islamic institutions in their historical and cultural context. Waldman.  
5 cl.

**642 Ottoman Empire, 1300-1800 U G 5**

The Ottoman Empire from frontier warrior band to world power to "Sick Man of Europe"; factors in upsurge and decline; cultural interaction with the West. Findley.  
5 cl.

**644 Middle East in the Modern Era, 1800 to Present U G 5**

Modernization of the Middle East, from the early autocratic modernizers to the present; economic, social, political, and intellectual transformations; modern Middle East in world perspective. Findley.  
5 cl.

**645 History of India and Central Asia U G 5****645.02 Muslim India**

The Sultanate and Mughal Empires (1000-1707 A.D.); emphasis on imperial institutions and the interaction of Hindu and Muslim societies. Dale.  
5 cl.

**646 Modern China, 1800-1949 U G 5**

History of modern China with emphasis on cultural contact between China and the West. Chang and Chu.  
5 cl. Not open to students with credit for 697 prior to Au Qtr 1985.

**647 History of Traditional Japan U G 5**

Problems regarding the political, intellectual, and institutional history of Japan prior to the arrival of Perry (1851). Bartholomew.  
5 cl.

**648 History of Modern Japan U G 5**

Political, social, and intellectual history of Japan from the beginning of the Meiji Period (1868) to the present. Bartholomew.  
5 cl.

**649 History of Business in Japan U G 5**

An examination of the interaction between business, technology, and scientific changes between 1600 and the present. Bartholomew.  
4 or 5 cl.

**650 History of Spain, 1469-Present U G 5**

Unification of the thrones; the rise and fall of empire; rivalry with Portugal; Napoleon to the Civil War; Franco and the Post-Franco Era. Andrien.  
5 cl.

**651 Latin American History U G 5****651.01 Colonial Latin American History**

Mayan, Aztec, and Incan Empires; the Spanish and Portuguese conquests and the transplanting of Iberian institutions; the Baroque period; the Bourbon Century and the Enlightenment. Andrien.  
5 cl.

**651.02 South America since Independence**

Nation-building in the South American republics during the 19th and 20th centuries with special emphasis on Argentina and Brazil. Cooper.  
5 cl.

**651.03 Central America and the Caribbean since Independence**

Political, economic, and cultural history of West Indies (Cuba, Haiti, Dominican Republic, etc.) and Central America (Panama, Guatemala, Nicaragua, etc.) and relations with United States. Cooper.  
5 cl.

**651.06 History of Brazil**

History of Brazil during colonial and independence periods with major emphasis on the 19th and 20th centuries. Cooper.  
5 cl.

**651.07 History of Mexico**

History of Mexico during precolonial, colonial, and independence periods with emphasis on the 19th and 20th centuries. Cooper.

5 cl.

**656 American Colonies U G 5**

The transplanting of European civilization to North America, the resultant international rivalries, and the political, social, and economic life of the English colonies to 1763. Bowers and Pestana.

5 cl.

**658 American Revolution and New Nation, 1763-1800 U G 5**

A continuation of 656 but may be taken separately; primary emphasis on social, intellectual, and economic factors. Bowers.

5 cl.

**659 Jeffersonian and Jacksonian Democracy, 1800-1840 U G 5**

A continuation of 658 but may be taken separately; primary emphasis on ideological, cultural, and political factors. Roth.

5 cl.

**660 Westward Movement since 1783 U G 5**

The westward spread of settlement and the influence of the westward movement on American development. Blackford.

5 cl.

**661 Slavery Controversy in the United States U G 3**

The social system of the Old South; the various aspects of the controversy; secession and the impact of war. Dillon.

3 cl.

**662 Civil War and Reconstruction U G 3**

The causes, character, and consequences of America's intersectional war and the post-war settlement. Benedict and Dillon.

3 cl.

**668 American Military Policy U G 5****668.01 American Military Policy, 1607-1918**

American military policy from the colonial period through World War I and America's emergence as a world power; emphasis on war-waging and military institutions. Millett.

5 cl.

**668.02 American Military Policy, 1919 to Present**

Emphasis on collective security, nuclear strategy, and the reciprocal impact of society and military institutions. Millett.

5 cl.

**670 American Foreign Policy to 1914 U G 5**

Emphasis on these topics: the revolution, neutral rights, the Monroe Doctrine, continental expansion, the Civil War, overseas expansion, and Far Eastern policy. Zahniser.

5 cl.

**671 American Foreign Policy since 1914 U G 5**

Emphasis on these topics: United States relations with Europe, Far East, and Latin America since 1914. Zahniser and Hogan.

5 cl.

**676 Topics in Women's History U G 5**

In-depth analysis of selected topics in American, European, and/or Third World women's history; topic varies by quarter.

2 2½-hr cl. Repeatable to a maximum of 15 cr hrs.

**680 History of American Science U G 5**

Social and intellectual factors from colonial beginnings to professionalization; Darwinism; American preeminence; the modern scientific crisis. Burnham.

5 cl. Prereq: Jr standing.

**683 History of Ohio U G 3**

A general survey of state history—social, economic, religious, and political—from the Indian period to the present time. Hopkins.

3 cl.

**684 History of American Medicine U P G 3**

Disease, public health, and the profession and practice of medicine in America from colonial times to the present. Burnham.

3 cl.

**685 United States Constitutional History: The Federal System U G 5**

Historical development of constitutional powers and functions of the federal and state governments and intergovernmental relationships. Benedict.

5 cl.

**686 United States Constitutional History: Rights and Immunities U G 5**

Historical development of the constitutional rights and immunities of the citizen. Benedict.

5 cl.

**688 American Urban History U G 5****688.01 American Urban History since Colonial Times**

A survey of American urban development, and its impact on national history, from the beginning of colonization to the present. Hopkins.

5 cl.

**689 American Labor History U G 5****689.01 History of the American Labor Movement**

Evolution of trade unionism in American life from the late 18th century to the present; attention to critical evolution of changes in labor history. Van Tine.

5 cl.

**691 The History of Chinese Intellectual Tradition U G 5**

A study of the major trends of thought in the Chinese tradition with emphasis on the axial age transformation.

Au Qtr. 5 cl. Prereq: 131 or 265 recommended.

**692 Workshop U G 1-8**

Arr.

**693 Individual Studies U G 1-3**

Individual study in some field of historical development; designed to allow the student to work on a problem of particular interest.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

The investigation of particular problems in various fields of history.

Repeatable to a maximum of 30 cr hrs.

**695 Classical China, 1400 B.C. to 220 A.D. U G 5**

The political, economic, and cultural life of ancient China from the Shang dynasty to the end of the Han dynasty. Chang and Chu.

5 cl.

**696 Traditional China, 220 A.D. to 1800 A.D. U G 5**

The political, economic, and cultural life of medieval China from the Age of Disunity to 1800 A.D. Chang and Chu.

5 cl.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Arr. Prereq: Written permission of dept chairperson.

Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**699 Chinese-American Relations in the 19th and 20th Centuries U G 5**

The commercial, cultural, and diplomatic relations between China and the United States with emphasis on the period since 1912. Chu.

5 cl.

**702 Advanced Topics in National Security U G 5**

Examination of various topics in the field of national security; survey of literature in field; identification of major problem areas.

1 cl. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs including credit in NSP Stds 702.

Cross-listed in National Security Policy Studies.

Cross-referenced in Political Science.

**702.01 US-USSR Foreign Policy and Strategic Rivalry**

The politics and diplomacy to nuclear weapons since 1945.

**702.02 International Conflict and Peace**

Introduction to theoretical and empirical literature in the study of conflict and peace.

**702.03 Arms Control**

Examination of the US-Soviet strategic arms competition and the threat of nuclear proliferation.

**702.04 Defense Economics and Weapons System Acquisition**

The role of defense investment in national security and the process of weapons system acquisition.

**702.05 Development of the Military Profession**

The development of the military profession in America from the Revolution to the 1970's.

**702.06 War since 1945**

The conduct and results of conventional war in the post-1945 world.

**702.07 North Atlantic Treaty Organization**

The study of the origins, institutions, and evolution of the North Atlantic Treaty Organization in the broader contexts of West European politics and US-West European relations.

**706 Studies in Medieval History****706.01 Advanced Readings in Medieval History U G 5**

Advanced reading course in sources and monographs on the principal issues and problems in medieval history, with a stress on bibliography. Gregory, Lynch, and Pegues.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 20 cr hrs.

**706.02 Late Medieval Paleography and Diplomatics U G 3**

Cursive hands in literature and diplomas, 1200-1500; the development of chanceries; notariats, secretariats, and the science of diplomatics; exercises with facsimiles, slides, and microfilm. Pegues.

Prereq: Permission of instructor.

**708 Studies in Ancient History U G 5**

An intensive study of selected problems and sources in ancient history (Near Eastern, Greek and/or Roman); readings in the primary and secondary materials. Balcer, Gregory, and Rosenstein.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 20 cr hrs.

**710 Studies in Renaissance or Reformation History U G 5**

Principal issues in the history of the Renaissance or the Reformation. Kittelson.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**712 Studies in Early Modern European History U G 5**

Selected topics in western European history of the 17th and 18th centuries. Rule.

Prereq: 612 or permission of instructor. Open only to grad students and by permission to srs majoring in history.

Repeatable to a maximum of 15 cr hrs.

**714 Studies in French History since 1815 U G 5**

An intensive study, through reading and discussion of standard works and recent scholarship, of the chief interpretative problems of modern French history. Rothney.

Prereq: Grad standing or by permission to srs majoring in history. Repeatable to a maximum of 10 cr hrs.

**726 Studies in Jewish History U G 5**

An intensive study of selected issues in Jewish history; emphasis on problems posed by available source material and by current research in the area. Cohen and Raphael.

Prereq: Grad standing or by permission to srs majoring in history. Repeatable to a maximum of 15 cr hrs.

**727 Studies in Islamic History U G 5**

Selected topics in Islamic history and historiography. Dale, Findley, and Waldman.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**730 Studies in European History, 1815-1914 U G 5**

Political and social impact of Industrial Revolution; authoritarianism vs. liberalism; church vs. state; nationalism; imperialism; emphasis on methods of historical research and documentary analysis.

Open only to grad students and by permission to srs majoring in history.

**731 Studies in European History, 1914 to Present U G 5**

Political, social, and economic developments; World Wars I and II; Communism, Nazism; present-day Europe; emphasis on methods of historical research and documentary analysis.

Open only to grad students and by permission to srs majoring in history. Repeatable to a maximum of 10 cr hrs.

**732 Studies in German History U G 5**

Exploration of selected topics of 19th and 20th century German history; emphasis on methods of historical research and documentary analysis. Beyerchen.

Prereq: 618 or equiv. Open only to grad students and by permission to srs majoring in history.

**738 Studies in British History U G 5**

Selected problems in British history since 1760; emphasis on different schools and interpretations, on methods of research, and an analysis of documents. Garland and Roberts.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**740 Studies in Russian and Soviet History U G 5**

An intensive study of problems in selected periods of Russian history. Curran, Levin, and Wildman.

Open only to grad students and by permission to srs majoring in history. Repeatable to a maximum of 15 cr hrs.

**751 Studies in Latin American History U G 5**

An intensive study of problems in selected periods of Latin American history. Andrien and Cooper.

Prereq: Grad standing or permission of instructor for srs majoring in history or a cognate Latin American field. Repeatable to a maximum of 10 cr hrs.

**752 Readings in African-American History U G 5**

Readings in the evolution of black culture, economics and family life, race relations, and the emergence of class stratification within the black community. Hamilton.

1 2½-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 10 cr hrs including cr hrs in Black St 752. Cross-listed in Black Studies.



**761 Studies in Mid-19th Century American History U G 5**

An intensive study of selected topics with emphasis on historiography and bibliography. Dillon.

Repeatable to a maximum of 10 cr hrs.

**765 Studies in Quantitative History U G 5**

Prereq: Permission of instructor.

**765.01 Studies in Quantitative History I**

A methodological introduction to the literature of quantitative history. Watts.

2 2-hr cl.

**767 Studies in Military History U G 5**

Selected topics and periods in military history; emphasis on recent scholarship.

Sp Qtr. 1 2½-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**768 Studies in Military Thought and Strategy U G 5**

Analysis and comparison of the most influential writers on the theory and practice of warfare including Thucydides, Machiavelli, Clausewitz, Mahan, Fuller, and Liddell Hart. Millett and Murray.

Prereq: 668 or equiv.

**770 Studies in the History of American Foreign Policy U G 5**

Studies in the main problems of American foreign policy with primary emphasis on basic literatures and selected primary materials. Zahniser and Hogan.

Prereq: 670. Repeatable to a maximum of 15 cr hrs.

**772 Studies in Recent United States History U G 5**

Readings in selected topics in American history since 1898. Burnham, Hartmann, Kerr, Van Tine, and Watts.

Prereq: Undergrads by permission of instructor. Repeatable to a maximum of 20 cr hrs.

**773 Studies in Business History U G 4**

Readings in the growth of capitalism, the rise of the modern corporation, government-business relations, business and society. Blackford and Childs.

1 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 8 cr hrs.

**781 Studies in Women's History U G 5**

An intensive reading course designed to prepare graduate students in the field of women's history; topic varies. Robertson and Rupp.

1 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 20 cr hrs.

**H783 Honors Research U 3-5**

Informal conferences to allow full scope to the Initiative of the student; a special topic is assigned and results are tested by papers and special examinations.

Prereq: 4th yr standing and 40 cr hrs in history courses with a grade of A in at least half of the history courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in history. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**784 Readings in American Constitutional and Legal History U G 5**

An intensive investigation of standard works as well as influential and seminal articles in American constitutional and legal history. Benedict.

1 3-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**785 Studies in Early American History U G 5**

Studies in the basic historical literature of 17th and 18th century America. Benedict.

Repeatable to a maximum of 10 cr hrs.

**786 Colloquium in the Philosophy of History, Historiography, and the Historian's Skills I U G 5**

A two-quarter colloquium on the principles of historical thought, historiography, and methods of historical research.

2 2-hr cl. Prereq: Permission of instructor. 786 must be followed by 787. Credit for 786 given on completion of 787. Required of MA and PhD candidates in history.

**787 Colloquium in the Philosophy of History, Historiography, and the Historian's Skills II U G 5**

Continuation of 786.

2 2-hr cl. Prereq: 786. Required of MA and PhD candidates in history.

**788 Studies in American Urban History U G 5**

A detailed examination of several themes in the growth of urban America. Hopkins.

Prereq: 688 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**798 Studies in Modern Chinese History U G 5**

Readings in documents and monographs; 19th and 20th century Chinese history. Chang and Chu.

5 cl. Repeatable to a maximum of 15 cr hrs. Knowledge of Chinese desirable but not required.

**800 Seminar in Renaissance and Reformation History G 5**

Research topic to be announced. Kittelson.

Repeatable to a maximum of 15 cr hrs.

**801 Seminar in German History G 5**

Research topic to be announced. Beyerchen.

Repeatable to a maximum of 15 cr hrs.

**802 Seminar in Russian and Soviet History G 5**

Curran, Levin, and Wildman.

Repeatable to a maximum of 15 cr hrs.

**803 Seminar in British History G 5**

Garland and Roberts.

Repeatable to a maximum of 15 cr hrs.

**804 Seminar in East Central European History G 5**

Research topic to be announced. Rogel.

Repeatable to a maximum of 15 cr hrs.

**805 Seminar in French History G 5**

Rule and Rothney.

Repeatable to a maximum of 15 cr hrs.

**807 Seminar in Medieval History G 5**

Gregory, Lynch, and Pegues.

Repeatable to a maximum of 15 cr hrs.

**808 Seminar in Ancient History G 5**

Topic to be announced. Balcer, Gregory, and Rosenstein.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**827 Seminar in the History of the Islamic World G 5**

Research topic to be announced. Dale, Findley, and Waldman.  
Repeatable to a maximum of 15 cr hrs.

**845 Seminar in East Asian History G 5**

Research topic to be announced. Bartholomew, Chang, and Chu.  
Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**850 Seminar in History G 5**

Research topic to be announced.  
Su, Au, Wi, Sp Qtrs. Prereq: Written permission of grad chairperson. Repeatable to a maximum of 15 cr hrs.

**851 Seminar in Latin American History G 5**

Research topic to be announced. Andrien and Cooper.  
Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**862 Seminar in Jewish History G 5**

Cohen and Raphael.  
Repeatable to a maximum of 15 cr hrs.

**867 Seminar in American History to 1800 G 5**

Research topic to be announced. Bowers and Roth.  
Repeatable to a maximum of 15 cr hrs.

**868 Seminar in 19th-Century American History G 5**

Research topic to be announced. Benedict, Dillon, and Roth.  
Repeatable to a maximum of 15 cr hrs.

**869 Seminar in 20th-Century American History G 5**

Research topic to be announced. Blackford, Burnham, Hogan, Hopkins, Kerr, and Van Tine.  
Repeatable to a maximum of 15 cr hrs.

**870 Seminar in Selected Topics in American History G 5**

Research topic to be announced. Burnham, Hogan, Hopkins, Van Tine, and Zahniser.  
Repeatable to a maximum of 15 cr hrs.

**873 Seminar in United States Military History G 5**

Millett.  
Prereq: 668 or equiv. Repeatable to a maximum of 15 cr hrs.

**881 Seminar in Women's History G 5**

Research seminar; topic varies. Robertson and Rupp.  
1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**890 Topical Research Seminar I G 5**

A two-quarter seminar on topical themes with emphasis on innovative types of research.  
1 2-hr cl. Prereq: PhD standing or permission of instructor.  
Repeatable to a maximum of 10 cr hrs. 890 must be followed by 891. Credit for 890 given on completion of 891.

**891 Topical Research Seminar II G 5**

Continuation of 890.  
1 2-hr cl. Prereq: 890.

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.  
Repeatable by permission.

**999 Research in History G Arr**

Research for thesis or dissertation purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# History of Art

100 Hayes Hall, 108 North Oval Mall, 292-7481

**111 Introduction to Art U 5**

A study of meaning of visual form and imagery in architecture, sculpture, and painting.  
Su, Au, Wi, Sp Qtrs. 5 cl. BER/LAC/LAR course. VPA Admis Cond course.

**205 Great Monuments of Western Civilization U 5**

Major buildings of Western civilization from antiquity to the present in their historical and cultural contexts.  
J. Morganstern.

**210 Western Art I U 5**

A survey of ancient and early Medieval art.  
Su, Au, Wi, Sp Qtrs. 5 cl. H210 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. VPA Admis Cond course.

**211 Western Art II U 5**

A survey of Romanesque, Gothic, Renaissance, and Mannerist art.  
Su, Au, Wi, Sp Qtrs. 5 cl. H211 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. VPA Admis Cond course.

**212 Western Art III U 5**

A survey from Baroque to contemporary art.  
Su, Au, Wi, Sp Qtrs. 5 cl. H212 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. VPA Admis Cond course.

**213 Asian Art U 5**

A survey of Far Eastern art: India, China, and Japan.  
Andrews and S. Huntington.  
Au, Sp Qtrs. 5 cl. Prereq: 2nd yr standing or 1st yr standing with credit for 111. BER/LAC/LAR course.

**216 Introduction to African Art and Archaeology U 5**

The art and archaeology of Africa with emphasis on the historic cultures of the Rock Art (8,000 B.C.), Egypt (3000 B.C.), Nok (900 B.C.), Igbo-Ukwu (695 A.D.), Ife (1200 A.D.), and Benin (1400-1900 A.D.). Odita.  
Au, Sp Qtrs. 5 cl. BER/LAC/LAR course. VPA Admis Cond course.

**294 Group Studies U 2-5**

The investigation of particular problems in various fields of the history of art.  
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.  
Repeatable to a maximum of 15 cr hrs.

**300 Art of the World's Religions U 5**

The art traditions of the Jewish, Christian, Islamic, Buddhist, and Hindu religions as related to tenets of the religions.  
5 cl.

**400 Women Artists of the Western World U 5**

A chronological, sociohistorical examination of women artists and their contribution to western art.  
5 cl. Prereq: 212 or permission of instructor.

**450 An Introduction to Artistic Media and Techniques U 5**

A survey of the major historical and contemporary artistic media and techniques.  
Wi Qtr. 2 2-hr cl. Prereq: 10 cr hrs in hist art or permission of instructor. Not open to BFA hist art majors.

**493 Individual Studies U 2-5**

Individual study in some field of historical development; designed to allow the student to work on a problem of particular interest.  
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.  
Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**505 Contemporary African Art: 1920 to Present U G 5**

Survey of the development of 20th-century African art. Oditā.  
5 cl. Prereq: 2nd yr standing.

**515 Renaissance Art in Italy U G 5**

A study of architecture, sculpture, and painting in Italy during the 14th, 15th, and 16th centuries. Melnikas.  
5 cl. Prereq: 2nd yr standing. Not open to hist art majors. BER/LAC course.

**519 Great Masters of the 17th and 18th Centuries U G 5**

A study concentrating upon the individual careers of Caravaggio, Bernini, Rubens, Rembrandt, Velazquez, Poussin, Watteau, Tiepolo, David, and Goya. Haeger.  
Prereq: Jr standing. Not open to hist art majors or to students with credit for 631, 632, or 634.

**520 Modern European Art U G 5**

European art from about 1800 to the present, with emphasis on the outstanding masters of painting and sculpture. Groseclose.  
5 cl. Prereq: 2nd yr standing. Not open to hist art majors or to students with credit for 635 or 636. BER/LAC course.

**525 Medieval Art U G 5**

An introduction to the art and architecture of eastern and western Christendom from the 3rd to the 13th century. J. Morganstern and Verzar.  
5 cl. Prereq: 2nd yr standing. Not open to hist art majors.

**530 American Art U G 5**

A study of architecture, painting, and sculpture in America. Groseclose.  
5 cl. Prereq: 2nd yr standing. Not open to hist art majors or to students with credit for 637 or 638. BER/LAC course.

**550 Art of Paris U G 5**

Study of the painting, sculpture, buildings, and public and private spaces created in and for the people and the city of Paris. Herban.  
Sp Qtr. 5 cl. Prereq: 2nd yr standing.

**576 The Arts of China U G 5**

An overview of the visual arts of China and their cultural context from prehistoric times to the modern era. Andrews and J. Huntington.  
Sp Qtr. 5 cl. Prereq: Soph standing or permission of instructor.

**610 African Art and Archaeology I U G 5**

A study of the art and culture of west Africa with emphasis on stylistic, historic, and archaeological implications. Oditā.  
5 cl. Prereq: 216 or permission of instructor.

**611 African Art and Archaeology II U G 5**

The study of the art and culture of central and southern Africa with emphasis on stylistic, historic, and archaeological implications. Oditā.  
5 cl. Prereq: 216 or permission of instructor.

**614 Comparative Study of African and European Art U G 5**

A critical study of the relationships between African and European art involving theory and practice. Oditā.  
5 cl. Prereq: Permission of instructor or jr standing.

**615 Contemporary Art of West Africa U G 5**

Painting and sculpture of Senegal, Sierra Leone, Liberia, Ivory Coast, Ghana, Dahomey, Nigeria, etc., focusing on history, style, and culture. Oditā.  
5 cl. Prereq: 216 or 505 or 610 or 614 or permission of instructor.

**616 Contemporary Art of Central Africa U G 5**

Painting and sculpture of Cameroons, Gabon, Republic of Congo, Zaire, Zambia, Sudan, Uganda, etc., focusing on history, style, and culture. Oditā.  
5 cl. Prereq: 216 or 505 or 610 or 614 or permission of instructor.

**617 Contemporary Art of East and Southern Africa U G 5**

Painting and sculpture of Ethiopia, Kenya, Tanzania, Mozambique, Southern Rhodesia, Malawi, South Africa, etc., focusing on history of style and culture. Oditā.  
5 cl. Prereq: 216 or 505 or 611 or 614 or permission of instructor.

**618 Contemporary Art of North Africa U G 5**

20th-century painting, sculpture, and tapestries of Morocco, Algeria, Libya, United Arab Republic, Mauritania, Mali, Niger, and Chad, focusing on history, style, and culture.  
5 cl. Prereq: 216 or 505 or 610 or 611 or 614 or permission of instructor.

**620 The Art and Archaeology of Preclassical Greece U G 5**

Art and archaeology in Greece from the neolithic through archaic periods (6,000-480 B.C.). Fullerton.  
5 cl. Prereq: 210 or 10 cr hrs in classics or ancient history or permission of instructor.

**621 Ancient Egyptian Art and Archaeology U G 5**

A specialized study of the architecture, sculpture, painting, and minor arts of ancient Egypt. Crane.  
Wi Qtr. 5 cl. Prereq: 210 or equiv with permission of instructor.

**622 The Art and Archaeology of Classical and Hellenistic Greece U G 5**

Art and archaeology in the Greek world during the classical and Hellenistic periods (480-31 B.C.). Fullerton.  
5 cl. Prereq: Either 210, 10 cr hrs in classics, 10 cr hrs in ancient history, or permission of instructor.

**623 Ancient Roman Art U G 5**

Sp Qtr. 5 cl. Prereq: Either 210, 10 cr hrs in classics, 10 cr hrs in ancient history, or permission of instructor.

**623.01 Etruscan and Early Roman Art**

Art and architecture in Italy before the Roman Empire, including prehistoric Italy, Etruria, Magna Graecia, and the Roman Republic. Fullerton.  
Not open to students with credit for 623.

**623.02 Art and Architecture of the Roman Empire**

Art and architecture in Rome and the provinces from Augustus to Constantine. Fullerton.  
Not open to students with credit for 623.

**624\* Early Christian and Byzantine Art U G 5**

The Christian art of the Mediterranean region to the 8th century and the art of the Byzantine Empire to the 15th century. J. Morganstern.  
Au Qtr. 5 cl. Prereq: 210 or permission of instructor.

**625\* Romanesque and Gothic Art U G 5**

The art of Western Europe from the Carolingian period to the 14th century. A. Morganstern, J. Morganstern, and Verzar.  
5 cl. Prereq: 210 and 211 or permission of instructor.

**627 Northern Renaissance Art U G 5**

Art of the Low Countries, France and Germany from 1350 to 1550—with emphasis on Campin, Jan van Eyck, van der Weyden, van der Goes, Durer, Grunewald, Bosch, and Breughel. A. Morganstern.  
Sp Qtr. 5 cl. Prereq: 211 or permission of instructor.

**628 Precursors to the Renaissance Art of Italy U G 5**

The establishment of Florentine and Siennese schools of painting during the 13th and 14th centuries as reflected in the works of Giotto and Simone Martini. Melnikas.  
Au Qtr. 5 cl. Prereq: 211 or equiv with permission of instructor.

**629 15th-Century Italian Art U G 5**

A selective study of painting and sculpture of the Quattrocento. Melnikas.  
Wi Qtr. 5 cl. Prereq: 211 or equiv with permission of instructor.

**630 16th-Century Italian Art U G 5**

A study of the major artists of the High Renaissance and Mannerist periods in Italy. Richardson.

Sp Qtr. 5 cl. Prereq: 211 or equiv with permission of instructor.

**631 Baroque Art in Italy, France, and Spain U G 5**

Painting, sculpture, and architecture in Italy, France, Spain, 1590-1700. Richardson.

Au Qtr. 5 cl. Prereq: 212 or equiv with permission of instructor.

**632 17th-Century Art in the Netherlands U G 5**

Flemish and Dutch painting in the Golden Age, with emphasis on Rubens, Van Dyck, Rembrandt, Hals, and Vermeer. Haeger.

5 cl. Prereq: 212 or equiv with permission of instructor.

**634 Art of the 18th Century in Europe U G 5**

The development of architecture, painting, and sculpture from the late Baroque and Rococo to Historicism. Haeger.

5 cl. Prereq: 212 or equiv with permission of instructor.

**635 19th-Century European Art U G 5**

5 cl. Prereq: 212 or permission of instructor. Not open to students with credit for 635.

**635.01 19th-Century European Art, 1800-1848**

Neo-classical and Romantic art with emphasis on France, Great Britain, Germany, and Spain. Herban.

**635.02 19th-Century European Art, 1848-1896**

Realist, Impressionist, and Symbolist art in Europe and Great Britain, including developments in architecture. Herban and Ciszewycz.

**636 20th-Century European Art U G 5**

5 cl. Prereq: 212 or permission of instructor. Not open to students with credit for 636.

**636.01 20th-Century European Art, 1896-1914**

Matisse, Picasso, Art Nouveau, and the Style Moderne; a survey of the foundations of modern art (Expressionism, Cubism, Futurism, and Non-representational). Herban and Ciszewycz.

Sp Qtr.

**636.02 20th-Century European Art, 1914-1945**

European art between the World Wars: Post-Cubism, Dada and Surrealism, Bauhaus and Constructivism, and abstraction. Ciszewycz.

**637 American Painting and Sculpture to 1900 U G 5**

History of painting and sculpture in America from colonial times to the end of the 19th century. Groseclose.

5 cl. Prereq: 212 or permission of instructor, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**638 Modern American Painting and Sculpture, 1900-1945 U G 5**

American painting and sculpture from 1900 to 1945. Groseclose.

5 cl. Prereq: 212 or permission of instructor, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**640 Contemporary Art since 1945 U G 5**

Visual arts of Europe and the United States from 1945 to the present. Groseclose.

Prereq: 212 or permission of instructor.

**644 Russian Art U G 5**

Russian art and architecture, beginning with the Byzantine influence on Muscovy to Soviet art today. Ciszewycz.

5 cl. Prereq: 211 or 212 or permission of instructor. Not open to students with credit for 236.

**645 Modern Russian Art U G 5**

Avant-garde movements in Russian art of the 19th and early 20th centuries. Ciszewycz.

Prereq: 212 or permission of instructor.

**650\* Monasteries and Cathedrals in the Middle Ages U G 5**

Major buildings of the early Christian, Byzantine, Carolingian, Romanesque, and Gothic periods. J. Morganstern.

Au Qtr. 5 cl. Prereq: 210 or 211 or permission of instructor.

**651\* Romanesque and Gothic Sculpture U G 5**

Development of sculpture from the 11th through the 14th centuries, with emphasis on architectural programs, their contexts, iconography, and style. A. Morganstern and Verzar.

5 cl. Prereq: 210 or 211 or permission of instructor.

**652 Medieval and Renaissance Manuscript Illumination U G 5**

A chronological survey of medieval and Renaissance illuminated manuscripts in the West. Melnikas.

Sp Qtr. 5 cl. Prereq: 210 or 211 or permission of instructor.

**661\* Art and Archaeology of the Ancient Near East U G 5**

A specialized study of the art and archaeology of the ancient Near East focusing on the cultures of the Mesopotamian valley and surrounding areas. Crane.

5 cl. Prereq: 210 or equiv with permission of instructor.

**663 Islamic Art and Architecture U G 5**

The art and architecture of Islam within cultural and historical settings emphasizing differences in regional developments, and unity provided by a common culture. Crane.

5 cl. Prereq: 210 or 213 or equiv with permission of instructor.

**670 Buddhist Art: Theory and History U G 5**

An analysis of Buddhism and its bearing on the art of India, Nepal, Tibet, China, and Japan. J. Huntington.

5 cl.

**671\* Art of India I U G 5**

Art and architecture of India from prehistoric times through the Gupta period, ca. 500 A.D. stressing relationship to religious and cultural developments. S. Huntington.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**672\* Art of India II U G 5**

Art and architecture of India from the Gupta period, ca. 500 A.D. to the Muslim period stressing relationship to religious and cultural developments. S. Huntington.

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**673 Art of Central Asia U G 5**

An analysis of the cross currents of style and iconography that constitute the pre-Muslim art of Central Asia. J. Huntington.

5 cl.

**674 Art of Nepal and Tibet U G 5**

A study and analysis of the major aspects of style, iconography, and historical sequence as found in the arts of Nepal and Tibet. J. Huntington.

5 cl.

**675 Art of India III U G 5**

A survey of architecture and painting after the Muslim conquest with emphasis on intermixture of indigenous and foreign styles. S. Huntington.

Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**676 Hindu Iconography U G 5**

A survey of Hindu iconography from a historical viewpoint emphasizing the development and meaning of specific deities. S. Huntington.

5 cl.

**677\* Chinese Art U G 5**

5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**677.01 Pre-Buddhist**

Examination of archaeological finds in China, ca. 4000 B.C. to the beginning of the 10th century A.D.; with emphasis on recent discoveries. J. Huntington.

**677.02 Buddhist**

Examination of the Buddhist arts of China; with emphasis on religious expression and content. J. Huntington.

**678\* Chinese Art: Painting U G 5**

5 cl. Prereq: 213 or permission of instructor. Fulfills in part the ASC advanced English composition requirement. Not open to students with credit for 678.

**678.01 Chinese Painting to 1368**

A survey of Chinese painting from the Han period through the Yuan dynasty, with emphasis on style, subject matter, and cultural context. Andrews.

**678.02 Chinese Painting from 1368 to the Present**

A survey of Chinese painting from the Ming dynasty to the present, with emphasis on style, subject matter, and cultural context. Andrews.

**681\* Japanese Art: Proto-Historic and Buddhist U G 5**

Selected topics in the history of Japanese arts of the Proto-Historic period and the Buddhist religion. J. Huntington.

Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**682\* Japanese Art: Painting and Prints U G 5**

Selected topics in the history of Japanese pictorial art and related subjects. Andrews.

Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**690 Selected Topics U G 5**

Topics to be announced.

5 cl. Each decimal subdivision repeatable to a maximum of 15 or hrs.

**690.01 Western Art****690.02 Asian and Non-Western Art****693 Individual Studies U G 2-5**

Advanced study for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****704 Studies in African Art and Archaeology U G 3-5**

Studies in African art emphasizing problem identification, concept organization, library research, and individual criticism. Odita.

Au Qtr. 3-5 cl. Prereq: 610 or 611 or permission of instructor. Repeatable to a maximum of 15 or hrs.

**705 Studies in Contemporary African Art U G 3-5**

Introduction to research in 20th-century African art.

Au Qtr. Arr. Prereq: 505 or 615 or 616 or 617 or 618 or permission of instructor. Repeatable to a maximum of 15 or hrs.

**710 Studies in Art Theory and Criticism U G 3-5**

Investigations of theories of art and their applications. Ludden.

Not open to students with credit for 839. Repeatable to a maximum of 15 or hrs.

**715 Research Methods in Art History U G 3**

Investigations of source materials, bibliography, concepts, and techniques of research.

Au Qtr. Prereq: 20 or hrs in hist art.

**717 Studies in Medieval Art U G 3-5**

Selected problems in architecture, painting, sculpture, and the minor arts from the Early Christian through the Byzantine and Gothic periods. Melnikas, A. Morganstern, J. Morganstern, and Verzar.

Wi Qtr. Prereq: 624 or 625 or permission of instructor. Repeatable to a maximum of 15 or hrs.

**718 Studies in Italian Renaissance Art U G 3-5**

Selected problems in painting, sculpture, and architecture of Italy in the 14th, 15th, and 16th centuries. Melnikas and Richardson.

Wi Qtr. 3-5 cl. Prereq: 515 or 629 or 630, or permission of instructor. Repeatable to a maximum of 15 or hrs.

**720 Studies in Near Eastern Art and Archaeology U G 3-5**

Selected problems in the art and archaeology of the Near East. Crane and Fullerton.

Sp Qtr. Prereq: 621 or 661 or 663, or equiv with permission of instructor. Repeatable to a maximum of 15 or hrs.

**722 Studies in Ancient Greek and Roman Art U G 3-5**

Selected problems in the art of Ancient Greece and Rome, 11th century B.C. to 4th century A.D. Fullerton.

3-5 cl. Prereq: 622 or 623 or permission of instructor. Repeatable to a maximum of 15 or hrs.

**724 Studies in Northern Baroque Art U G 3-5**

Selected problems in the painting, sculpture, and architecture of Belgium, Holland, Germany, and France in the 17th and 18th centuries. Haeger.

3-5 cl. Prereq: 632. Repeatable to a maximum of 15 or hrs.

**725 Studies in Italian Baroque Art U G 3-5**

Selected problems in the painting, sculpture, and architecture of the 17th century. Richardson.

Sp Qtr. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**726 Studies in Spanish Art U G 3-5**

Selected studies in the architecture, sculpture, painting, and minor arts of Spain. Richardson.

Wi Qtr. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**737 Studies in Modern Art U G 3-5**

Selected studies in the art of the United States or modern Europe.

3-5 cl. Prereq: 635 or 636 or 637 or 638, or permission of instructor. Repeatable to a maximum of 15 or hrs.

**745 Studies in Russian Art U G 3-5**

Selected problems in the painting, sculpture, and architecture of Russia. Ciszewycz.

Prereq: 645 or permission of instructor. Repeatable to a maximum of 15 or hrs.

**747 Studies in Late Gothic and Northern Renaissance Art U G 3-5**

Selected problems in the art of the Low Countries, Germany, and France from the 14th through the 16th centuries. A. Morganstern.

3-5 cl. Prereq: 627 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**770 Studies in Buddhist Art U G 3-5**

Introduction to research in Buddhist art and iconography. J. Huntington.

3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**771 Studies in the Art of India U G 3-5**

Research problems in the art of India at an introductory level. S. Huntington.

Repeatable to a maximum of 35 cr hrs.

**774 Studies in Inner Asian Art U G 3-5**

Introduction to research in Inner Asian history of art. J. Huntington.

Prereq: 673 or 674 or 677 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**776 Studies in Chinese Art U G 3-5**

Introduction to research in Chinese art historical problems. Andrews and J. Huntington.

Prereq: 677 or 678 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**780 Studies in Japanese Art U G 3-5**

Introduction to research in Japanese art historical problems. Andrews and J. Huntington.

Prereq: 681 or 682 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

A program of study arranged for each student, with individual conferences, reports, and honors thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the hist art courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BFA *with distinction* in hist art. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr. hrs. This course is graded S/U.

**793 Individual Studies U G 2-5**

Advanced study for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**804 Problems in African Art and Archaeology G 5**

Research techniques with emphasis on scholarly methods involving extensive search for available source materials on African art. Odita.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**805 Problems in Contemporary African Art G 5**

Advanced study and specialized research on major topical problems in 20th-century African Art.

Au Qtr. 5 cl. Prereq: Two 600-level courses in contemporary African art or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**816 Museum Problems G 3-5**

An introduction to professional work in museums.

Repeatable to a maximum of 15 cr hrs.

**822 Problems in Ancient Art G 3-5**

Advanced study and specialized research on major topical problems in ancient art. Crane and Fullerton.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**832 Problems in American Art G 2-5**

Groseclose.

Wi Qtr. Prereq: Permission of instructor. Not open to students with a maximum of 15 cr hrs in 932. Repeatable to a maximum of 15 cr hrs.

**893 Individual Studies G 1-5**

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**917 Seminar in Medieval Art G 2-5**

A. Morganstern, J. Morganstern, and Verzar.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**920 Seminar in Italian Renaissance Art G 2-5**

Melnikas and Richardson.

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**930 Seminar in Modern Art G 2-5**

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**970 Seminar in Buddhist Art G 3-5**

Advanced research in Buddhist iconographic problems. J. Huntington.

Prereq: Two of the following: 670, 671, 673, 677, 681, and 770; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**971 Seminar in the Art of India G 2-5**

Research problems in the art of India. S. Huntington.

Repeatable to a maximum of 35 cr hrs.

**976 Seminar in Chinese Art G 3-5**

Advanced studies in the history of Chinese art. J. Andrews and J. Huntington.

Prereq: 677 or 678 or 776 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**980 Seminar in Japanese Art G 3-5**

Advanced studies in the history of Japanese art. J. Andrews and J. Huntington.

Prereq: 681 or 682 or 780 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**999 Research in History of Art G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Home Economics Education

347 Campbell Hall, 1787 Neil Avenue, 292-4487

**289 Introductory Field/Work Experience**

Directed observation-participation experiences in schools, and/or in extension or workplace settings related to teaching home economics. Andrian.

Application for placement must be filed in dept the qtr preceding the experience. Registration one quarter prior to field experience. Open only to students enrolled in home economics teaching major and UVC home economics CAP code. Repeatable to a maximum of 10 cr hrs. These courses are graded S/U.

**289.01 Introductory Field Experience U 1-5**

Directed observation-participation experience in middle and/or secondary schools, or in extension.

Au, Wi, Sp Qtrs. Arr field experience; Au, Wi Qtrs. 1 hr cl. concur or after field experience.

**289.02 Home Economics Occupational Work Experience U 2**

Supervised and directed experience in a work setting related to home economics job training or consumer homemaking.

Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor.

**290 The Profession of Home Economics U 2**

Scope of home economics as a field of study and as a profession.

Au, Wi, Sp Qtrs. Not open to students with credit for Home Ec 290. To be scheduled in the 1st or 2nd qtr of enrollment in HEC.

**294 Group Studies U 2, 3 or 5**

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 or hrs.

**340 Educative Process in Home Economics U 3**

Planning and organizing instructional materials and experiences for non-formal educational setting. Laster or Dohner.

Au, Wi, Sp Qtrs. 2 1/2-hr cl. Prereq: 3rd yr standing with 10 or hrs in home ec major; Fm&Hu Dv 364 or equiv, Fm Res M 341.01 or equiv, and Psych 100 or 300. Not open to H Ec Edu teaching majors.

**341 Introduction to Home Economics Teaching U 3**

Participation in simulated teaching activities with emphasis on planning and on strategies.

Sp Qtr. 1-2-hr cl, 1 3-hr lab. Prereq: Acceptance in H Ec Edu, 2nd yr standing, and prereq or concur: Psych 230.

**440 Vocational Home Economics Programs U 3**

Principles and procedures in developing and administering programs in vocational home economics with consideration of federal-state-local relationships. Andrian.

Au Qtr. 3 cl. Prereq: 341 or equiv, 3rd yr standing, and 2.50 cumulative pt-hr ratio.

**444 Program Planning in Secondary Home Economics U 3**

Consideration of curriculum, instruction, management, evaluation, and other responsibilities of home economics teacher. Dohner.

Wi Qtr. 3 cl, 1/2 day arr. Prereq: 440 and 2.50 cumulative pt-hr ratio.

**446 Program Planning in Home Economics Related Occupations U 3**

Consideration of curriculum, instruction, evaluation, and other aspects of teaching in home economics related occupations. Andrian.

Au Qtr 1 2 1/2-hr cl, arr hrs for observation and participation. Prereq: 440 and 2.50 cumulative pt-hr ratio. For vocational certification only.

**575 Vocational Home Economics Job Training Teaching**

Development of basic knowledge, skills, and attitudes required for vocational certification of new non-certified vocational home economics teachers.

Prereq: Current employment as a vocational teacher. Repeatable to a maximum of 24 or hrs. These courses are graded S/U.

**575.01 Preservice Program U 8**

Su Qtr. 8 hrs/day for 20 days.

**575.02 Inservice I U 2**

Su, Au, Wi Qtrs. Prereq: 575.01 or ED P&L 575.01.

**575.03 Inservice II U 2**

Su, Au, Wi, Sp Qtrs. Prereq: 575.02

**575.04 Inservice III U 2**

Su, Au, Wi, Sp Qtrs. Prereq: 575.03

**575.05 Two Week Follow-up Program U 4**

The refinement of curriculum development, leadership, and human relations skills required by employed, one-year certified vocational teachers.

Su Qtr. 8 hrs/day for 10 days. Prereq: 575.04.

**575.06 Inservice IV U 2**

Au Qtr. Prereq: 575.05. This course is graded S/U.

**575.07 Inservice V U 2**

Au, Wi, Sp Qtrs. Prereq: 575.06.

**575.08 Inservice VI U 2**

Au, Wi, Sp Qtrs. Prereq: 575.07.

**589 Field Experience**

Application for placement must be filed in dept the qtr preceding registration. Each decimal subdivision repeatable to a maximum of 10 or hrs.

**589.01 Home Economics Education U 1-5**

Directed participation in roles and responsibilities of the home economics teacher. Andrian.

Au, Wi, Sp Qtrs: field exper, arr; Au, Wi Qtrs; 1 hr sem. Prereq: 341 and 3rd or 4th yr standing in home ec teaching major. This course is graded S/U.

**589.02 Home Economics Extension U 1-10**

Supervised participation in roles and responsibilities of the extension home economist. Redick.

Su, Au, Sp Qtrs. Arr. Prereq: 3rd or 4th yr standing in home ec and written permission of instructor.

**591 Supervised Home Economics Teaching U 5**

Supervised participation in the responsibilities and activities of the home economics teacher in the regular day school and extended school program.

Sp Qtr. (Au qtr by special permission only.) Full time for 1 qtr for 15 or hrs. Prereq: 444 or 446, 589.01, 2.50 cumulative pt-hr ratio, and 4th yr standing.

**591.01 Designing Instructional Plans**

Concur: 591.02 and 591.03.

**591.02 Implementing Instructional Plans**

Concur: 591.01 and 591.03.

**591.03 Allied Professional Responsibilities**

Concur: 591.01 and 591.02.

**593 Individual Studies U 1-5**

Problems in various phases of home economics education.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in college honors program or eligible for enrollment. Prereq: Completion of individual study plan form. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

**595 Professional Development U 2**

The professional: role in society, career opportunities and goals, securing a position, performance, trends, professional involvement, and continuing development.

Wi Qtr. 1 1/2-hr cl. Prereq: 3rd or 4th yr standing in home ec edu or journal. Not open to students with credit for Home Ec 595.

**660\* Entrepreneurship in Home Economics U G 3**

Application of knowledge to teaching entrepreneurship in home economics in secondary, adult, and higher education and/or formulating plans to become an entrepreneur using home economics skills. Gritzmacher.

Sp Qtr. (Even-numbered years.) 1 2 1/2-hr cl.

**694 Group Studies U G 2, 3 or 5**

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 or hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**740\* Trends in Home Economics U G 3**

An overview of home economics at the elementary, secondary, higher education, and adult levels; general trends in enrollment, curriculum, supervision, administration, and research. Dohner.

Au Qtr. (Even-numbered years.) 1 2½-hr cl.

**741\* Curriculum in Home Economics U G 3**

Critical analysis and development of curriculum in Home Economics in terms of philosophy, design, and adaptability. Laster or Redick.

Sp Qtr. 1 2½-hr cl. Prereq: Advanced undergrad or grad standing.

**743 Research Methods in Home Economics U G 3**

Nature of research in various areas of the field; criteria for setting up a research problem; techniques for collecting and analyzing data. Gritzmacher.

Au Qtr. 1 2½-hr cl. Prereq: Enrollment in home ec honors program or grad standing. Not open to students with credit for 840.

**744\* Evaluation in Home Economics U G 3**

Principles of evaluation, framework for evaluation, procedures for appraising student progress in the attainment of objectives, construction of evaluation instruments, analysis and interpretation of evaluation data. Gritzmacher.

Sp Qtr. (Odd-numbered years.) 1 2½-hr cl.

**745\* Supervision in Home Economics Education U G 3**

Principles, models, and processes of supervision in the context of student teaching and other settings where instruction in home economics takes place. Dohner.

Au Qtr. (Odd-numbered years.) 1 2½-hr cl.

**793 Individual Studies U G 1-5**

Problems in various phases of home economics education.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Completion of individual study plan form. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**842\* Home Economics in Higher Education G 3**

Present status and function of home economics at the higher education level; faculty involvement within a home economics unit and in the overall institutional setting. Dohner.

Wi Qtr. (Odd-numbered years.) 1 3-hr cl. Prereq: 740 or equiv with written permission of instructor.

**843 Seminar in Home Economics Education G 3 or 5**

Wi Qtr. 1 2½-hr cl. Repeatable to a maximum of 15 or hrs.

A—Home Economics Education Research. Wi Qtr. Prereq: 743 or equiv. Gritzmacher.

B—Topics to be announced.

**846\* Home Economics Teaching Strategies and Learning Theory G 3**

Innovative use of teaching methods; relationship to learning theory. Laster.

Sp Qtr. 1 2½-hr cl. Prereq: A course in educational psychology.

**889 Internship G 1-15**

Guided participation to enhance professional competencies in selected areas.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in home ec ed and permission of instructor. Repeatable to a maximum of 15 or hrs in any combination of decimal subdivisions. A maximum of 10 or hrs will apply toward master's degree

requirements. Application with dept must be completed in qtr prior to qtr internship is to take place. Travel and subsistence costs must be borne by the student. These courses are graded S/U.

**889.01 Instruction**

**889.02 Extension**

**889.03 Business, Industry, or Communications**

**889.04 Administration or Supervision**

**894 Group Studies G 2, 3 or 5**

Selected topics in home economics education.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 or hrs.

**899 Interdepartmental Seminar G 1-5**

See 797 Interdepartmental Seminars.

**942\* Administration in Home Economics G 3**

Principles, trends, problems, and evaluative criteria related to home economics units in higher education administrative structure; functions, responsibilities, and qualifications of home economics administrative personnel. Bailey.

Su Qtr. (Even-numbered years.) 1 3-hr cl. Prereq: MS degree in home ec.

**946\* Program Analysis and Design in Home Economics G 3**

Theoretical approach to program development; innovation and experimentation in program design in home economics at different levels; analysis and restructuring of existing programs; climate and strategies for change. Redick.

Sp Qtr. (Odd-numbered years.) 1 2½-hr. Prereq: 846 or written permission of instructor.

**993 Individual Studies G 1-10**

Problems in various phases of home economics education chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Completion of plan for individual study form. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Honors, University

University Honors Center, 220 West 12th Avenue, 292-3135

**H296 University Honors Proseminar U 3-5**

Designed to foster an understanding of concepts, issues, and problems which transcend the boundaries of a single discipline; topic varies.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Fresh or soph standing in an honors program and/or permission of instructor. Repeatable to a maximum of 15 or hrs.

**H596 University Honors Seminar U 3-5**

Designed to foster appreciation, understanding and/or problem-solving skills related to concepts, issues, or problems that transcend the boundaries of a single discipline; topic varies.

Au, Wi, Sp Qtrs. Arr. Prereq: Jr or sr standing in an honors program. Repeatable to a maximum of 15 hrs with permission of University Honors director.



# Horticulture

152 Howlett Hall, 2001 Fyffe Court, 292-3850

## 150 Introduction to Horticulture U 4

A survey course intended to give the non-major an overview of horticultural subject matter and production principles. Prince and Utzinger.

Su, Au, Sp Qtrs. 3 cl, 1 2-hr lab. Not open to students with credit for 111 or 202 or 203.

## 170 Wine in Western Culture U 3

The role of wine in western culture with emphasis on the geographic origins, production, and specific uses of wine types. Dalmasso.

Au, Wi Qtrs. 3 cl.

## General Prerequisites for Courses Numbered 200

*Unless otherwise indicated, the prerequisites for 200-level courses are 45 cr hrs in collegiate courses, exclusive of ROTC and phys ed.*

## 201 Horticultural Science U 4

An overview of the genetic, physiological, environmental, and cultural influences on aesthetic and food crop production and post production quality. D. Miller.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Biology 110 or 113. Not open to students with credit for 200 or Agronomy 200. This course is available for EM credit.

## 231 Landscape Plants I U 3

A laboratory, field, and discussion course studying trees, shrubs, vines, and ground covers used in landscape plantings. Sydnor.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 112. Not open to landscape hort majors.

## 232 Landscape Maintenance U 3

Management of landscape plantings with special emphasis on transplanting, mulching, nutrition, pest control, pruning, physiological disorders, and diagnosing plant problems. Sydnor.

Wi Qtr. 3 cl. Prereq: 231. Not open to landscape hort majors.

## 233 Landscape Plants II U 3

Landscape characteristics and qualities of selected woody plants, their use, seasonal interest, and environmental suitability.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 232. Not open to landscape hort majors.

## 294 Group Studies U 1-5

Special group studies in areas of fruit, vegetable, and florist crops; landscape horticulture; processing and technology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

## General Prerequisites for Courses Numbered 300 and 400

*Unless otherwise indicated, the prerequisites for 300- and 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified courses numbered 100-399.*

## 303 Plant Nutrition for Horticultural Crops U 3

Fundamental concepts of mineral nutrition and horticultural crop growth and development; study of fertilization programs, nutrient monitoring techniques and fertilizer sources, and methods of application. Scheerens.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: Agronomy 240.

## 415 Plant Propagation U 4

Study of the principles and commercial practices involved in the asexual propagation of horticultural plants; facilities, equipment, and pathogen free stock are considered. Hanniford.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 201 or Agronomy 200 and Botany 112. This course is available for EM credit.

## 424 Commercial Floral Design U 2

Introduction to the principles, forms, and mechanics of floral design; aspects of commercial floral design will be emphasized.

Sp Qtr. 1 cl, 1 2-hr lab. Prereq: Jr or sr standing or permission of instructor. Open only to floriculture majors.

## 430 Indoor Plants U 3

The identification, maintenance, and use of plants for interior decoration in the home, office, public buildings, and related locations. Prince.

Wi Qtr. 2 cl, 1 2-hr lab arr. Prereq: 201 or Agronomy 200; Botany 112.

## 431 Herbaceous Ornamental Plants U 5

The identification, culture, and landscape use of bulbs, annuals, herbaceous perennials, and garden roses; identification of weeds and turf management is also covered. Still.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Agronomy 240 and Botany 112.

## 435 Deciduous Shade Trees and Narrowleaf Evergreens U 6

Study of deciduous shade trees and narrow leaf evergreens including their identification, growth habits, ornamental features, environmental adaptation, utilization, and management in the landscape. Still.

Au Qtr. 4 cl, 2 2-hr labs. Prereq: Botany 112. Not open to students with cr for 432.

## 436 Deciduous Flowering Trees and Shrubs, Vines, and Broadleaf Evergreens U 6

Study of deciduous flowering trees, flowering shrubs, vines, and broadleaf evergreens including their identification, growth habits, ornamental features, environmental adaptation, utilization, and management in the landscape. Still.

Sp Qtr. 4 cl, 2 2-hr labs. Prereq: Botany 112. Not open to students with cr for 434.

## 441 Processing of Fruit and Vegetable Products U 5

Fundamentals essential to commercial processing and utilization of fruits, vegetables, and related food products. Proctor.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122.

## 442 Quality Attributes of Fruits, Vegetables, and Related Foods U 5

Identifying, evaluating, and controlling quality attributes of fresh and processed fruits, vegetables, and related products as to consumer acceptance, nutrition, and use. Proctor.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Chem 102 or 122.

## 450 Principles of Vegetable Crop Production U 5

The production and utilization of vegetable crops with emphasis on environmental factors which influence growing and handling of these crops. Erb.

Sp Qtr. 4 cl, 1 2-hr lab.

## 461\* Fruit Tree Physiology and Production U 5

A study of the physiology and growth of woody perennial tree crops and the influence of environmental, cultural, and economic factors on fruit production efficiency. D. Miller.

Au Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 201 or Agronomy 200.

## 462\* Small Fruit Production and Viticulture U 3

Physiology and growth of small fruit plants, including strawberries, blueberries, and grapes; and the influence of environmental, cultural, and economic factors on fruit production efficiency. D. Miller.

Au Qtr. Prereq: 201 or Agronomy 200, and Botany 112.

## 489 Horticultural Industries Experience U 1-6

Ten weeks of planned and supervised practical experience in an approved horticultural enterprise including a written report.

Su, Au, Wi, Sp Qtrs. Prereq: Major standing in hort and permission of instructor. Repeatable to a maximum of 6 cr hrs. Open only to dept majors.

**494 Group Studies U 1-5**

Special group studies in areas of fruit, vegetable, and florist crops; landscape horticulture; processing and technology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**General Prerequisites for Courses Numbered 500**

*Unless otherwise indicated, the prerequisites for 500-level courses are 15 cr hrs in courses in the same discipline numbered 200 or higher, or 10 cr hrs in courses numbered 200 or higher in the same discipline, plus 10 cr hrs in courses numbered 200 or higher in specified allied disciplines; or baccalaureate degree.*

**509 Post-Harvest Physiology of Horticultural Crops U G 3**

The principles of post-harvest physiology, handling and storage of fruits, vegetables, flowers, and ornamentals. Prince.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 431 or 436. Not open to students with credit for 609.

**521 Greenhouse Environment Control U G 5**

Principles and practices of greenhouse operation including construction, heating, cooling, light, temperature, ventilation, moisture, soils, and nutrition. Tayama.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: Botany 112 and Hort 415. Not open to students with credit for 621.

**522 Commercial Floriculture Production I U G 5**

Physiological principles and environmental factors involving photoperiod, thermoperiod, nutrition, moisture, soil, carbon dioxide, and chemical growth regulators involved in the commercial production of selected plants. Tayama.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 521. Not open to students with credit for 622.

**524 Commercial Floriculture—Marketing and Management U G 4**

Fundamentals of retail florist management and principles and practices in the market distribution of floricultural commodities.

Sp Qtr. 2 2-hr cl. Prereq: 521 and Acctg 211. Not open to students with credit for 624.

**533 Management of Commercial Nursery Operations U G 5**

Detailed consideration of factors involving commercial nursery site selection, production, harvesting, and marketing of woody ornamentals and related products. Struve.

Wi Qtr. 4 cl, 3-hr lab. Prereq: 435, Agronomy 240 or permission of instructor. Not open to students with credit for 633. This course is available for EM credit.

**553 Special Topics for Vegetable Crops U G 1**

Selected topics relating to vegetable crop growth, development, and culture.

Sp Qtr. Students may register for a maximum of 5 cr hrs under this number, subdivisions not repeatable.

**553.01 Physiology of Vegetable Crops**

The physiological principles involved in growth, development, flowering, and fruiting of vegetable crops. Kretchman.

10 cl during the 1st and 2nd weeks of the qtr. Prereq: 450 and Botany 436.

**553.02 Anatomy and Morphology of Vegetable Crops**

Examination of the internal and external organization of common vegetable plant structures; includes basic cell and tissue types as they relate to growth and development in vegetable crops. Precheur.

10 cl during the 3rd and 4th weeks of the qtr. Prereq: 450.

**553.03 Vegetable Seed and Transplant Production**

The principles involved in the production of vegetable seed and transplants. Berry.

10 cl during the 5th and 6th weeks of the qtr. Prereq: 450.

**553.04 Protected Cultivation of Vegetable Crops**

Principles concerned with controlling various parameters of the plant's environment (light, temperature, humidity, etc.) in order to influence plant growth and development. Bauerle.

10 cl during the 7th and 8th weeks of the qtr. Prereq: 450.

**553.05 Vegetable Plant Taxonomy**

The various systems for classifying and categorizing vegetables. Bennett.

10 cl during the 9th and 10th weeks of the qtr. Prereq: 450.

**593 Individual Studies U 1-5**

Special studies in the fields of fruit, vegetable, florist crops, landscape horticulture, and processing and technology of fruits, vegetables, and related crops.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Research and Educational Trends in Horticulture U 1**

A study of the research and extension roles of a university and the interaction of these with the horticulture industry. Prince.

Wi Qtr. 1 cl. Prereq: Sr standing in hort and 15 cr hrs in hort.

**596 Plant Protection Seminar U G 1**

Current topics relative to plant pest management research, technology, and employment.

Wi Qtr. Arr. Not open to students with 2 cr hrs of 596 in: agronomy, entomol, or plant path. Repeatable to a maximum of 3 cr hrs. Cross-listed in Agronomy, Entomology, and Plant Pathology. This course is graded S/U.

**General Prerequisites for Courses Numbered 600**

*Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.*

**601 Horticultural Plant Breeding U G 4**

Utilization of plant breeding methods and genetic principles for the improvement of fruit, vegetable, ornamental, and flower crops. Hanniford.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Genetics 140 or 500.

**605 Advanced Vegetable Crops Production and Physiology U G 5**

A physiological study of the principal vegetable crops used for processing and fresh market; cultural practices are also considered. Gorski.

Wi Qtr. 5 cl. Prereq: 450 and Botany 436. Not open to students with credit for 551 or 552.

**610 Weed Control in Horticultural Crops U G 4**

A study of environmental and cultural factors which influence weed development in horticultural crops and a review of the principles of chemical and mechanical weed control. Gorski.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 15 cr hr hort or agronomy, Chem 102 or 122 or equiv.

**631 Arboriculture U G 5**

Environmental factors affecting plant growth and the planting, fertilization, pruning, cabling, and diagnosis of disorders in commercial arboriculture, city, forestry, park, and industrial grounds maintenance. Sydnor.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 435; Botany 431 or 436; Entomol 460; Plant Path 401. Not open to students with credit for 731. This course is available for EM credit.

**640 Food Regulations and Product Examination U G 5**

Food laws, regulations, grade standards, and the technical control of processed foods, interpretation of laboratory analysis for control of product quality. Proctor.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 241 and 442. Not open to students with credit for 741.

**641 Horticultural Food Processing and Technology U G 5**

Unit processes of handling, grading, cleaning, sorting, peeling, pumping, change in form, and filling as related to commercial processing of fruits, vegetables, and related products. Wiese.

Su Qtr. 3 cl, 2 3-hr lab. Prereq: 441.

**645 Fermented Plant Product Technology U G 3**

Study of microbial processes and their control during fermented products manufacture. Dalmasso.

Wi Qtr. 3 cl. Prereq: 441, Microbiol 509 or 601 and 602.

**648 Essentials of Food Plant Operation U G 3**

An indepth presentation of the special factors affecting food plant organization, production, procurement, distribution, and the interaction required to develop plant operations. Wiese.

Wi qtr. 3 cl. Prereq: A minimum of 8 hrs from 441, 641, Agr Econ 310.02, Animi Sc 453, Fd Sc&Nu 551 or Ag M&Sys 381.

**649†\* Packaging Materials and Methodology U G 3**

A discussion of terminology and literature of commercial packaging, principal methods of packaging, and principles of selecting packaging materials. Wiese.

Wi Qtr. 3 cl. Prereq: 441, 442 and 640 or equiv. Not open to students with credit for 794c.

**653\* Processing Technology of Cereal Grains and Related Foods U G 3**

Unit processes of milling, baking, extruding, formulating, and utilizing cereal grains and related foods as related to the commercial processing. Peng.

Wi Qtr. 3 cl. Prereq: 441. Not open to students with credit for 543.

**670\* Enology—Principles and Technology U G 3**

Principles and technology involved in making table, dessert, and sparkling wines with attention given to must treatments, fermentation practices, and quality evaluation. Dalmasso.

Au Qtr. 2 cl, 2 2-hr lab. Prereq: 442, Microbiol 509 or 601 and 602.

**H683 Honors Project U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr H590.01, enrollment in honors program, and permission of honors supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**692 Workshop in Horticulture U G 1-2**

In-depth program on selected areas of horticulture with emphasis on problem solving through the application of principles and related practices.

Su, Au, Wi, Sp Qtrs. 15 or 30 contact hrs during scheduled workshops or short courses. Prereq: 15 cr hrs of hort and written permission of instructor. Repeatable to a maximum of 6 cr hrs in one decimal subdivision or 10 cr hrs in any combination of decimal subdivisions. Pre-workshop session required.

**692.01 Landscape Horticulture**

**692.02 Floriculture**

**692.03 Pomology**

**692.04 Vegetable Crops**

**692.05 Fruit and Vegetable Processing**

**694 Group Studies U G 1-5**

Special group studies in the fields of fruit, vegetable, florist crops, landscape horticulture, and processing and technology.

Au, Wi, Sp Qtrs. Prereq: Sr or grad standing. Repeatable to a maximum of 10 cr hrs.

**General Prerequisites for Courses Numbered 700**

*Unless otherwise indicated, the prerequisites for 700-level courses are 15 cr hrs in courses in the same discipline numbered 400 or higher, plus additional specified course(s) numbered 600 or higher.*

**715 Applications of Plant Cell, Tissue, and Organ Culture to Horticultural Research U G 5**

Laboratory methodology and physiological principles concerned with the in vitro culture of plant tissues and organs. Jourdan.

Wi Qtr. 2 cl, 1 4-hr lab. Prereq: Botany 630, 643, and permission of instructor.

**742†\* Research and Development Technologies in the Food Industries U G 3**

Critical review of trends, changes, research, and development methods and literature in food processing and technology. Wiese.

Wi Qtr. 3 cl. Prereq: Sr standing in the food areas.

**744\* Thermal Processing of Canned Foods U G 3**

Identification and application of various techniques of thermal process calculations for safe canned foods. Peng.

Au Qtr. 3 cl. Prereq: 441 or equiv.

**747†\* Technology of Fats and Oils U G 3**

Study of the manufacturing, processing, utilization, and quality control of fats, oils, and their products. Peng.

Wi Qtr. 3 cl. Prereq: Fd Sc&Nu 521 or equiv. Not open to students with credit for 647.

**748†\* Technology of Plant Proteins U G 3**

Study of the manufacturing and processing of protein foods from plant origin and the problems related to their utilization in human foods. Peng.

Au Qtr. 3 cl. Prereq: Fd Sc&Nu 521 or equiv. Not open to students with credit for 648.

**761 Secondary Products of Higher Plants U G 4**

The biochemistry of secondary products unique to higher plants with emphasis on phenolics, waxes, flavonoids, terpenoids, alkaloids, and related compounds.

Sp Qtr. 2 2-hr cl. Prereq: Biochem 511, Botany 631 or equiv.

**General Prerequisites for Courses Numbered 800 and 900**

*Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.*

**803 Research Principles and Techniques in Horticulture G 2**

The philosophy and components of graduate education with a development of the techniques useful in conducting research in the field of horticulture. Struve.

Au Qtr. 2 cl.

**804 Seminar G 1**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**813\* Advanced Plant Nutrition G 5**

Effects of plant nutrients on the growth and development of horticultural crops; emphasis will be placed on the physiological, bio-chemical, and anatomical responses of plants.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Botany 631 or equiv. Not open to students with credit for 811 or 812.

**814 Physiology of Horticultural Plants G 5**

The application of physiological concepts to horticultural plant situations; review of applicable literature.

Au Qtr. 5 cl. Prereq: Botany 630 and 631.

**815†\* Post-Harvest Physiology G 3**

An in-depth review of the literature pertaining to the physiology and biochemistry of horticultural crops after harvest as influenced by various external and internal factors. Prince.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: Botany 630, 631 and Biochem 511 or equiv.

**892 Interdepartmental Seminar in Plant Physiology G 1**

Students will present seminars on their research or related topics in plant physiology and/or attend seminars by local and visiting researchers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Not open to students with 12 cr hrs in Agronomy 892, Biochem 892, Botany 892, or Fd Sc&Nu 892. Repeatable to a maximum of 12 cr hrs, including cr hrs earned in Agronomy 892, Biochem 892, Botany 892, and Fd Sc&Nu 892. Cross listed in Agronomy, Biochemistry, Botany, and Food Science and Nutrition. This course is graded S/U.

**993 Individual Studies G 1-5**

Special studies in the fields of fruit, vegetable, florist crops, landscape horticulture, and processing and technology of fruits, vegetables, and related food products.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**999 Research Thesis or Dissertation G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Hospital and Health Services Administration

College of Medicine

543 School of Allied Medical Professions Building, 1583 Perry Street, 292-9708

**693 Individual Studies U G 1-5**

Study of individually designed topics not otherwise available in the curriculum.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Group studies of special topics within hospital and health services administration.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**795 Seminar U G 1-3**

Investigation of current topics of significance to health services management and policy.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**800 Health Care Organization G 4**

Analysis of arrangements for the organization, financing, and delivery of health care services.

Au Qtr. 2 2-hr cl. Prereq: Written permission of instructor.

**802 Economic Analysis of Health Services G 3**

Applications of microeconomic analysis to the health services industry, with emphasis on the market structure and performance.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**809 Field Study I: Health Organizations in the Community G 2**

Identification and survey of patterns of organization and control of health care institutions; analysis of nature and extent of interrelationships among institutions.

Au Qtr. Prereq: Permission of instructor. This course is graded S/U.

**810 Field Study II: Departmental Management G 2**

Analysis of departmental and institutional objectives, management functions, interdepartmental relationships, and supervisory styles.

Sp Qtr. Arr cl, field study in health organizations. Prereq: Permission of instructor. This course is graded S/U.

**811 Legal Environment of Health Care G 3**

Legal environment of health care, including hospital-patient-doctor relationships; labor law and collective bargaining; and constitutional law and administrative regulations pertaining to prepayment and planning.

Wi Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**815 Health Services Organizational Management G 3**

Principles of organizational structure and behavior applied to health service organizations; emphasis on professionalism, governance, and unique problems of the health service setting.

Au Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**816 Human Resource Management in Health Care G 3**

Human resource management principles and applications in the health care setting, including interviewing, selection, training, conflict resolution, performance evaluation, and labor-management relations.

Wi Qtr. 2 1½-hr cl. Prereq: 815 or BUS-MHR 806 or equiv.

**820 Health Services Finance G 4**

Principles of finance and accounting applied to health service organizations.

Sp Qtr. 2 2-hr cl. Prereq: Bus: Fin 620 or equiv.

**822 Financial Management of Health Organizations G 3**

Principles of financial management and management control in health care organizations, including budgeting, capital investment analysis, and working capital management.

Wi Qtr. 3 cl. Prereq: 820 and 10 cr hrs of acct&MIS.

**830 Forecasting Methods in Health Services Administration G 3**

Forecasting methods, with special emphasis on topics useful in health services administration, including service area determination, population forecasting, and non-historical methods.

Au Qtr. 2 1½-hr cl. Prereq: 6 cr hr of stat or permission of instructor.

**831 Strategic Planning and Program Development G 3**

Description of techniques and methods essential for strategic and project planning with an emphasis on social technical systems and health systems.

Au Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**850 Seminar in Health Service Management and Policy G 4**

Policy process and methods of decision making; assignment and solution of managerial problems; case studies, with emphasis on strategy and implementation.

Sp Qtr. 2 2-hr cl. Prereq: 18 cr hrs in hosp adm or written permission of instructor.

**855 Health Care Policy and Politics G 3**

Political characteristics of the policies and mechanisms for the provision of personal health services, with emphasis on community, state, and federal levels of policy-making.

Sp Qtr. 2 1½-hr cl.

**860 Evaluation G 4**

Models of evaluation, including experimental designs, quasi-designs, and case studies with discussion of barriers to effective use of evaluation results in decision-making.

Wi Qtr. 3 1½-hr cl. Prereq: Grad level course in stat or permission of instructor.

**861 Behavioral and Normative Decision Approaches G 3**

Decisions as made by individuals, groups, and organizations comprising the health delivery system; examination of decision-maker behavior; strategies to improve decisions.

Sp Qtr. 2 1½-hr cl. Prereq: 860 or permission of instructor.

**870 Advanced Studies in Hospital and Health Services Administration G 3**

Seminar in special topics in hospital and health services administration with content varying from quarter to quarter.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**998 Thesis Research G 1-12**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

## Human Ecology

201 Campbell Hall, 1787 Neil Avenue, 292-6612

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of assistant dean. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

## Human Nutrition and Food Management

265 Campbell Hall, 1787 Neil Avenue, 292-4485

**230† Food Service Systems Management: Introduction U 2**

Orientation to field of food service management.

Au, Sp Qtr. 2 cl.

**294 Group Studies U 2, 3 or 5**

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**310 Fundamentals of Human Nutrition U 5**

Nutrient and food energy needs of the human biological system throughout the life cycle with consideration of socio-psychological factors.

Au, Wi, Sp Qtrs. 5 cl. H310 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 5 cr hrs of biological sciences, eligibility for honors program. This course is available for EM credit.

**313 Food in Different Cultures U 3**

Food practices of selected peoples of the world with consideration of the existing social, cultural, and economic conditions.

Wi Qtr. 3 cl. Prereq: 10 cr hrs of social science.

**314 Fundamentals of Food U 5**

Application of chemical and physical principles to food preparation and use.

Wi Qtr. 2 cl, 3 2-hr lab. Prereq: 10 cr hrs of chem.

**350 Principles of Food Production U 5**

A study of food science and volume food service equipment as related to food production in quantity.

Au, Sp Qtrs. 3 cl, 3 hr lab. Prereq: Chem 101 and 102, or 121 and 122.

**370 Food Purchasing, Menu Planning, and Cost Control U 5**

A study of the impact of the menu, standardized recipe, forecast, and food purchasing on cost control and food quality. An overview of records related to cost control.

Au, Wi Qtrs. 5 cl. Prereq: 350.

**400 Beverage Management U 2**

Managerial control of beverage sales within the hospitality industry.

Au, Wi Qtrs. 1 cl, 2 hr lab. Prereq: 370.

**406 Nutrition: The Life Cycle U 3**

Food and nutrient needs throughout various phases of the life cycle.

Sp Qtr. 3 cl. Prereq: 310. Not open to students with credit for 606.

**413 Food Management for Families U 3**

Nutritional, aesthetic, economic, and social aspects of planning, purchasing, preparing, and serving food to family groups at different income levels.

Wi Qtrs. 2 cl, 1 2-hr lab. Prereq: 310 and 314 or 350.

**450 Equipment, Layout, and Sanitation U 5**

A study of the principles of (a) equipment selection and layout design related to food production, assembly, service, and dishwashing or disposal; (b) design as related to the aesthetic qualities of dining and related areas; (c) sanitation as related to equipment selection, food production, food service, food storage, and food service regulations.

Au, Wi Qtrs. 5 cl. Prereq: 350.

**460 Personnel and Organization U 5**

Integration of principles of management and learning in the management of hospitality operations; emphasis on management of human resources.

Au, Sp Qtrs. 5 cl. Prereq: 350, Bus-MHR 660 or 701.

**470 Food Quality Analysis and Control U 3**

Principles of sensory evaluation and the attributes of food quality as related to physical and chemical properties.

Au, Qtr. 2 cl, 2 hr lab. Prereq: 350.

**480 Marketing and Merchandising U 5**

Application of the principles of marketing to the hospitality industries.

Wi, Su Qtrs. 5 cl. Prereq: Bus-Mktg 650.

**504 Principles of Education in Dietetics U 4**

Principles of education related to individuals and groups based on knowledge of nutrition, communication skills, recognition of socioeconomic influences, and familiarity with community resources.

Au Qtr. 2 2-hr cl. Prereq: 310 and 406.

**550 Hospitality Management: Foodservice Internship U 5, 10, 15**

Planned experience in hospitality setting, under supervision.

Su, Au, Wi, Sp Qtrs. Prereq: 350, 370, 460, 2.00 cumulative pt-hr ratio, and permission of instructor. Dept application must be filed 2 qtrs in advance. Repeatable to 30 cr hrs.

**560 Hotel Systems U 5**

Examines functions and procedures in hotels. Traditional and modern accounting systems-flow of data for sales, allowances, receivables, cash receipt, and disbursement. Housekeeping management and sanitation.

Au Qtr. 5 cl. Prereq: Acct&MIS 211, 212, Cptr/Inf 201 or 211.

**570 Hospitality Management: Hotel Internship U 5, 10, 15**

Planned experience in hotel operations, under supervision.

Su, Au, Wi, Sp Qtrs. Prereq: 550 and 560. Permission of instructor. Registration 2 qtrs in advance. Repeatable to 15 credits.

**580 Current Issues in the Hospitality Industry U 3**

Overview of regulations and current issues in the hospitality industries.

Wi, Sp Qtrs. Prereq: Sr standing and permission of instructor.

**589 Field Work U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing in home ec; 2.25 cumulative pt-hr ratio; written permission of instructor; Acct&MIS 211; Econ 200; and Humn Ntr 350, 370, and 460. Registration 2 qtrs before scheduling. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**593 Individual Studies U 1-5**

Problems in various phases of human nutrition and food management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. H593 (honors) may be available to students enrolled in college honors program or eligible for enrollment. Prereq: Minimum of 6 cr hrs in subject matter of problem with cumulative point-hour ratio of 2.70 or written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Professional Development U 2**

Professionalism, ethics, and career alternatives in dietetics, food, or nutrition professions; professional organizations, continuing education, and development; demonstration and practice of skills to seek and obtain employment.

Au Qtr. 1 2-hr cl. Prereq: 4th yr standing in humn ntr or permission of instructor.

**601 Nutritional Concepts in Nursing Practice U G 3**

Consideration of the role of nutrition in preventive health care and various alterations in health with emphasis on the role of the nurse.

Au Qtr. 1 2½-hr cl. Prereq: 310 or equiv and human physiology. Not open to students with credit for 612.01 or 612.02.

**610 Advanced Human Nutrition U G 5**

Interrelationships of nutrition and human biological functions.

Au Qtr. 5 cl. Prereq: 310, Biochem 211, and Zoology 232.

**612 Nutritional Therapy U G 6**

A two-qtr course in current practices of nutritional therapy with emphasis on the biochemical and physiological rationale for dietary modifications. Open only to dept. majors, except by permission of instructor.

Students required to take 612.01 and 612.02 in sequence. A final grade in the course will not be given until the end of the 2nd qtr.

**612.01 Nutritional Therapy I**

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 610. A mark of "P" will be given at the end of qtr.

**612.02 Nutritional Therapy II**

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 612.01. A final grade for the two-qtr sequence will be given at the end of qtr.

**615 Food Theory and Application U G 5**

Application of experimental methods to problems involved in preparation of foods.

Sp Qtr. 3 cl, 2 3-hr lab. Prereq: 350, Biochem 211, Chem 231 or 241 and 243.

**690 Workshop U G 4**

Full time for 3 wks. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**694 Group Studies U G 1-5**

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****704 Nutrition Programs and Services in the Community U G 3**

Exploration of food and nutrition programs emphasizing goals, target audiences, funding, legislation, and identification of community, state, and national programs.

Au Qtr. 3 cl, arr observation. Prereq: 310.

**705 Nutrition and Exercise U G 3**

Theoretical and applied framework for making dietary decisions for exercising populations.

Su Qtr. 2 cl, 3-hr lab. Prereq: Advanced coursework in nutrition, physiol and biochem and permission of instructor.

**706 Practicum in Nutrition and Exercise U G 1**

Development of practical skills employed in solving nutritional problems of exercising populations.

Su Qtr. 3-hr lab. Concur: 705.

**708 Nutrition of Persons with Developmental Disabilities U P G 3**

A problem-oriented approach to nutrition of the developmentally disabled population.

Su Qtr. 2 cl, 2 hrs lab. Prereq: 612.01 and 612.02 or equiv.

**710 Physiological Basis for Food Utilization U G 5**

Advanced concepts of human nutrition integrating physiological, biochemical, and nutritional functions relevant to food utilization.

Wi Qtr. 3 1½-hr cl. Prereq: 610 or equiv.

**711 Nutrition: History U G 3**

Persons, discoveries, and methods in the evolution of nutrition as a science and a factor in the control of human welfare.

Au Qtr. 3 cl. Prereq: 610 or equiv.

**713\* Advanced Food Theory and Application U G 3**

Food theories applied to individual investigations in food preparation, preservation, and storage in the home and volume food service.

Su Qtr. 1 2-hr cl, 1 3-hr lab. Prereq: 615 or equiv.

**730 Advanced Food Service Systems Management: Operational Integration U G 3**

Current practices and research in management of food service systems.

Sp Qtr. 1 2-hr cl. Prereq: 460.

**793 Individual Studies U G 2, 3, or 5**

Problems in various phases of human nutrition and food management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**797 Interdepartmental Seminar U G 2-4**

Two or more departments may collaborate in presenting seminars in subjects of mutual interests; topics to be announced.

Repeatable to a maximum of 6 cr hrs and by permission.

**802 Seminar in Human Nutrition and Food Management G 3 or 5**

Prereq: 610, 615, 460 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

A—Food Management. Su Qtr.

B—Advanced topics in Human Nutrition and Food Management. Au Qtr.

C—Food. Wi Qtr.\*

D—Human Nutrition. Su Qtr.

**810 Nutritional Assessment G 3**

Evaluation of methods used to assess human nutritional status.

Sp Qtr. 2 cl, 3 hrs lab. Prereq: 710.

**816 Recent Developments in Food G 3**

Analysis of selected topics in food with application to current issues.

Wi Qtr. 1 2-hr cl. Prereq: 615 or equiv.

**830 Advanced Studies in Nutrition G 3**

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 610 or Animl Sc 630 or Pltry Sc 630 or Animl Sc 631 or Dairy Sc 631 or Home Ec 610; Fd Sc&Nu 761 and 762 and 10 grad cr hrs in physiol. Not open to students with credit for Animl Sc 830, Dairy Sc 830 or Pltry Sc 830. Cross-listed in Animal Science, Dairy Science, Food Science and Nutrition, and Poultry Science.

**830.01\* Energy**

Conrad and Snook.

Wi Qtr.

**830.02†\* Minerals**

Mahan.

Wi Qtr.

**830.03\* Proteins and Amino Acids**

Naber.

Sp Qtr.

**830.04†\* Vitamins**

Naber.

Sp Qtr.

**830.05†\* Lipids**

Palmquist.

Au Qtr.

**830.08\* Carbohydrates**

Roehrig.

Au Qtr.

**832\* Recent Developments in Food Service Systems Management G 3 or 5**

Analysis of selected topics in food service systems management with application to current issues.

Su Qtr. 1 2-hr cl. Prereq: 460 and experience in food service management. Repeatable to a maximum of 15 cr hrs.

**894 Group Studies G 2, 3, or 5**

Selected topics in human nutrition and food management.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**895 Seminar G 1**

Presentations by students, faculty, and visiting scientists with critical discussion of issues in human nutrition.

Au, Wi Qtrs. Arr. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**898 Interdepartmental Seminar in Nutrition and Food Technology G 1**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

**993 Individual Studies G 2, 3, or 5**

Problems in various phases of human nutrition and food management chosen for individual study.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Humanities, College of

186 University Hall, 230 North Oval Mall, 292-1882

**110 Aspects of Hispanic Life U 1**

Selected topics in the life of Hispanic peoples; examples: Mexican-American Chicano life, Spanish life, Afro-Caribbean Hispanic life.

Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 3 cr hrs, including cr hrs earned for topics offered under Hum Col 294. Knowledge of Spanish not required. This course is graded S/U.

**294 Group Studies U 1-6**

Interdisciplinary study under the direct auspices of the College of Humanities involving materials of an interdepartmental or intercollegiate nature.

Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**694 Group Studies U G 1-6**

Interdisciplinary study under the direct auspices of the College of Humanities involving materials of an interdepartmental or intercollegiate nature.

Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

## Hungarian

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101 Elementary Hungarian I****101.51 Individualized Track U 1-5**

Development of the four skills: listening comprehension, speaking, reading, and writing; introduction to Hungarian culture.

Su Qtr. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete 1-5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

**102 Elementary Hungarian II****102.51 Individualized Track U 1-5**

Further development of the four skills: listening comprehension, speaking, reading, and writing, and more work on Hungarian culture.

Prereq: 5 cr hrs of 101.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 101.51 and 102.51 concurrently with permission of instructor.

**103 Intermediate Hungarian I****103.51 Individualized Track U 1-5**

Continuation of 102.51; development of listening comprehension, speaking, reading, and writing, with somewhat more emphasis on listening comprehension and reading.

Prereq: 5 cr hrs of 102.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 104.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 102.51 and 103.51 concurrently with permission of instructor.

**104 Intermediate Hungarian II****104.51 Individualized Track U 1-5**

Continuation of 103.51; development of the four skills with emphasis on listening comprehension and reading.

Prereq: 5 cr hrs of 103.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 103.51 and 104.51 concurrently with permission of instructor.

**405 Advanced Hungarian I****405.51 Individualized Track U 1-5**

Continued development of the four basic skills with somewhat greater emphasis on vocabulary building and reading skills.

Su Qtr. Prereq: 5 cr hrs of 104.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 104.51 and 405.51 concurrently with permission of instructor.

**407 Advanced Hungarian II****407.51 Individualized Track U 1-5**

Continuation of 405.51; further development of the four basic skills.

Su Qtr. Prereq: 5 cr hrs of 405.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 405.51 and 407.51 concurrently with permission of instructor.

**580 Reading Hungarian I****580.51 Individualized Track U G 1-5**

Continuation of 407.51 with special emphasis on reading.

Su Qtr. Arr. 5 cr hrs of 407.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 407.51 and 580.51 concurrently with permission of instructor.

**581 Reading Hungarian II****581.51 Individualized Track U G 1-5**

Reading for comprehension; unedited texts of moderate difficulty from contemporary newspapers and journals.

Su Qtr. Arr. 5 cr hrs of 580.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 580.51 and 581.51 concurrently with permission of instructor.

**312 Manufacturing Laboratory U 3**

Hands-on experience in both tool room and production manufacturing operations in casting, heat treating, welding, and machining processes.

Wi, Sp Qtrs. 8 lab hrs. Prereq: 311 or equiv with written permission of instructor. Safety glasses must be worn in laboratory.

**406 Industrial Quality Control U 3**

Application of probability theory, statistics, and control theory to problems and product inspection and process control; economic evaluation of quality control techniques. Bishop.

Sp Qtr. 2 cl. Prereq: 513.

**485 Practical Experience in an Industrial Organization U 2**

To be obtained in some engineering or industrial organization; prior adviser approval and final report required.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Majors in ind eng only. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**501 Work Systems Analysis and Measurement U G 4**

Analysis of work content; measurement of the performance of man-machine systems; establishment of standards for the evaluation of work; techniques of methods engineering; measurement of man-machine performance via charting techniques. Lewis.

Au, Wi Qtrs. 2 1½-hr cl, 1 2-hr lab. Prereq: Stat 426 or equiv.

**502 Work Systems Planning and Evaluation U G 3**

The evaluation and planning of man-machine systems experiments.

Au, Wi Qtrs. 2 cl, 1 2-hr lab. Prereq: Math 568, Stat 426 or equiv, and jr standing in ind eng; or permission of chairperson.

**503 Work Physiology and Biomechanics in Work Design U G 3**

Investigations of the physiological and biomechanical aspects of work design; anthropometry, biomechanical analysis, physiologic control models, and work rest cycles applied to the workplace.

Au, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: Stat 425 and 426, and jr standing in ind eng; or permission of chairperson.

**504 Engineering Economic Analysis U G 3**

Economic analysis of engineering projects and methods of operation; the analysis of public investments, and introduction to the analysis of engineering decisions.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 3rd yr standing or written permission of instructor; and a minimum cumulative pt-hr ratio of 2.00.

**508 Industrial Practice in Systems Design U 3**

An in-depth systems design project for industrial engineering.

Prereq: 656, 658, English 305, and at least 20 additional hrs of ISE courses or written permission of chairperson. 2-qtr sequence, must be taken in consecutive qtrs.

**508.01 Industrial Practice in Systems Design I**

Problem formulation, data collection, and exploration of design alternatives for an actual systems engineering problem.

Au, Wi Qtrs 2 2-hr cl. Prereq: 656, 658, English 305, and at least 20 additional hrs of ISE courses or written permission of chairperson. 2 qtr sequence, must be taken in consecutive qtrs.

**508.02 Industrial Practice in Systems Design II**

Exploration and selection of design alternatives; justification, recommendation, and written and oral presentation of problems solution.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 508.01.

# Industrial and Systems Engineering

210 Baker Systems Engineering Building, 1971 Neil Avenue, 292-6239

**311 Manufacturing Engineering U 4**

Fundamentals and interrelationships of the principal manufacturing processes; principles and characteristics illustrated with related laboratory demonstrations.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. Prereq: 2nd yr standing in engineer or written permission of instructor. Safety glasses must be worn in laboratory.



**513 Applied Waiting Line Analysis U 3**

Analysis and design of stationary and non-stationary queueing systems: model formulation, approximation techniques, and adaptation of existing solutions.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: Stat 425. Not open to students with credit for 613.

**534 Principles of Industrial Engineering U G 4**

A survey of operations methods used in industry including optimization, probability and statistics, waiting line models, quality control, simulation models, and scheduling methods.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 3rd yr standing or equiv with written permission of instructor. Not open to students in ind eng.

**549 Introduction to Methods for Planning, Design, and Optimization of Industrial Systems U 3**

Computer methods for planning of production and distribution systems; includes techniques for optimal resources allocation.

Au, Wi Qtrs. 2 1½-hr cl. Prereq: Math 568.

**554 Introduction to Discrete System Simulation U 3**

Introduction to the analysis of systems via discrete computer simulation models, generation of random variables.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 513 and En Graph 143 or equiv.

**604 Advanced Engineering Economic Analysis U G 3**

Theoretical foundations and advanced topics in economic analysis of engineering projects and operations; economic engineering decisions under certainty and uncertainty.

Sp Qtr. 2 1½-hr cl. Prereq: 504.

**605 Machine Tool Control and Programming U G 4**

Provides an introduction to numerically controlled machine tools including principles of operation, programming systems, computer assisted programming, performance characteristics, and applications. Lewis.

Wi Qtr. 2 1½-hr cl, 2 2-hr labs. Prereq: 311 and 620.

**607 Manufacturing Processes and Simulation U G 4**

Exposure to the basic theory of basic manufacturing processes; processes to be covered include metal removal, casting, welding, and forming; simulation of the processes is also included.

Wi Qtr. 2 1½-hr cl, 1 2-hr lab. Prereq: 311 or permission of instructor.

**610 Planning of Engineering Experiments U G 3**

Study of the planning of industrial and research experiments. Neuhardt.

Wi Qtr. 2 1½-hr cl. Prereq: 502 or written permission of instructor.

**611 Metal Cutting Theory and Practice U G 4**

Analysis and application of machining processes; topics include tool wear, cutting mechanics, heat, surface integrity, and properties of materials.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 631 and Eng Mech 420, or equivs.

**614 Automation U G 3**

A survey of mechanization principles and current design practices involved in the automation of manufacturing operations and processes. Maul.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 311 or equiv.

**615 Automation Laboratory U G 1**

Application of principles of mechanization to manufacturing operations and processes.

Au, Sp Qtrs. Prereq or concur: 614.

**620 Computer Application in Industrial Process Control U G 3**

Provides an introduction to evaluation and design of practical industrial control systems with emphasis on real time computer control of discrete processes. Miller.

Au, Sp Qtrs: 2 1-hr cl, 1 2-hr lab. Prereq: En Graph 200 or equiv and sr standing in ind eng or permission of instructor.

**631 Tool Engineering U G 4**

The design of tools, jigs, and fixtures; the basic elements of fixture design, such as form, locating points, clamping device, and the use of standardized parts. Lewis.

Au Qtr. 2 cl, 4 lab hrs. Prereq: 311.

**649 Quantitative Design Methods in Systems Engineering I U G 3**

Model formulation and solution methods for system design problems with emphasis on matrix and vector space methods for static and dynamic systems. Miller.

Au Qtr. 2 cl. Prereq: 549 or Math 471 or equiv and permission of instructor.

**652 Analysis of Inventory Systems U G 3**

Mathematical analysis applied to single stage inventory systems using both deterministic and probabilistic models. Posner.

Wi, Sp Qtrs. 2 cl. Prereq: Stat 426 or equiv, and jr standing in ind eng or permission of chairperson.

**653 Engineering Data Analysis U G 3**

Graphical and other special techniques for estimating parameters and testing goodness of fit of non-normal distributions to engineering data. Neuhardt.

Sp Qtr. 2 1½-hr cl. Prereq: 502 or written permission of instructor.

**655 System Reliability and Availability U G 3**

Prediction of system reliability and availability, life cycle costing, methods for analyzing system design concepts from the viewpoint of reliability and availability. Clark.

Wi Qtr. 2 cl. Prereq: 436 or Stat 426 or 436 or permission of instructor. Offered every other yr in odd yrs.

**656 Production Programming U G 4**

Mathematical formulation and solution of problems of scheduling, inventory control, and logistics using linear programming methods. Reilly.

Wi, Sp Qtrs. 4 cl. Prereq: 549, Math 568 or equiv, and jr standing in ind eng; or permission of chairperson. Not open to students with credit for 507.

**658 Facilities Design for the Production System of the Future U G 3**

Application of analytical techniques in the layout and design of production facilities including flexible manufacturing systems, robotized cells, and automatic storage/retrieval systems. Bishop.

Au, Sp Qtrs. 2 cl. Prereq: 656 and sr standing in ind eng; or permission of chairperson. Not open to students with credit for 506.

**662 Introduction to Applied Decision Analysis U G 3**

Introduction to decision analysis and its application; deals with modern utility theory and the application of this theory to engineering decisions under risk. Fraser.

Au, Wi Qtrs. 2 cl. Prereq: 435 or Stat 425 or 435 or equiv with written permission of instructor.

**671 Industrial Accident Prevention and Control U G 3**

Industrial safety practices; OSHA; models of accident phenomena; measurement, inspection, and control of unsafe behavior and conditions; design of loss control programs. Student projects.

Au Qtr. 2 cl. Prereq: 501 or equiv with written permission of instructor.

**672 Analysis and Design of Workplace Environments U G 4**

Measurement of environmental parameters including noise, heat, gases, particulates, and light, and their effect on human productivity; design of engineering controls; laboratory includes industrial surveys.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 501 or equiv with written permission of instructor.

**673 Cognitive Engineering U G 3**

Methodology for design of person-machine systems; psychological aspects of human performance; design of displays and control, human computer interactions, and human information processing. P. Smith.

Au, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: Stat 425 and 426, and jr standing in ind eng; or written permission of chairperson.

**689 Senior Laboratory U 3**

Students pursue independent laboratory project of up to two quarters duration; proposals must be approved by a faculty member prior to registration for the course.

Prereq: Sr standing in ind eng. Repeatable to a maximum of 6 cr hrs.

**693 Individual Studies in Industrial Engineering U G 1-6**

Designed to give the advanced students an opportunity to pursue special studies not offered in fixed curricula.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**694 Group Studies in Industrial Engineering U G 1-6**

Advanced topics in the various phases of industrial engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 23 cr hrs.

**700\* Empirical Model Building in Industrial Engineering U G 3**

Study of empirical problems in IE including the use of response surface methodology; topics include empirical strategies related to problems in manufacturing and human factors. Neuhardt.

Sp Qtr. 2 1½-hr cl. Prereq: 610 or Stat 641 or 645 or equiv. Not open to students with credit for 750.03.

**701\* Arbitration of Industrial Engineering Disputes U G 3**

Case studies in the arbitration of technical disputes involving incentive standards, job evaluation, crew size, line balancing, etc. G. Smith.

Wi Qtr. 2 cl. Prereq: 501 or 534 or equiv with written permission of instructor.

**702 Mathematical Programming: Linear G 3**

Convex and concave problems, global solutions, extreme point solutions, degeneracy, the Simplex methods, duality, complementary slackness, sensitivity analysis, parametric programming, and applications.

Au Qtr. 2 1½-hr cl. Prereq: Math 568 or equiv with written permission of instructor. Not open to students with credit for 830.

**703 Stochastic Processes Used in Systems Engineering I G 3**

Introduction to modeling of stochastic systems, including Poisson processes and Markov chains.

Wi Qtr. 2 1½-hr cl. Prereq: Stat 425 or 521 or equiv. Not open to students with credit for 843.

**704 Introduction to Discrete System Simulation U G 3**

Introduction to the analysis of systems via discrete computer simulation models, generation of random variables. Clark.

Au Qtr. 2 1½-hr cl. Prereq: Stat 426, En Graph 143, Cptr/Inf 211 or equiv with permission of instructor. Not open to students with credit for 554 or 654.

**705 Robotic Applications in Manufacturing U G 3**

Aspects of computer based robots; applications of robots in advanced manufacturing systems; role of learning machines in process automation. Maul.

Wi Qtr. Prereq: 620 or written permission of instructor.

**720 Computer Applications in Manufacturing Systems U G 3**

Principles of digital computer utilization for the control of manufacturing processes and the design, planning, and control of manufacturing systems are presented. Miller.

Sp Qtr. 2 cl, 2 lab hrs. Prereq: 620.

**750 Advanced Studies in Industrial Engineering U G 3**

Au, Wi, Sp Qtrs. Prereq: 4th yr standing and permission of instructor. Repeatable to a maximum of 24 cr hrs; subdivisions not repeatable. The student must register for specific classes in areas as indicated below, and may register for more than one at a time.

750.04 Discrete-System Analysis and Control

750.09 Forecasting and Estimating

750.11 Organization of Industrial Engineering Functions

750.12 Production Engineering

**754 Simulation of Complex Systems U G 4**

Analysis of systems via continuous discrete and combined continuous-discrete simulation; continuous simulation of discrete-event processes; advanced discrete system simulation. Clark.

Wi Qtr. 2 2-hr cl. Prereq: 513 and 554 or 703 and 704.

**755 Analysis of Multi-Criteria Decisions U G 3**

Multiple criteria decision-making, multi-attribute decision theory, and linear multi-objective programming. Clark.

Sp Qtr. 2 cl. Prereq: 656 or equiv with written permission of instructor.

**758 Design, Analysis, and Control of Integrated Manufacturing Systems G 3**

A systematic description of traditional, cellular, and flexible configurations; an integrated view of interacting elements and their design, analysis, and control with examples from industry.

Wi Qtr. Prereq: Stat 425 and 426 or 525 or equiv.

**760 Basic Concepts of Systems Theory U G 3**

Study of formal concepts of systems theory including general models of systems, abstract dynamic systems, the concept of state, goal seeking, and decision making systems. Miller.

Wi Qtr. 2 cl. Prereq: 649 or equiv with written permission of instructor.

**772 Decision Analysis U G 3**

Introduction to Bayesian decision analysis and its applications. Fraser.

Sp Qtr. Prereq: 662. Not open to students with credit for 862.

**797 Interdepartmental Seminars U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Repeatable by permission.

**802 Operations Research Models and Methods G 3**

Examines many basic OR models including the knapsack, traveling salesman, newsboy, and secretary problems; and random walk and queuing models, algorithmic concepts are discussed.

Sp Qtr. 2 1½-hr cl. Prereq: 702 and 703. Not open to students with credit for 842.

**810\* Product Development Analysis G 3**

Application of multivariate statistics to problems of industrial experimental planning and analysis; multiple responses, product profile analysis, multivariate quality control. Neuhardt. Au Qtr. 2 1½-hr cl. Prereq: 700 or equiv with written permission of instructor; Stat 645. Not open to students with credit for 836.

**811 Methods Engineering G 3-12**

Advanced work in one or more special phases of time study, motion study, job evaluation, wage analysis and payment systems, and speed and effort rating; the viewpoint of unions, and problems arising from labor-management relationships.

Au, Wi, Sp Qtrs. Prereq: 501 and 502 or equiv with written permission of instructor.

**812\* Product Development Experimentation G 3**

Application of linear statistical models to industrial engineering experimentation with emphasis on resource constrained investigations. Neuhardt.

Au Qtr. 2 1½-hr cl. Prereq: 700 or equiv with written permission of instructor; Stat 645. Not open to students with credit for 835.

**814 Stochastic Processes Used in Systems Engineering II G 3**

Additional models of stochastic systems including Markov, renewal, and other stochastic processes.

Wi Qtr. 2 1½-hr cl. Prereq: 703.

**815 Estimation of System Parameters from Time Series Data G 3**

Estimation of parameter values for stochastic process models used in systems engineering, model identification and forecasting; single and multiple time series. Clark.

Au Qtr. 2 1½-hr cl. Prereq: 704 and 814.

**816 Advanced Queuing Theory G 3**

Mathematical analysis and design of waiting line systems emphasizing transient solutions, general arrival and service distributions, and priority queues and networks of queues.

Au Qtr. 2 1½-hr cl. Prereq: 814 or equiv. Not open to students with cr for 813.

**817 Advanced Seminar—Cognitive Engineering G 3**

Advanced seminar on contemporary topics dealing with engineering applications of cognitive psychology, artificial intelligence, and linguistics; topic areas include human-computer interactions, the design of information retrieval systems, and mental models of complex systems.

Sp Qtr. 2 cl. Prereq: 673 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**818 Advanced Models in Human Factors Engineering G 3**

Advanced study in applied models used in human factors engineering; topics include models of human error, workload measurement and evaluation, risk acceptance, and performance under work paced and environmental stress.

Au Qtr. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**819 Advanced Topics in Biomedical Ergonomics G 3**

Advanced study of state of the art biomechanic evaluation methods applied to ergonomic problems; topics include hand tool evaluation, low back injury, electro-physiology, and anthropometry.

Wi Qtr. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**821 Problems in Production Engineering G 3-12**

Advanced work in one or more phases of production engineering involving problems in production design, equipment planning, tool design, and quantity and quality control.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**822 Seminar in Advanced Topics in Manufacturing G 3**

Seminar will feature speakers from industry; students will prepare reports and oral presentations on various topics. Altan.

Sp Qtr. 2 2¼-hr cl. Prereq: Admission to grad program or permission of instructor.

**824 Sequencing and Scheduling G 3**

Survey of sequencing/scheduling problems encountered in management systems emphasizing study of available solution techniques: algebraic, branch-and-bound, heuristics, network analyses, and linear/integer programming. Posner.

Wi Qtr. 2 1½-hr cl. Prereq: 702 or permission of instructor.

**828 Advanced Studies in Plant Design and Materials Handling G 3-12**

Advanced work in one or more special phases of plant design and materials handling, such as group technology and robotics.

Au, Wi, Sp Qtrs. Prereq: 658.

**831 Mathematical Programming: Nonlinear G 3**

Convex sets, convex functions, saddle point optimality criteria, the Fritz John and Kuhn-Tucker conditions, sensitivity and parametric results, applications, and an introduction to algorithms.

Wi Qtr. 2 cl. Prereq: 702.

**832 Mathematical Programming: Advanced Nonlinear G 3**

Wolfe/Falk duality, conjugate/geometric duality, applications of quality (e.g., geometric programming, quadratic programming, location problems, decomposition).

Sp Qtr. 2 cl. Prereq: 831.

**833 Optimization Methods for Large Systems G 3**

Methods for the solution of large optimization problems including decomposition, generalized linear programs, relaxation methods, and primal and dual hierarchical decompositions.

Wi Qtr. 2 cl. Prereq: 710 or 831 or equiv with written permission of instructor.

**834 Integer Optimization Methods G 3**

Methods used in the solution of applied optimization problems which contain integer variables. Content emphasizes general properties and use of common methods. Posner.

Au Qtr. 2 1½-hr cl. Prereq: 656 or 702 or Math 671 or equiv with written permission of instructor.

**837 Multilevel Systems Theory G 3**

Examination of the structure of hierarchical systems including problems of decomposition and co-ordination. Miller.

Sp Qtr. 2 cl. Prereq: 760 and permission of instructor.

**854 Advanced Simulation Design and Experimental Procedure G 3**

Variance reduction, experimental procedures, estimation of the variance at the time series average, comparison and ranking of alternatives, and response surface search methods. Neison.

Sp Qtr. 2 1½-hr cl. Prereq: 554 or 704.

**864 Optimization of Dynamic Systems G 3**

Study of theory and methodology for optimum control of dynamic systems (sequential decision systems); included are calculus of variations, Pontryagin Maximum Principle, and associated approaches. Miller.

Wi Qtr. 2 cl. Prereq: 649 or equiv with written permission of instructor.

**866 Programming and Control Research G 3-12**

Advanced work in the several phases of programming and control theory; consists primarily of application of mathematical methods to the formulation and solution of process programming and control problems. Miller.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

**871 Man-Machine Systems Research G 3-12**

Advanced work in special research topics in man-machine systems.

Au, Wi, Sp Qtrs. Prereq: 672 or 673. This course is graded S/U.

**881 Seminar in Industrial Engineering G 2**

Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**885 Practices in Operations Research G 3**

Application of OR methods in manufacturing, financial governmental, educational, and service organizations; students work on actual problems of a sponsoring organization and present in both oral and written reports.

Au Qtr. 2 1½-hr cl. Prereq: 802. Not open to students with credit for 844.

**893 Individual Studies G 1-6**

Designed to give advanced graduate students an opportunity to pursue special studies not offered in fixed curricula.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**894 Group Studies G 1-6**

Advanced topics in the various phases of industrial engineering.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 18 cr hrs.

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs.

**900 Seminar in Operations Research G 3**

Seminar on research topics in Operations Research designed to prepare PhD students for dissertation research and research careers.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: PhD standing or permission of instructor, other prereqs vary by topic. Repeatable to a maximum of 15 cr hrs, including cr hrs earned in each decimal subdivision.

**900.01 Optimization****900.02 Probabilistic Models****900.03 Simulation and Experimentation****900.04 Decision Analysis****900.05 Systems Theory****999 Research in Industrial Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Industrial Design

380 Hopkins Hall, 128 North Oval Mall, 292-6746

**160 Introduction to Industrial Design U 3**

Introduction to the rationale of design and systematic design processes; an overview of the profession of industrial design; an introduction to the department's educational program.

Au, Wi, Sp Qtrs. 1 cl, 1 2½-hr cl. VPA Admis Cond course.

**199 Industrial Design: Visual Thinking and Problem Solving U 3**

Introduction to drawing and problem solving in the context of design; emphasis on materials, tools, and rapid visualization.

Au, Wi, Sp Qtrs. 2 2-hr labs.

**250 Studies in Industrial Design U 3**

Studies in specified areas in the field of industrial design, with emphasis on particular aspects of product, visual communication, and interior space design problems.

Au, Wi, Sp Qtrs. 3 2-hr labs. Prereq: Permission of instructor.

**251 Basic Industrial Design I U 5**

Introduction to the theories, methods, and practices of industrial design with primary emphasis on basic visual language and visual encoding practices.

Au Qtr. 3 3-hr labs. Prereq: Successful completion of English 110 or 111 or equiv, Ind Dsgn 160, Math 116, and the qualifying exam; and a cumulative pt-hr ratio of 2.00.

**252 Basic Industrial Design II U 5**

Application of two- and three-dimensional organizational principles; introduction to visual logic, freehand perspective sketching systems, and basic three-dimensional modeling techniques and materials.

Wi Qtr. 5 2-hr labs. Prereq: 251 or permission of instructor.

**253 Basic Industrial Design III U 3****253.01 Industrial Design Practices**

A continuation of 252 with an introduction to three-dimensional structural principles and materials.

Sp Qtr. 3 2-hr labs. Prereq: 252; concur 253.03; or permission of instructor.

**253.03 Industrial Design History**

A history of industrial design as affected by technology and other factors within the context of our culture.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 252; concur 253.01; or permission of instructor.

**258 Basic Typography U 3**

Introduction to the knowledge and skills of typographical design and its corresponding aesthetic, functional, and technological applications and utilizations.

Au, Wi, Sp Qtrs. 1 2-hr cl, 2 2-hr labs. Open only to majors in ind dsgn and art educ or by permission of instructor.

**294 Group Studies in Industrial Design U 1-5**

The investigation of various problems in industrial design.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 15 cr hrs.

**460 Intermediate Industrial Design I U 5**

Au Qtr. 3 3-hr labs. Prereq: 160; En Graph 121, 122; Communic 105 or 110; Math 116 or equiv; Ind Dsgn 253.01, 253.03, 258; En Graph 204 or 206 (int dsgn major); Photog 201; Cptr/Inf 201 or 211 or 221; Stat 125 or Psych 220 or Econ 442, and acceptance resulting from portfolio review, or permission of chairperson.

**460.02 Visual Communication Design**

Design and application of non-verbal elements in production of visual messages using photographic and handgraphic techniques, based upon communication theory and the theory of signs.

**460.04 Product Design**

Design of simple products as a means of introducing systematic methods, sketching, model making, human factors, and presentation.

**460.08 Interior Space Design**

An introduction to conceptual planning, space organization, space requirements, and human factors, with emphasis on model making and presentation techniques.

Prereq: 160; Communic 105 or 110; 9 cr hrs in arch or en graph; Math 116 or equiv; Ind Dsgn 253.01, 253.03, 258; Photog 201; Cptr/Inf 201 or 211 or 221; Stat 125 or Psych 220 or Econ 442, and acceptance resulting from portfolio review, or permission of chairperson.

**461 Intermediate Industrial Design II U 5**

Wi Qtr. 3 3-hr labs.

**461.02 Visual Communication Design**

Design and application of typographical elements in production of verbal messages using photographic and handgraphic techniques, based upon communication theory and the theory of signs.

Prereq: 460.02 and 551.

**461.04 Product Design**

Emphasis is placed on the refinement of systematic design methods, visualization, detailing and documentation; students are introduced to team working and client requirements.

Prereq: 460.04 and 551.

**461.08 Interior Space Design**

Introduction to furniture design, exploring material and production characteristics, detailing and full-scale model making, emphasizing man-space-product interface, and special user requirements.

Prereq: 460.08 and 551.

**462 Intermediate Industrial Design III U 5**

Sp Qtr. 3 3-hr labs.

**462.02 Visual Communication Design**

Verbal and nonverbal graphic signs, integrated in the design and development of three-dimensional communication solutions in such areas as packaging, exhibit design, or sign systems.

Prereq: 461.02; concur 555; or equiv with written permission of instructor.

**462.04 Product Design**

Developing of specialized problem solving approaches to more complex product designs which emphasize the refinement of solutions in terms of suitable technology and user consideration.

Prereq: 461.04; concur 502 and 555; or equiv with written permission of instructor.

**462.08 Interior Space Design**

Design of specialized interior spaces, introducing space planning and design methodology; emphasis on user interaction and existing space and furniture system analysis.

Prereq: 461.08; concur: 522 and 555.

**501 Conceptual Drawing for Industrial Design U 3**

Principles of creative conceptual drawing and sketching methods used in the design process.

Au Qtr. 2 3-hr cl. Prereq: 253.01 and 253.03; En Graph 121 and 122; concur 551 and 460.04 or 460.08; or written permission of instructor.

**502 Three Dimensional Design Graphics U 3**

Principles of graphic design for product and interior space design.

Sp Qtr. 2 3-hr cl. Prereq: 461.04 or 461.08, 501, and 552; and Photog 201.

**511 Visual Communication Hand Graphics U 3**

Advanced laboratory practice in communicating with drawn messages; evaluation and selection of appropriate visual treatments and techniques for medias of print, film, and television.

Au Qtr. 2 3-hr labs. Prereq: 253.01; concur: 460.02 and 551.

**514 Graphic Design Production U 3**

Fundamental information on the preparation, administration, and development of printed matter used by the visual communication designer.

Au Qtr. 3 cl. Prereq: 258, 462.02, and 512; concur 660.02.

**521 Interior Drawing U G 3**

Principles and application of conceptual drawing techniques.

Au Qtr. 2 3-hr labs. Prereq: 253.01 and En Graph 122 or Arch 271.

**522 Interior Graphics U G 3**

Application and meaning of light, color, material structures, and surface textures; principles of spatial order systems, correlations and intercommunication of space components, forms, signs, styles.

Wi Qtr. 2 3-hr labs. Prereq: 253.01.

**523 Interior Space Modeling U G 3**

Principles and practices to represent spatial components and user interaction; communication and simulation of space in 2- and 3-dimensional form.

Sp Qtr. 2 3-hr labs. Prereq: 521 and 551, or permission of instructor.

**524 Interior Specification U G 3**

Overview and analysis of interior product systems, furniture line market surveys; interior specification and contracting.

Wi Qtr. 2 3-hr labs. Prereq: 4th yr standing in ind dsgr.

**551 Industrial Design Manufacturing Materials and Processes U 3**

Overview of the properties and fabrication principles for materials used in visual communication, interior space, and product design.

Au Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 460.02 or 460.04, and 501; or concur: 460.08 and 521.

**552 Industrial Design Communication Practices U 3**

An overview of communication methods, techniques, and procedures utilized in the various stages of the design process.

Wi Qtr. 1 2-hr cl, 1 2-hr lab. Prereq: 460.02 or 460.04 or 460.08.

**554 Human and Environmental Systems Design U 3**

Overview of the social/behavioral/physical nature of man and his interaction with the environment as interpreted by the industrial designer.

Au Qtr. 1 2-hr cl, 1 2-hr lab. Prereq: 462.02 or 462.04 or 462.08; and 555.

**555 Design Methodology U 3**

Introduction to and application of qualitative and quantitative methodology useful in a problem solving process.

Sp Qtr. 1 2-hr cl, 1 2-hr lab. Prereq or concur: 462.04 and 502; or 462.08 and 502; or 462.02; or written permission of instructor.

**656 Industrial Design Professional Practices U G 3**

Investigation of the administrative and legal aspects of the design profession contrasting the private firm with corporate and free-lance types of practice.

Sp Qtr. 1 2-hr cl, 1 1-hr cl. Prereq: 661.02 or 661.04; or 661.08 or grad standing in ind dsgr program.

**660 Advanced Industrial Design I U G 5**

Au Qtr. 3 3-hr labs.

**660.02 Visual Communication Design**

Application of planning and analysis techniques in designing two- or three-dimensional visual communication systems; encoding, production, and transmitting practices.

Prereq: 462.02, 512, 551, 552, and 555; and Photog 551, 552, and 557.

**660.04 Product Design**

Design of products and product systems for complex functions; emphasis is on extending design consideration to include detailing, mock-ups, prototypes, testing and servicing.

Prereq: 462.04, 502, 551, and 555; Cer Eng 423 or 424; English 305; and Ind Eng 311 and 312.

**660.08 Interior Space Design**

Design of complex interior spaces emphasizing psychological aspects of spatial components, referring to human performance and behavior, detail development and specification of space-creating products.

Prereq: 462.08, 522, 552, and 555; English 305; and 6 cr hrs in cer eng or ind eng.

**661 Advanced Industrial Design II U G 5**

Wi Qtr. 3 3-hr labs.

**661.02 Visual Communication Design**

Development and refinement of visual communication products and systems; emphasis on the application of visual communication research practices.

Prereq: 554 and 660.02.

**661.04 Product Design**

Introduction of field research experience and interdisciplinary expertise to the design of products and product systems.

Prereq: 554 and 660.04.

**661.08 Interior Space Design**

Design of public environments using an interdisciplinary team approach for conceptualization, documentation, and presentation, emphasizing environmental characteristics, and the physical and psychological functionalism of space.

Prereq: 554 and 660.08.

**662 Advanced Industrial Design III U G 5**

Sp Qtr. 3 3-hr labs.

**662.02 Visual Communication Design**

Individual student projects; to demonstrate proficiency and grasp of previous subject matter in a project approved by the instructor; portfolio development.

Prereq: 661.02; concur 656; or equiv with written permission of instructor.

**662.04 Product Design**

Product design thesis project; students are to demonstrate their proficiency and grasp of previous subject matter in a project approved by the instructor; portfolio development.

Prereq: 661.04; concur 656; or equiv with written permission of instructor.

**662.08 Interior Space Design**

Interior space thesis project; students are to demonstrate their proficiency, ability to evaluate and solve problems, comprehension for human needs and environmental concerns; portfolio development.

Prereq: 661.08; concur 656; or equiv with written permission of instructor.

**671 Photo Graphics U G 3**

An experimental photo workshop in techniques of manipulating existing images to create new visual ideas, emphasizing individual exploration; discussions and critiques.

Wi Qtr. 2 2-hr labs. Prereq: Permission of instructor.

**672 Advanced Typography for Industrial Design U G 3**

Advanced applications in typographic design emphasizing visual communication design principles and an introduction to computer-generated typography as practiced in the profession.

Wi Qtr. 1 2-hr cl, 2 2-hr labs. Prereq: 253.01, 253.03, and 258; or equivs with written permission of instructor. Repeatable to a maximum of 9 cr hrs.

**675 Introduction to Computing in Industrial Design U G 3**

Survey of computer-aided industrial design applications; introduction to principles of CAID system operation and extensive use of COTACL and IDCL facilities.

Au Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 462 or grad standing in ind dsgn, Cprr/Inf 211, and Math 152; or equivs; and written permission of instructor.

**676 Computer Applications in Industrial Design Research U G 3**

Computer applications in industrial design research; emphasis on the use of computers for conceptual design, form generation, and design experimentation and development; studio/lab format.

Wi Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 675 or grad standing in ind dsgn or equiv; and written permission of instructor.

**677 Advanced Computer Applications in Industrial Design Research U G 3**

Advanced work in computer applications in industrial design research; emphasis on the use and development of integrated CAID systems; advanced design experimentation; studio/lab format.

Sp Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 676 or grad standing in ind dsgn or equiv; and written permission of instructor.

**685 Field Work in Industrial Design U G 3-10**

Field application of industrial design in a capacity requiring a close working relationship with a professional environment.

Au, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**693 Individual Studies U G 2-5**

Advanced study for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****770 Communication Practices Related to Industrial Design U G 3**

An overview perspective of the variable components and methods related to the study and analysis of the communication process as applied to industrial design.

Sp Qtr. 2 2-hr cl.

**H783 Honors Research U 3-5**

A program of research and/or visual investigation for each student with individual conferences resulting in a honors thesis or honors project.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a pt-hr ratio of 3.50 in ind dsgn; permission of the instructor under whose supervision the work is to be completed and the College of the Arts Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**785 Orientation to Graduate Studies in Industrial Design U G 3**

Overview of current and future trends in industrial design; professional organizations and publications; faculty interests and research; available resources; requirements of graduate level study.

Au Qtr. 1 2-hr cl, 1 1-hr cl.

**786 Design Research and Inquiry U G 3**

Design as a mode of inquiry, including examination of traditional and post-traditional approaches and emphasizing general problem-solving as a goal-directed, value-laden activity.

Wi Qtr. 2 2-hr cl. Prereq: 785.

**787 Industrial Design Planning, Development, and Evaluation U G 3**

Preparation for graduate thesis and project courses with emphasis on concept development, evaluation, and field research.

Sp Qtr. 2 1½-hr cl. Prereq: 786.

**795 Departmental Seminar in Industrial Design Research Principles and Techniques U G 3-5**

Advanced work in special problems related to methods and procedures of research in industrial design.

Au Qtr. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**797 Interdepartmental Seminar U G 1-5**

Interdisciplinary knowledge and problems examined and discussed in the context of shared concerns.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**894 Group Studies G 1-5**

Group studies for students in specialized programs.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**950 Research Problems in Design G 3-5**

Su, Au, Wi, Sp Qtrs. Repeatable to maximum of 45 cr hrs.

**993 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs. This course is graded S/U.

**998 Research in Design: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Internal Medicine

217 Means Hall, 1655 Upham Drive, 293-8724

**661 Principles of Medicine P 2**

A survey course in medicine to dental students considering the infectious, deficiency, and systemic diseases; representative diseases are selected for detailed consideration and demonstrations.

Wi Qtr. 2 cl. Prereq: Dent 3rd yr standing. This course is graded S/U.

**793 Individual Studies in Medicine P 6, 12, or 18 G 1-5**

All months, 1 or more months to be elected. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. These courses are graded S/U.

Research on a minor problem under faculty supervision in the following specialties of medicine:

**793.02 Cardiology**

**793.04 Endocrinology**

**793.08 Infectious Diseases**

**793.10 Pulmonary Diseases**

**793.12 Rheumatology**

**794 Group Studies in Medicine P 6, 12, or 18**

Group studies of special topics in medicine.

Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**797 Interdepartmental Seminars P G 1-5**

Wi Qtr. Prereq: Written permission of instructor. Repeatable by written permission of College Secretary. This course is graded S/U.

B—The Philosophy of Clinical Practice for Bio-Medical Engineers

**850 Seminar in Medicine G 1-3**

Discussion of pertinent literature and research projects in various subspecialty areas with emphasis on basic science concepts. Warren and staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. These courses are graded S/U.

**850.01 Allergy**

**850.02 Cardiology**

**850.04 Endocrinology**

**999 Research in Medicine G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## International Studies

308 Dulles Hall, 230 West 17th Avenue, 292-9660

**230 Introduction to the Soviet Union U 5**

A survey of the land, people, history, politics, social institutions, literature, and arts of the Soviet Union, conducted by members of several departments.

Au, Wi Qtrs. 5 cl. BER/LAC/LAR course.

**231 Introduction to Eastern Europe since World War II U 5**

Survey of the land, people, history, politics, social institutions, literature, and arts of Eastern Europe since World War II.

Au, Wi Qtrs. 5 cl. BER/LAC/LAR course.

**235 Introduction to China and Japan U 5**

Interdepartmental survey of contemporary Asian civilization; geographic and racial background, historical and cultural heritage, social organizations, economic and political problems, and international relations.

Sp Qtr. 5 cl. BER/LAC/LAR course.

**240 Introduction to Latin America U 5**

Interdepartmental survey of Latin American societies, anthropology, economics, history, literature, geography, and agriculture. Graham.

Sp Qtr. 5 cl. BER/LAC/LAR course.

**245 Introduction to the Modern Middle East U 5**

Interdepartmental survey of the land, people, history, politics, religions, philosophy, social institutions, economic development, literature, and the arts, conducted by members of several departments. Payind.

Sp Qtr. 5 cl. BER/LAC/LAR course.

**250 Introduction to Africa U 5**

Interdepartmental survey of the land, people, history, politics, social institutions, economic development, literature, and the arts, conducted by members of several departments.

Au, Wi Qtrs. 5 cl. BER/LAC/LAR course.

**255 Introduction to Southeast Asia U 5**

Interdisciplinary survey of Southeast Asia; geographic and historical background, linguistic and cultural heritage, and contemporary political and economic development.

Sp Qtr. 5 cl.

**294 Group Studies U 1-5**

Groups of students are offered the opportunity to pursue the interdepartmental study of special topics.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**500 Conceptual Approaches to International Studies U 5**

Exploration of classic and contemporary conceptual approaches to international studies used by anthropologists, economists, geographers, historians, political scientists, and psychologists.

Wi Qtr. 2 2-hr cl. Prereq: 15 cr hrs of course work in one or more relevant disciplines and permission of the instructor. Not open to students with credit for Comp Std 500. Cross-listed in Comparative Studies in the Humanities.

**501 Selected Problems in International Studies U G 5**

Class discussions, with several guest speakers, informal conferences, and a reading and research program arranged to meet the special needs of those enrolled.

Sp Qtr. 2 cl. Open only to int stds majors or students with equiv preparation.

**689 Student Intern Program in International Studies U 4-16**

Opportunity to gain knowledge of the policy process in an international government agency.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Jr or sr standing with at least a B average, and 25 cr hrs in a foreign language.

Repeatable to a maximum of 15 cr hrs. Travel and subsistence costs to be borne by the student. This course is graded S/U.

**693 Individual Studies U G 1-10**

Designed to give able students an opportunity to pursue a special course of study not otherwise available to them.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 10 cr hrs. The course is graded S/U.

**694 Group Studies U G 3-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept. chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**H783 Honors Research U 3-5**

Informal conferences to allow full scope of the initiative of the student; a special topic is assigned to each student; the results are tested by papers and a special examination.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing and 40 cr hrs in the social sciences including 15 cr hrs in courses acceptable for a major in int stds, with a grade of A in at least half of these major courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. Failure to receive a mark of S in this course is a disqualification for special honors. This course is graded S/U.

## Italian

Cunz Hall, 1841 Millikin Road, 292-5842

Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.

**101 Elementary Italian U 5**

Elements of Italian grammar with oral and written exercises; attention to ear training and oral practice; elementary reading based on Italian geography, history, and customs.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 100.02 or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**102 Elementary Italian U 5**

The elements of Italian grammar with abundant oral and written exercises; development of conversational skill; reading, vocabulary building, attention to Italian idioms; modern Italian prose.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 101 or 100.02. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**103 Intermediate Italian U 5**

Review of Italian grammar; reading of short stories and plays; increased attention to development of oral and written proficiency.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 102. Not open to native speakers of this language through regular course enrollment or EM credit.

**104 Intermediate Italian**

Prereq: 103 or 112. Not open to native speakers of this language through regular course enrollment or EM credit. The following courses are not open to students with credit for 104, and only one of the decimal subdivisions may be taken for credit.

**104.01 Basic Course U 5**

Intensive practice in oral and written Italian; reading of Italian short stories; grammar and idiom review; course conducted in Italian.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**104.02 Civilization U 5**

Aspects of Italian civilization; geography, history, social development, and the arts; readings and discussion in Italian.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**111 Intensive Intermediate Italian U 5 or 10**

Intensive course combining content of 103 and 104 to complete the presentation of basic Italian grammar and to provide extensive practice in language skills.

Sp Qtr. 5 2-hr cl. Prereq: 102 or equiv. Not open to students with credit for 104 or 104 decimal subdivisions, or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 103 or 112 may not register for more than 5 cr hrs. Course intended for students who wish to expedite completion of language requirement.

**112 Intensive Italian U 5, 10, or 15**

Elementary and intermediate Italian; intensive drill in forms, syntax, vocabulary, and idiom; reading of short stories and plays in Italian.

Su Qtr. 15 cl. Enrollment limited to 20 students. Prereq: Permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, and 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in Italian will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. No audit. FL Admis Cond course.

**150 Introduction to Italian Culture and Literature U 5**

Introduction to the main currents of Italian culture from the beginning to the present through literature, art, music, film, and folklore.

Wi, Sp Qtrs. 4-5 cl. BER/LAC/LAR course.

**202 Italian Conversation and Composition U 5**

Intensive practice in spoken, idiomatic Italian, and composition based on materials concerning Italian life and culture.

Au Qtr. 5 cl. Prereq: 104 or permission of instructor.

**271† Italian Renaissance Literature in Translation U 5**

Reading, analysis, and discussion of major works from Dante's Divine Comedy to those of High Renaissance authors such as Machiavelli and Castiglione.

Au Qtr. 4 or 5 cl. Prereq: English 110 or 111 or equiv. BER/LAC course.

**293 Individual Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**401† Review Grammar and Composition U 3**

Review of Italian grammar; composition on assigned topics and practice in translation.

Wi Qtr. 3 cl. Prereq: 104 or permission of instructor.

**402 Intermediate Italian Conversation and Composition U 5**

Vocabulary building, practice in speaking Italian, and composition dealing with various aspects of present-day Italian life.

Au Qtr. 5 cl. Prereq: 104 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit.

**420 Thematic Approaches to Modern Italian Literature and Culture U 5**

Study of a major theme in modern Italian culture through analysis and discussion of literary texts, film, and opera; topic varies.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 104 or equiv. Repeatable to a maximum of 15 hrs. Conducted in Italian.



**601 Modern Italian Syntax U G 5**

Study of modern Italian syntax with emphasis on review of complex structures and current tendencies in syntactic analysis.

Au Qtr. 5 cl. Prereq: 401 or permission of instructor.

**603\* Advanced Italian Conversation and Composition U G 5**

Intensive practice in speaking and writing, based on contemporary usage.

Sp Qtr. 5 cl. Prereq: 401 or 402 or permission of instructor.

**604 Italian Phonology U G 5**

Description and analysis of the phonetic structure of modern Italian training in auditory and oral aspects of Italian pronunciation.

Au Qtr. 5 cl. Prereq: 401 or 402 or permission of instructor.

**621 Dante U G 5**

Introduction to the reading of the Divine Comedy; analysis of major episodes.

Wi Qtr. 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.

**622† Petrarch and Boccaccio U G 5**

Historical and aesthetic analysis of Petrarch's poetry; Petrarchism as a European phenomenon; literary background of Boccaccio's prose and verse; reading from the Decameron.

Wi Qtr. 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.

**625† Italian Literature of the Renaissance U G 5**

Readings in works of representative authors of the 15th and 16th centuries such as Leonardo, Michelangelo, Castiglione, Machiavelli, Ariosto, and Tasso.

Sp Qtr. 4 or 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.

**626 Italian Literature of the 17th and 18th Centuries U G 5**

Readings in selected works of Campanella, Marino, Galilei, Metastasio, Vico, Goldoni, Parini, and Alfieri.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.

**627† Modern Italian Fiction U G 5**

The evolution of modern Italian fiction from 1800 to the present.

Au Qtr. 4 or 5 cl. Prereq: 10 cr hrs at the 400 level or permission of instructor.

**628 Modern Italian Poetry and Drama U G 5**

The evolution of Italian poetry and drama from 1800 to the present.

Au Qtr. 5 cl. Prereq: 10 cr hrs in Italian literature at the 400 level or permission of instructor.

**693 Individual Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 30 cr hrs.

**722 Studies in Italian Literature: 14th Century U G 3**

Intensive study of one author, major work, or topic such as historiography, jocular poetry, the Vita Nova; reading in relevant criticism and scholarship.

Sp Qtr. 3 cl. Prereq: Grad standing or by permission of instructor to srs majoring in Italian with credit for 621, 622, or equiv.

**725†\* Studies in Italian Literature: 15th and 16th Centuries U G 3**

Intensive study of one author, major work, or topic such as epic poetry, the Courtier, Poliziano; readings in relevant criticism and scholarship.

Au Qtr. 3 cl. Prereq: Grad standing or by permission of instructor to srs majoring in Italian with credit for 625 or equiv.

**726†\* Studies in Italian Literature: 17th and 18th Centuries U G 3**

Intensive study of one author, major work, or topic such as baroque poetry, Tassoni, Alfieri's theatre; readings in relevant criticism and scholarship.

Au Qtr. 3 cl. Prereq: Grad standing or by permission of instructor to srs majoring in Italian with credit for 626 or equiv.

**H783 Honors Research U 3-5**

A program of individual study for undergraduate honors students; includes individual conferences and reports; requires presentation and oral defense of an honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with at least a 3.50 cumulative pt-hr ratio in Italian; written permission of instructor under whose supervision the work is to be completed, and of the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of the major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

Wi Qtr. 2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in Comparative Studies in the Humanities, English, French, German, and Spanish.

**792† Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**801† Teaching Italian at the College Level G 5**

Methods and techniques for teaching Italian language at the college level.

Au Qtr. Two wks intensive workshop previous to the beginning of qtr followed by a 2-hr wkly cl. Prereq: Teaching associate in the Dept of Romance Languages and Literatures or permission of instructor. Not open to students with credit for Ed-T&P 801.02. For students enrolled in this course, the minimum number of cr hrs required for graduation is increased by 5 hrs. Cross-listed in Educational Theory and Practice as 801.02.

**811†\* History of the Italian Language: Introduction G 5**

Basic concepts of historical linguistics; the major factors of change in the history of the Italian language from the Roman times to the present.

Wi Qtr. 4-5 cl. Prereq: MA candidates in Italian, others by permission of instructor.

**830\* Seminar in Italian Linguistics G 5**

Detailed exploration of selected topics in Italian linguistics with extensive analysis of Italian language data relevant to the topic.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**832 Seminar in Italian Literature G 2-5**

Wi Qtr. 2 or 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**833 Seminar in Italian Literature G 2-5**

Sp Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**885 Introduction to Methods in the History and Criticism of Literature G 5**

Selected readings in basic literary history, criticism, and theory, with practice in the use of standard bibliographical aids to scholarship.

Au Qtr. 4 or 5 cl.

**893 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-15**

Investigation of minor problems in the various fields of Italian literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**999 Research in Italian Language or Literature G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Japanese

276 Cunz Hall, 1841 Millikin Road, 292-5816

**101 Elementary Modern Japanese I**

Elements of standard colloquial Japanese grammar, with intensive oral and written exercises; introduction to the Japanese writing system (*hiragana*, *katakana*, and *kanji*).

Not open to students with credit for 101; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**101.01 Classroom Track U 5**

Au Qtr. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**101.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

**102 Elementary Modern Japanese II**

Continuation of 101.

Not open to students with credit for 102; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**102.01 Classroom Track U 5**

Wi Qtr. 5 cl. Prereq: 101 or 101.01 or 5 cr hrs of 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**102.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

**103 Elementary Modern Japanese III**

Continuation of 102.

Not open to students with credit for 102; or to native speakers of this language through regular course enrollment or EM credit.

**103.01 Classroom Track U 5**

Sp Qtr. 5 cl. Prereq: 102 or 102.01 or 5 cr hrs of 102.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**103.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: 102 or 102.01 or 5 cr hrs of 102.51. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 104. Progress is sequential from one cr hr to the next with a demonstrated proficiency of 80% required for advancement to next level.

**104 Elementary Modern Japanese IV U 5**

Continuation of 103 with supplementary reading of selected graded texts.

Au Qtr. 5 cl. Prereq: 103 or 112 or equiv with written permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. This course available for EM credit.

**111 Intensive Intermediate Japanese I: Spoken U 5**

First course in the sequence of intensive Japanese courses; organized around a set of videotaped core conversations.

Au Qtr. 5 cl. Prereq: 103 or equiv, or permission of instructor; concur: 211. Not open to students with credit for 104 or 205. Students must register for 111 and 211 concurrently.

**112 Intensive Japanese U 5, 10, or 15**

An introductory course with emphasis on basic structure taught through oral-aural drill; *hiragana*, *katakana*, and a limited number of *kanji*; equivalent to 101, 102, and 103.

Su Qtr. Prereq: Permission of instructor. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, 103.

Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 will enroll for 10 cr hrs.

Students with no credit in Japanese will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. FL Admis Cond course.

**205 Intermediate Modern Japanese U 5**

Continuation of 104 with a shift in emphasis from the spoken to the written language; reading of selected graded texts, writing, and composition.

Wi Qtr. 5 cl. Prereq: 104 or equiv with written permission of instructor. This course is available for EM credit.

**206 Intermediate Modern Japanese U 5**

Continuation of 205.

Sp Qtr. 5 cl. Prereq: 205 or equiv with written permission of instructor. This course is available for EM credit.

**211 Intensive Intermediate Japanese II: Written U 5**

Second course in the sequence of intensive Japanese courses; organized around *Reading Japanese* and a series of genre-specific samples of Japanese as it is written today.

Au Qtr. 5 cl. Prereq: 103 or equiv, or permission of instructor; concur: 111. Not open to students with credit for 104 or 205. Students must register for 111 and 211 concurrently.

**231 Elements of Japanese Culture U 5**

A survey of literature, art, religion, philosophy, and social institutions of the Japanese people from the earliest to the most recent times.

Su, Au, Wi, Sp Qtrs. 5 cl. Taught in English. BER/LAC/LAR course.

**251 Japanese Literature in Translation U 5**

Representative masterpieces from Japanese literature: fiction, drama, poetry, prose. Taught in English.

Au, Wi Qtrs. 5 cl. BER/LAC course.

**252 Modern Japanese Literature in Translation U 5**

Modern Japanese literature from late 19th century Western influences to contemporary writers; selected readings in English translation with emphasis on Tanizaki, Kawabata, and Mishima.

Wi, Sp Qtrs. 5 cl.

**293 Individual Studies U 1-5**

Individual investigation of problems in Japanese culture, language, and literature.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**310 Intensive Intermediate Japanese II: Spoken U 5**

Third course in the sequence of intensive intermediate Japanese courses; organized around a set of videotaped core conversations.

Wi Qtr. 5 cl. Prereq: 104 and permission of instructor, or 111, or permission of instructor; concur: 311. Not open to students with credit for 205. Students must register for 310 and 311 concurrently.

**311 Intensive Intermediate Japanese II: Written U 5**

Fourth course in the sequence of intensive intermediate Japanese courses; organized around a set of genre-specific samples of Japanese as it is written today and integrated with 310 in structure and vocabulary.

Wi Qtr. 5 cl. Prereq: 211 or equiv, or permission of instructor; concur: 310. Not open to students with credit for 205. Students must register for 310 and 311 concurrently.

**507 Advanced Modern Japanese I U G 5**

Readings in modern Japanese aiming at acquisition of control of the 1850 characters in common use; translation, composition, character drill.

Au Qtr. 5 cl. Prereq: 206 or equiv with written permission of instructor.

**508 Advanced Modern Japanese II U G 5**

Continuation of 507; supplementary readings in short stories and standard reference works.

Wi Qtr. 5 cl. Prereq: 507 or equiv with written permission of instructor.

**509 Advanced Modern Japanese III U G 5**

Continuation of 508.

Sp Qtr. 5 cl. Prereq: 508 or equiv with written permission of instructor.

**510 Intensive Intermediate Japanese III: Spoken U G 5**

Fifth course in the sequence of intensive intermediate spoken Japanese; uses audio, video, and textual materials produced for native consumption.

Sp Qtr. 5 cl. Prereq: 311 or equiv, or permission of instructor; concur: 511. Students must register for 510 and 511 concurrently.

**511 Intensive Intermediate Japanese III: Written U G 5**

Sixth course in the sequence of intensive intermediate written Japanese; moves from pedagogically planned texts to genres written today for native consumption.

Sp Qtr. 5 cl. Prereq: 510 or equiv, or permission of instructor; concur: 510. Students must register for 510 and 511 concurrently.

**514 Advanced Japanese Conversation U 3**

Lectures, discussion, reports; extensive use of taped materials including news broadcasts, drama, interviews, informal conversations; conducted entirely in Japanese.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 104 or permission of instructor. Repeatable to a maximum of 9 cr hrs.

**601 Classical Japanese I U G 5**

Classical written language with emphasis on its structure; reading and analysis of selected pre-modern literary texts.

Au Qtr. 5 cl. Prereq: 509 or equiv.

**602 Classical Japanese II U G 5**

Continuation of 601.

Wi Qtr. 5 cl. Prereq: 601 or equiv.

**603 Classical Japanese III U G 5**

Continuation of 602.

Sp Qtr. 5 cl. Prereq: 602 or equiv.

**641 The Japanese Religious Tradition U G 5**

A survey of the Japanese tradition, including Shinto, Buddhism, Taoism, Neo-Confucianism, and folk religion from the 6th century B.C.E. to the present.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Not open to students with credit for Rel Stds 641. Cross-listed in Religious Studies.

**654\* Japanese Literature: Classical Period U G 5**

Survey of Japanese literature from the eighth to the mid-fourteenth century: myths, court poetry, tales, fiction, diaries, and miscellanies.

Au Qtr. 5 cl. Prereq: 231 or 251 or 252, or another Japanese literature course at the 200 level or above. Not open to students with credit for 754.

**655\* Japanese Literature: Medieval and Edo Periods U G 5**

Survey of Japanese literature from the mid-fourteenth to the mid-nineteenth century: popular tales, poetry, drama, and the fiction of the merchant class.

Wi Qtr. 5 cl. Prereq: 231 or 251 or 252, or another Japanese literature course at the 200 level or above. Not open to students with credit for 755.

**656\* Japanese Literature: Modern Period U G 5**

Survey of Japanese poetry, fiction, and drama from the 19th century to the present.

Sp Qtr. 5 cl. Prereq: 231 or 251 or 252, or another Japanese literature course at the 200 level or above. Not open to students with credit for 756.

**661 Readings in Modern Japanese I U G 5**

Selected readings in modern literary, scholarly, and journalistic Japanese; essentially a language course intended to improve fluency.

Au Qtr. 5 cl. Prereq: 509 or permission of instructor.

**662 Readings in Modern Japanese II U G 5**

Continuation of 661.

Wi Qtr. 5 cl. Prereq: 661 or permission of instructor.

**663 Readings in Modern Japanese III U G 5**

Continuation of 662.

Sp Qtr. 5 cl. Prereq: 662 or permission of instructor.

**680 Introduction to Japanese Linguistics U G 5**

An introduction to the phonology, syntax, and lexicon of the Japanese language.

Au Qtr. 3 1½-hr cl. Prereq: 103 or 103.01 or 5 cr hrs of 103.51, and Linguist 601; or permission of instructor.

**681 History of the Japanese Language U G 5**

A survey of the development of the Japanese language from early times to the present.

Sp Qtr. 3 1½-hr cl. Prereq: 103 or 103.01 or 5 cr hrs of 103.51, and Linguist 601; or permission of instructor.

**693 Individual Studies U G 1-5**

Requires the use of Japanese sources and the completion of a paper reflecting the student's research.

Su, Au, Wi, Sp Qtrs. Prereq: 509 or 603, and written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses. This course is graded S/U.

**694 Group Studies U G 1-5**

Investigation of minor problems in Japanese language and literature.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. Not a substitute for regular language courses.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**751\* Studies in Japanese Poetry U G 5**

Critical studies in Japanese poetry; survey of poetic forms, techniques, and aesthetics; concentration on a specific collection, poet, or coterie; topic varies.

Au Qtr. 5 cl. Prereq: 601, 654, 655, and 656; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**752\* Studies in Japanese Prose Literature U G 5**

History and critical study of myths, early tales, diaries, chronicles, *setsuwa*, miscellanies, medieval tales, Edo fiction, or the modern novel; topic varies.

Wi Qtr. 5 cl. Prereq: 601, 654, 655, and 656; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**753\* Studies in Japanese Drama U G 5**

History and texts of Japan's dramatic literature; *nô*, *kyôgen*, *kowaka-mai*, *bunraku*, *kabuki*, *shinsei shimpa*, *shingeki*, *rakugo*; topic varies.

Sp Qtr. 5 cl. Prereq: 601, 654, 655, and 656; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**782\* Japanese Phonology U G 3**

An analysis of the phonological structure of present-day Japanese with a critical examination of traditional and contemporary works on Japanese phonology.

Sp Qtr. 3 cl. Prereq: 680, 681, or permission of instructor. Not open to students with credit for 624.

**H783 Honors Research U 3-5**

A program of reading arranged for each student, with individual conferences, reports, and honor thesis.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a record of A in at least half of the Japanese courses taken and an average of B in all courses; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Open only to candidates for BA in Japanese. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**784 Japanese Syntax U G 3**

A survey of the grammatical structures of present-day Japanese; presentation of syntactic rules within the model of transformational grammar.

Au Qtr. 3 cl. Prereq: 680, 681, or permission of instructor. Not open to students with credit for 626.

**785 Japanese Dialects U G 3**

A survey of current trends and methods in Japanese dialectology; illustrative material from a variety of dialects (recordings and maps) will be used.

Wi Qtr. Prereq: 206 and 680, or equiv with written permission of instructor.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**800 Japanese Bibliography and Research Methods G 3**

Problems and procedures in the use of Japanese bibliographies and other reference materials.

Au Qtr. 3 cl. Prereq: 509 or permission of instructor.

**801 Teaching Japanese at the College Level G 5**

Methods and techniques of teaching college-level Japanese, selection and preparation of teaching, testing, and laboratory materials; observation of a variety of language classes.

Au Qtr. Two wks intensive workshop previous to qtr followed by 2-hr wkly cl. Prereq: Permission of instructor. For students enrolled in this course, the minimum number of cr hrs required for graduation is increased by 5 hrs.

**877 Topics and Problems in Japanese Literature G 3-5**

Readings in the major genres of Japanese literature with emphasis on analysis and critical evaluation.

Sp Qtr. 3 cl. Prereq: 603 or 663, and written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**879 Seminar in Japanese Literature G 3-5**

Au, Wi, Sp Qtrs. Prereq: 603 or 663, and written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**887 Topics and Problems in Japanese Linguistics G 3-5**

A detailed investigation of specific problems in the phonological, syntactical, and lexical analysis of the Japanese language.

Sp Qtr. Prereq: 206 and 680. Repeatable to a maximum of 10 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**998 Research in Japanese: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Jewish Studies

339 Dulles Hall, 230 West 17th Avenue, 292-0967

**294 Group Studies U 1-5**

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**694 Group Studies U G 1-5**

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

## Journalism

211 Journalism Building, 242 West 18th Avenue, 292-6291

**101 Introduction to Mass Communication U 3**

Introduction to the mass media in America, especially newspapers and broadcasting; analysis of forces and institutions affecting media behavior, and the resulting quality of performance.

Au, Wi, Sp Qtrs. 3 cl. Prereq: English 110 or 111 or equiv. SS Admis Cond course.

**201 Basic Reporting and Newswriting U 4**

Reporting and writing news and features for the print and electronic media.

Su, Au, Wi, Sp Qtrs. 4 2-hr cl. Prereq: 101; typing ability required.

**202 Advanced Reporting and Newswriting U 3**

Continuation of 201 with emphasis on more complicated reporting and news writing.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 2-hr labs. Prereq: 201.

**222 Reporting and Newswriting for Broadcast U 3**

Reporting and writing in broadcast news writing style; emphasis on gathering information for delivery through written communication meant to be heard rather than read.

Au, Wi, Sp Qtrs. 1 cl, 2 2-hr labs. Prereq: 201.

**303 Photojournalism U 3**

Reporting the news with a camera; how to recognize, develop, and create picture stories; experience in coordinating words and news pictures; picture editing; layout.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 201 or permission of instructor. Not open to students with credit for 203.

**304 Editing U 3**

Editing of copy, headline writing, rewriting, and general copy desk work.

Au, Wi, Sp Qtrs. 2 cl, 2-hr lab. Prereq: 202.

**311 Graphics of Communication U 4**

An introduction to visual and graphic communication in the print media, involving perception, typography, picture editing, and basic design skills.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 201 or permission of instructor.

**411 Reporting and Writing Radio News U 4**

Audio materials, instruments and techniques used in reporting news for radio; emphasis on the technical, aesthetic, and ethical problems in broadcast reporting.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 222.

**412 Reporting and Writing for Television U 3**

Reporting and editing for the news film medium, writing for the news film and newscast; practice in television news production and newscasting.

2 2-hr cl, lab hr arr. Prereq: 222.

**421 Journalism Laboratory—News Editorial U 3**

Reporting, editing, and photojournalism, primarily for the *Lantern*.

Su, Au, Wi, Sp Qtrs. No more than a total of 9 cr hrs may be earned in any combination of decimal subdivisions of 421 and 422; subdivisions not repeatable.

**421.01 Reporting**

Prereq: 202.

**421.02 Editing**

Prereq: 304.

**421.03 Photojournalism**

Prereq: 203 or 303, and permission of instructor.

**422 Radio and Television News Laboratory U 3**

Reporting and editing news primarily for radio and television programs.

Au, Wi, Sp Qtrs. Prereq: 411 or permission of instructor. No more than a total of 9 cr hrs may be earned in any combination of decimal subdivisions of 421 and 422; subdivisions not repeatable.

**422.01 Radio**

Prereq: 411.

**422.02 Advanced Radio**

Prereq: 422.01.

**422.03 Television**

Prereq: 411 and 412.

**431 Public Relations Principles U 3**

Origin and development of public relations, including ethical standards and functional role in modern society; basic principles of public relations theory, philosophy, and operation.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Jr or sr standing.

**432 Case Studies in Public Relations U 3**

Specific case studies designed for internal and external audiences; organization, administration of programs and departments; analysis of techniques, channels, media, and applicable research methods.

Au, Wi Qtrs. 3 cl. Prereq: 431 or 631.

**433 Public Relations Practice U 3**

Application of principles to specific public relations problems.

Au, Wi, Sp Qtrs. Prereq: 431. Open only to declared sr journalism majors.

**481 Principles of Advertising U 4**

Advertising in a free market society; its role, history, legal, and other restraints; social and economic impacts; agency operation and role of the media in advertising.

2 2-hr cl. Prereq: 201. Not open to students with credit for 494A Sp Qtr 1981 or Au Qtr 1982.

**482 Advertising Copywriting U 4**

Introduction to advertising copywriting; theory and practice in the writing and editing of advertising copy; study of copy testing and research methods; legal considerations and ethical problems.

Au, Wi, Sp Qtrs. 3 2-hr cl. Prereq: 481 or permission of instructor; 311 recommended.

**489 Journalism Field Experience U 3**

An out-of-class supervised field experience for advanced journalism majors.

Su, Au, Wi, Sp Qtrs. Arr.

**489.01 Advertising**

Prereq: 481, 482, and permission of instructor.

**489.02 Radio-Television**

Prereq: Jr or sr standing and permission of instructor. Repeatable to a maximum of 6 cr hrs.

**494 Group Studies U 1-5**

Regular class meetings and group discussion of specified problems.

Su, Au, Wi, Sp Qtrs. Prereq: Soph standing or above.

Repeatable to a maximum of 15 cr hrs.

**555 Factual Writing U G 3**

Gathering and writing factual material; research interviewing, critical analysis, and rewriting are stressed.

Au, Wi, Sp Qtrs. Prereq: English 110 or 111 or equiv. Not open to students majoring in journal.

**555.02 Home Economics****571 Basic Journalism for Beginning Graduate Students G 5**

Introduction to gathering facts and writing news stories for the media, with attention given to substantive reporting at the local level; libel and fair play.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Grad standing and permission of instructor. Credit does not apply to the minimum hrs required for grad study in journal.

**602 Magazine Writing U G 3**

Non-fiction writing for magazines, commercial and industrial; emphasis on the non-technical full-length magazine article.

3 cl. Prereq: 202 or permission of instructor.

**605 Development of the Mass Media in America U G 4**

Major currents and trends basic in the shaping of the mass media; famous personalities, foundations, and evolution of a free, responsible press.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Jr, sr, or grad standing.

**607 Law of the Press, Radio, and Television U G 4**

History, principles, and provisions of the law of libel, slander, copyright, and other statutes affecting newspapers, other publications, and broadcasting.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Jr or sr or grad standing.

**609 Mass Media Science Reporting U G 3**

Emphasis on information gathering and writing skills appropriate to communicating science to nonscientists; analysis of the state of the art of science reporting in U.S. mass media.

1 3-hr cl. Prereq: 201 or permission of instructor.

**611 Newspaper Design U G 3**

Application of design techniques to the modern newspaper, emphasis on analysis of contemporary newspaper format and its evolution.

Sp Qtr. 1 3-hr cl. Prereq: 311 or permission of instructor. Not open to students with credit for 694G.

**614 Supervision of Journalism in Secondary Schools U G 3**

Designed for journalism teachers in secondary schools and advisers; editorial, advertising, circulation, mechanical production, and publishing phases of school newspapers, magazines, and annuals.

1 cl. Prereq: Jr or sr or grad standing.

**622 Reporting Public Affairs for Radio and Television U G 3**

Instruction and practice in reporting the news of government, the courts, politics, education, finance, intergovernmental relations, political public opinion, and urban affairs.

2 2-hr cl, lab arr. Prereq: 422.01 or 422.03.

**623 Writing of Reviews and Criticisms U G 3**

Study of the work of the dramatic and literary critic, especially on newspapers and magazines; practice in writing reviews and criticisms.

Prereq: Jr or sr or grad standing or permission of instructor.

**624 Editorial Page U G 3**

Study of the purpose, form, style, and spirit of the editorial; consideration of current events, practice in news interpretation, and other editorial writing.

3 1-hr cl. Prereq: Journal 4th yr standing or permission of instructor.

**625 Investigative Reporting U G 3**

Intensive reporting and writing.

1 3-hr cl, conf arr. Prereq: Journal 4th yr standing or permission of instructor.

**626 Media Management U G 3**

Exploration of the specific functions and problems of the media manager; study of the structure of newspapers and broadcast stations.

3 cl. Prereq: Journal 4th yr standing or permission of instructor.

**627 Advanced Editing U G 3**

Advanced theory and practice in news selection, preparation and display for newspaper, magazine, broadcast and photo-journalism media; emphasis on the responsibility of the journalist.

Au, Wi, Sp Qtrs. Prereq: Journal 3rd yr standing and written permission of instructor.

**627.01 News-Editorial****627.02 Radio-Television****627.03 Photojournalism****627.04 Magazine****634 Writing for Public Relations Projects U G 3**

Writing and editing for public relations projects; identifying special audiences and tailoring material to their interests; writing for broadcast and print, in-house, and mass media.

2 2-hr cl. Prereq: 202 and 431 or permission of instructor. Not open to students with credit for 694R prior to Wi Qtr 1986.

**635 Public Relations Management and Strategy Development U G 3**

Application of management techniques to public relations; public relations strategy; campaign development.

Sp Qtr. 1 3-hr cl, arr consultations. Prereq: 431 and sr standing; or permission of instructor.

**636 Public Relations in Associations and Development Programs U G 3**

A systematic exploration of the literature applicable to important subfields of public relations; practical application projects.

Sp Qtr. 2 2-hr cl. Prereq: 431 or sr or grad standing, or permission of instructor. Not open to students with credit for this topic under 694L.

**641 Reporting Public Affairs U G 3**

Instruction and practice in reporting the news of government, the courts, politics, education, finance, intergovernmental relations, political public opinion, and urban affairs.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 421.01 or 422.01, and Jr or sr or grad standing in Journal.

**642 Mass Media, Society, and Basic Issues U G 4**

Analysis of the basic issues affecting news performance, especially ethics, news management, government control, gatekeeping, and monopoly; assessment of the effects of the resulting performance.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Sr or grad standing; or permission of instructor.

**643 International Communications and the World Press U G 4**

Examination of international news communication systems and selected media concepts and the role they play in the political, economic, and cultural environments.

3 cl, conf arr. Prereq: Jr or sr or grad standing or permission of instructor.

**648 Cartooning in American Journalism U G 3**

A study of the history of cartooning and its role in society and American journalism; an analysis of the power of cartoons as a popular communication medium.

2 1½-hr cl. Prereq: Journal major or permission of instructor. Not open to students with credit for 494D.

**651 Mass Media Research and Theory U G 4**

An overview of methods and findings of research in mass communications; instruction in the techniques of surveying public opinion, experimentation, and content analysis.

4 cl. Prereq: Jr or sr or grad standing or permission of instructor.

**661 Soviet System of Mass Communications U G 4**

Theory, organization, structure, and practice of the Soviet mass media in their historical as well as contemporary perspectives.

2 2-hr cl. Not open to students with credit for 694I.

**681 Advertising Media Planning U G 4**

Problems in planning and selecting advertising media; examination of how advertisers plan, evaluate, and use media to reach specific audiences.

Prereq: 481 and Jr standing.

**693 Individual Studies U G 1-5**

Students make extensive and significant studies in the field of journalism.

Su, Au, Wi, Sp Qtrs. Prereq: Journal 4th yr standing and permission of director, or grad standing and permission of instructor. No more than 5 cr hrs for undergrad and 6 cr hrs for grad students may be earned in any combination of decimal subdivisions. These courses are graded S/U.

**693.01 News-Editorial****693.02 Radio and Television****693.03 Photojournalism****693.04 Magazines****693.05 Public Relations****694 Group Studies U G 1-5**

Regular class meetings and group discussions of specified problems.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 25 cr hrs.

**711 Electronic Publishing U G 3**

Survey of videotex, teletext, and cabletext; emphasis on news services provided by these publishing activities; impact on other media.

Wi Qtr. 1 3-hr cl.

**712 Producing News for Videotext, Teletext, and Cabletext U G 3**

Presentation of the techniques of editing, writing, and reporting for electronic publishing.

1 cl, 2 2-hr labs. Prereq: 201 and 202, or 571, or permission of instructor; 711 recommended.

**H783 Honors Research U 3-5**

A program for students who are candidates for a degree *with distinction* in journalism.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing, a grade of A in half of the major courses and a B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**801 Research Methodologies for Journalism and Mass Communication G 4**

Integrated reading and research in the fields of journalism.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.

**801.01 Survey and other Field Methods**

Prereq: 651 or permission of instructor. Not open to students with credit for 801A.

**801.02 Experimental Design**

Prereq: 651 or permission of instructor. Not open to students with credit for 801B.

**801.03 Content Analysis**

Prereq: 651 or permission of instructor. Not open to students with credit for 801C.

**801.04 Legal Methods**

Prereq: 607 or permission of instructor. Not open to students with credit for 802C.

**801.05 Historical Methods**

Prereq: 605 or permission of instructor. Not open to students with credit for 802B.

**802 Topics in Journalism and Mass Communication G 4**

Integrated reading and research in the fields of journalism.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.

**802.01 People, Society, and Mass Media**

Prereq: 642 or permission of instructor. Not open to students with credit for 802A.

**802.02 International Communications**

Prereq: 643 or permission of instructor. Not open to students with credit for 812.

**802.03 Theories of Mass Communication**

Prereq: 651 or permission of instructor. Not open to students with credit for 801D.

**802.04 Literature and Journalism**

Not open to students with credit for 802D.

**802.05 Mass Communication Law G 4**

First Amendment principles through study of legal philosophy; judicial process; and case law affecting freedom of expression in the U.S.

1 3-hr cl. Prereq: 607 or permission of instructor.

**802.06 Special Topics G 4**

Discussion of current research in journalistic areas of mass communication.

1 3-hr cl. Repeatable to a maximum of 12 cr hrs.

**803 Issues in Journalism G 4**

Integrated reading and research in the fields of journalism.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs.

**803.01 News-Editorial Journalism**

Not open to students with credit for 803A.

**803.02 Radio/Television Journalism**

Not open to students with credit for 803B.

**803.03 Visual Communications**

Not open to students with credit for 803C.

**803.04 Magazine Journalism**

Not open to students with credit for 803D.

**803.05 Public Relations**

Prereq: 431 or permission of instructor. Not open to students with credit for 803E.

**805 Seminar in Kiplinger Public Affairs Reporting**

Designed to enhance the understanding and public affairs reporting capabilities of persons admitted to the Kiplinger Program.

Au, Wi, Sp Qtrs. Prereq: Admission to the Kiplinger Public Affairs Reporting Program.

**805.01 Local, State, and Federal Levels G 3**

3 cl. Repeatable to a maximum of 9 cr hrs.

**805.02 Field Studies G 6**

Arr.

**999 Research in Journalism G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Judaic and Near Eastern Languages and Literatures

256 Cunz Hall, 1841 Millikin Road, 292-9255

**271 Sacred Texts of the Near East U 5**

An introductory survey of the sacred texts of the Near East: Egyptian and Mesopotamian, the Bible, the Avesta, Hellenistic Gnostic literature, and the Qur'an.

Au Qtr. 5 cl.

**272 Masterpieces of Near Eastern Literatures in Translation U 5**

An introduction to major works of the Arabic, Persian, Turkish, and modern Greek literary tradition from the sixth century to the present.

Wi Qtr. 5 cl. Taught in English. BER/LAC/LAR course.

**294 Group Studies U 1-5**

Special topics to be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**610 Introduction to Akkadian U G 5**

Introduction to the phonology, morphology, and syntax of Akkadian; readings from *The Code of Hammurabi*, *The Annals of Sennacherib*, and other texts.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

**611 Comparative Semitics U G 5**

An introduction to the study of the comparative grammar of the Semitic languages.

Wi Qtr. 5 cl. Prereq: Permission of instructor.

**620 Biblical Aramaic U G 5**

Introduction to the language of the Aramaic sections of the books of Daniel and Ezra in the Old Testament.

Wi Qtr. 5 cl. Prereq: Hebrew 104 or permission of instructor.

**630 Introduction to Ugaritic U G 5**

Introduction to the language and literature of Ugaritic; readings in the Ugaritic mythological literature.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

**671 Canon and Communities in the Near East U G 5**

Investigation of the process by which Near Eastern sacred texts (Bible, Qur'an, and others) become sacred and the interaction between texts and communities holding them sacred.

Au Qtr. 5 cl.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs, including cr hrs earned in 693.10, 693.20, and 693.30.

**694 Group Studies U G 1-5**

Special topics to be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

## Korean

276 Cunz Hall, 1841 Millikin Road, 292-5816

**101 Elementary Modern Korean I U 5**

Standard modern Korean: development of listening, speaking skills; basic grammar; reading and writing of the Korean script (*hangul*).

Au Qtr. 5 cl. Not open to students with credit for Hum Col 294 Au Qtr 1981; or to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**102 Elementary Modern Korean II U 5**

Continuation of 101.

Wi Qtr. 5 cl. Prereq: 101 or equiv. Not open to students with credit for Hum Col 294 Wi Qtr 1982; or to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**103 Elementary Modern Korean III U 5**

Continuation of 102.

Sp Qtr. 5 cl. Prereq: 102 or equiv. Not open to students with credit for Hum Col 294 Sp Qtr 1982; or to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**104 Elementary Modern Korean IV U 5**

Continuation of 103.

Su, Au Qtrs. 5 cl. Prereq: 103 or equiv. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**111 Intensive Korean U 5 or 10**

An intensive course combining the content of 103 and 104.

Sp Qtr. 5 2-hr cl. Prereq: 102 or equiv. Not open to students with credit for 104. Equiv to 3rd and 4th courses in foreign language sequence; successful completion of 101, 102, 111 fulfills ASC foreign lang requirement. Students with credit for 103 may not register for more than 5 cr hrs.

**205 Intermediate Modern Korean I U 5**

Continuation of 104; designed to provide further acquisition of language skills in speaking, aural comprehension, reading, and writing.

Au Qtr. 5 cl. Prereq: 104 or 111 or equiv.

**206 Intermediate Modern Korean U 5**

Continuation of 205; designed to provide further acquisition of language skills in speaking, aural comprehension, reading, and writing.

Wi Qtr. 5 cl. Prereq: 205 or equiv.

**231 Elements of Korean Culture U 5**

A survey of the religion, customs, performing arts, fine arts, literature, and social institutions of the Korean people from the earliest era to the present.

Sp Qtr. 5 cl. Taught in English.

## Landscape Architecture

136B Brown Hall, 190 West 17th Avenue, 292-8263

**200 Outlines of Landscape Architecture U 3**

Introduction to landscape architecture and the environment; roles of the landscape architect in contemporary society.

Au, Sp Qtrs. 3 cl. Not open to students with credit for 300. VPA Admis Cond course.

**201 History of Landscape Architecture U 3**

Critical analysis of man's historical effort to control and shape his environment from earliest times to present.

Au Qtr. 3 cl. SS Admis Cond course.

**202 Shaping the American Landscape U 3**

Critical analysis of the shaping of the American landscape.

Wi Qtr. 3 cl. VPA Admis Cond course.

**203 History of the Profession of Landscape Architecture U 3**

Critical analysis of the historical formulation, growth, and present status of the profession of landscape architecture, concentrating on personalities, concerns, and works by selected landscape architects.

Sp Qtr. 3 cl. VPA Admis Cond course.

**204\* Design of Gardens and Small Properties I U 5**

Design of small-scale residential projects; master planning, use of plants and architectural materials, graphics.

Wi Qtr. 2 cl, 4 lab hrs. VPA Admis Cond course.

**205 Design of Gardens and Small Properties II U 5**

Continuation of 204.

Wi Qtr. 2 cl, 4 lab hrs. Prereq: 204.

**241 Landscape Architectural Design I U 6**

Study of existing outdoor spaces via graphics and models; design principles, elements and spatial organization.

Au Qtr. 2 cl, 12 lab hrs. Enrollment in arch and 2.15 cumulative pt-hr ratio.

**242 Landscape Architectural Design II U 7**

Landscape design as creative problem solving; the establishment of goals and objectives; use of spatial data diagramming, the generation and evaluation of alternative design solutions.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 241.

**243 Landscape Architectural Design III U 7**

Development of landscape design skills in abstract and real forms; color and spatial organization.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: 242 and 272 or 205 and permission of dept.

**271 Landscape Architectural Graphics I U 3**

Basic graphic elements, media and skills used in preparing and delineating hardline drafted plans, sections and base sheets for landscape architecture design and construction.

Au Qtr. 6 lab hrs. VPA Admis Cond course.

**272 Landscape Architectural Graphics II U 3**

Basic graphic elements, media and skills used in preparing and delineating freehand plans, sections, elevations, and isometrics essential to landscape architecture presentations.

Wi Qtr. 6 lab hrs. Prereq: 271.

**321 Landscape Construction: Earthwork as Design U 5**

Study of techniques essential to the horizontal and vertical development of site designs; emphasis on grading as an artform.

Sp Qtr. 3 cl, 6 lab hrs. Prereq: 205 or 271; Math 148.



**322 Landscape Construction: Layout Controls U 5**

Study of techniques essential to horizontal and vertical development of site designs; emphasis on layout, and circulation.

Au Qtr. 3 cl, 6 lab hrs. Prereq: 205 or 243; Math 150.

**323 Landscape Construction: Water in the Landscape U 5**

Integration of site systems; application of landscape construction and landscape materials detailing. Study of surface and subsurface drainage, stormwater management; pools, fountains, and water features in the landscape.

Wi Qtr. 3 cl, 6 lab hrs. Prereq: 205 or 243, and 321.

**341 Landscape Architectural Design IV U 7**

Social science inputs in landscape design at site planning scale; use of plant materials in spatial form development.

Au Qtr. 2 cl, 12 lab hrs. Prereq: 200, 243, and 321.

**342 Landscape Architectural Design V U 7**

Study of the factors influencing the design of urban landscapes and the impact of those factors on design process; case studies and project applications.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 200, 321, and 341.

**343 Landscape Architectural Design VI U 7**

Study of the factors influencing suburban and rural landscapes and their impact on design process case studies in site planning and design.

Sp Qtr. 2 cl, 12 lab hrs, arr field trips. Prereq: 200, 323, and 341. Travel and subsistence costs for the field trips will be borne by the student.

**373 Advanced Landscape Architectural Graphics U 3**

Advanced graphic elements, media, and skills used in preparing landscape architecture presentations.

Au Qtr. 6 lab hrs. Prereq: 271 and 272. Not open to students with credit for 273.

**421 Landscape Construction: Materials U 4**

Properties and production of man-made landscape building materials; material performance in exterior application; construction detailing with emphasis on wood and masonry assemblies.

Sp Qtr. 2 cl, 6 lab hrs. Prereq: 205 or 243 and Math 150.

**441 Landscape Architectural Design VII U 7**

Design of macro-scale landscape studies involving urbanization and multi-use management of landscape resources; use of geo-referenced data, computer-assisted analysis and display.

Sp Qtr. 2 cl, 12 lab hrs. Prereq: Jr standing, concur: Civil En 605.

**442 Landscape Architectural Design VIII U 6**

Project scale site planning and design; emphasis on development of landscape architectural skills required to complete the master plan and schematic design phases of landscape design.

Au Qtr. 1 cl, 12 lab hrs. Prereq: 343. Travel and subsistence cost for the field trip will be borne by the student.

**447 Landscape Architectural Design and Construction U 9**

Synthesis, refinement and expansion of professional knowledge and skills through design development and contract document phases of project design in landscape architecture.

Wi Qtr. 2 cl, 18 lab hrs. Prereq: 442, 421 and sr standing.

**451 Landscape Architecture Seminar U 4**

Research, discussion, and exercises pertinent to landscape architecture and related fields.

Sp Qtr. 4 cl. Prereq: 20 cr hrs in larch.

**620 Landscape Design Implementation I P G 5**

Study of design implementation procedures including: grading and drainage, earthwork calculations, road alignment, staking and layout, surveying appliances.

Au Qtr. 3 cl, 6 lab hrs. Prereq: Grad standing in larch or permission of grad studies committee.

**622 Landscape Design Implementation II P G 5**

Study of stormwater management in the treatment of landscape, uses of water in ponds, pools, and fountains; irrigation systems.

Au, Wi Qtrs. 3 cl, 6 lab hrs. Prereq: 620 or equiv with permission of grad studies committee.

**640 Landscape Architectural Design P G 5**

Exploration and application of principles of design, components and characteristics of space, landscape architectural design process, and small scale design.

Au Qtr. 2 cl, 12 lab hrs. Prereq: Grad standing in larch or permission of grad studies committee.

**642 Urban Landscape Design P G 5**

Landscape design in the urban setting; emphasis on design process, spatial structure, and design detailing of urban spaces.

Wi Qtr. 2 cl, 12 lab hrs. Prereq: 640 or permission of grad studies committee.

**644 Site Planning and Design P G 5**

Investigation of site planning and design at the project scale in the urban fringe or rural setting.

Sp Qtr. 2 cl, 12 lab hrs, arr field trips. Prereq: 642 or permission of grad studies committee. Travel and subsistence costs for the field trips will be borne by the student.

**670 Graphic Techniques in Landscape Architecture P G 3**

Graphic media, elements, and skills required in the preparation of landscape architectural presentations in plan, section, and elevation.

Au Qtr. Prereq: Grad standing in larch or permission of grad studies committee.

**693 Individual Studies U G 2-5**

For students in the Graduate School and those who wish to pursue special studies in landscape architecture.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing or permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

For students majoring in landscape architecture desiring to pursue special studies not offered in the fixed curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of the dept. Repeatable to a maximum of 15 cr hrs.

**740\* Research and Documentation in Landscape Architecture P G 5**

Research in professional practice techniques; emphasizes all phases of design investigation and documentation.

Au, Wi, Sp Qtrs. 1 cl, 4 2-hr labs. Prereq: Grad standing in larch. Repeatable to a maximum of 15 cr hrs.

**742\* History of Contemporary Landscape Architecture P G 5**

Investigation of personalities, works and concerns which influenced formulation, growth and current status of the profession of landscape architecture in the United States.

Sp Qtr. 2 2-hr cl. Prereq: Grad standing in larch or permission of instructor.

**750 Studio in Landscape Architecture P G 8**

Advanced professional landscape architectural project design techniques; documentation and execution of all phases from programming through detailed design and construction documents.

Au, Wi, Sp Qtrs. 4 4-hr lab. Concur: 740 and grad standing in larch. Repeatable to a maximum of 24 cr hrs.

**760 Evaluation and Criticism In Landscape Architecture P G 2**

Seminar in design philosophy and aesthetic evaluation criteria in landscape architecture.

Au, Wi Qtrs. 2 2-hr seminars. Prereq: Grad standing in larch. Repeatable to a maximum of 6 cr hrs.

## 970 Project in Landscape Architecture G Arr

Project scale design research, programming, and preparation of design alternatives, schematic, design development and construction documents for a selected project.

Su, Au, Wi, Sp Qtrs. 2-15 hrs arr. Prereq: Grad standing in larch. Repeatable to a maximum of 15 cr hrs.

# Latin

414 University Hall, 230 North Oval Mall, 292-2744

See also Classics.

Classics majors specializing in Latin should consult the departmental statement in the College of Humanities section of the *Colleges of the Arts and Sciences Bulletin*. Placement tests are required for all matriculating (including transfer) students who continue the study of Latin in the University in courses 101, 102, 103, 104, and any 200-level course. A placement test will be given on the first day of the quarter. For details see the departmental secretary in 414 University Hall.

Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 (including the decimal subdivisions such as 101.51, etc.) and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.

## 101 Elementary Latin I

Not open to students with credit for Latin 100.01 or 100.02. FL Admis Cond courses.

### 101.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 101.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hrs before the end of the qtr may proceed to 102.51. In 101.51, 102.51, and 103.51 progress is sequential from one cr hr to the next. Not open to students with 5 cr hrs in 101.02.

## 102 Elementary Latin II

FL Admis Cond courses.

### 102.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100.02 or 101.01, or 5 cr hrs of 101.02 or 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 102.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: 100.02 or 101.01, or 5 cr hrs of 101.02 or 101.51, or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Progress is sequential from one cr hr to the next. Not open to students with 5 cr hrs in 102.02.

## 103 Intermediate Latin I

Completion of Latin grammar and syntax; introduction to reading of Latin authors.

### 103.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 102.01, or 5 cr hrs of 102.02 or 102.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 103.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: 102.01, or 5 cr hrs in 102.02 or 102.51, and permission of instructor. Students may register for 102.51 and 103.51 concurrently with permission of instructor. Progress is sequential from one cr hr to the next. Not open to students with 5 cr hrs in 103.02.

## 104 Intermediate Latin II U 5

Selected readings in Latin literature.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Placement test, or 103.01, or 5 cr hrs of 103.02 or 103.51. This course is available for EM credit. BER course.

## 210†\* Cicero U 5

Readings from the Orations.

5 cl. Prereq: 104 or equiv high school Latin. Not open to students with credit for 201.

## 211 Vergil U 5

Readings from the *Aeneid*.

Sp Qtr. 5 cl. Prereq: 104 or equiv high school Latin. Not open to students with credit for 205.

## 212†\* Roman Historians U 5

Readings from Caesar, Sallust, Livy, and/or Tacitus' *Agricola*.

Au Qtr. 5 cl. Prereq: 104 or equiv high school Latin. Not open to students with credit for 203.

## 213\* Ovid U 5

Readings from the *Metamorphoses*.

Wi Qtr. 5 cl. Prereq: 104 or equiv high school Latin.

## 214\* Horace U 5

Readings from the *Odes and Epodes*.

5 cl. Prereq: 104 or equiv high school Latin. Not open to students with credit for 200.

## 293 Individual Studies U 1-3

Intermediate readings in Latin literature.

Su, Au, Wi, Sp Qtrs. Prereq: 101-104 or equiv; and written permission of dept. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

## 571 Fundamentals of Latin for Graduate Students I G 5

Fundamentals of Latin grammar and syntax for grad students preparing to use Latin for work in non-classical fields.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 501. Credit does not apply toward minimum hrs required for master's or doctoral degree. No audit.

## 572 Fundamentals of Latin for Graduate Students II G 5

A continuation of 571; preparation for reading Latin texts.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grad standing or permission of instructor. Not open to students with credit for 502. Credit does not apply toward minimum hrs required for the master's or doctoral degree. No audit.

## 601†\* Survey of Latin Literature: The Republic U G 5

A survey of authors representative of the Republican period of Latin literature, with discussion of historical background and methods of criticism.

2 2-hr cl. Prereq: 4 200-level courses and permission of instructor; or grad standing.

## 602†\* Survey of Latin Literature: Augustan Age U G 5

A survey of authors representative of the Augustan period of Latin literature, with discussion of historical background and methods of criticism.

2 2-hr cl. Prereq: 4 200-level courses and permission of instructor; or grad standing.

## 603†\* Survey of Latin Literature: Imperial Period U G 5

A survey of authors representative of the Imperial period of Latin literature, with discussion of historical background and methods of criticism.

2 2-hr cl. Prereq: 4 200-level courses and permission of instructor; or grad standing.

## 612\* Latin Prose Composition U G 5

Review of elementary syntax leading to composition of sentences and short connected passages; concurrent readings from Caesar or Cicero.

Sp Qtr. 3 cl, 2 hrs arr. Prereq: 4 courses more advanced than 104 or permission of instructor.

**615† Readings in Cicero U G 5**

Au Qtr. 5 cl. Prereq: 4 courses more advanced than 104.

**616 Readings in Vergil U G 5**

Sp Qtr. 5 cl. Prereq: 4 courses more advanced than 104.

**617† Readings in Caesar U G 5**

2 2-hr cl. Prereq: 4 courses more advanced than 104.

**618 Readings in Lucretius U G 5**

Extensive readings from *De Rerum Natura*.

2 2-hr cl. Prereq: 4 courses more advanced than 104.

**619† Readings in Ovid U G 5**

2 2-hr cl. Prereq: 4 courses more advanced than 104.

**620† Readings in Livy U G 5**

5 cl. Prereq: 4 courses more advanced than 104.

**622† Readings in Roman Comedy U G 5**

Extensive readings drawn from the works of Plautus and Terence.

5 cl. Prereq: 4 courses more advanced than 104.

**625 Readings in Post Classical Latin U G 5**

Extensive readings from texts illustrating the history of Latin language and literature of the medieval and/or Renaissance periods.

Wi Qtr. 5 cl. Prereq: 4 courses more advanced than 104 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**660 Special Topics in Latin Literature U G 5**

Extensive reading from masterpieces of Latin literature; topic varies.

Su Qtr. 2 2-hr cl. Prereq: 4 courses more advanced than 104. Repeatable to a maximum of 20 cr hrs.

**693 Individual Studies U G 1-6**

Passages for reading and topics for investigation will be selected to meet the needs of individual students.

Su, Au, Wi, Sp Qtrs. Prereq: 4 courses more advanced than 104. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Su, Au, Wi, Sp Qtrs. Prereq: 4 courses more advanced than 104 or permission of chairperson. Repeatable to a maximum of 20 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**H783 Honors Research U 3-5**

A program of study arranged for each student with individual conferences, reports, and an honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the Latin courses taken and with an average of B in the remainder; written permission of instructor under whose supervision the work is to be completed and ASC Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in Latin. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**792 Independent Studies in the Humanities U G 5**

Two or more departments may collaborate in presenting colloquia on studies of mutual interest; topics to be announced.

Au, Wi, Sp Qtrs. 1 or 2 2-hr cl.

**General Prerequisites for Courses Numbered 800 and Above**

*Prerequisites for admission to courses numbered 800 and above are graduate standing and permission of the chairperson.*

**802\* Advanced Latin Prose Composition G 5**

Study of the development and style of Latin prose; prose composition exercises; prepared and unprepared readings; conventions of prosody.

2 cl, tutorial arr. Prereq: 612 or permission of instructor.

**812† Studies in Vergil G 5**

Critical study of one or more of the works of Vergil.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**814† Studies in Cicero G 5**

Selected topics in the works of Cicero.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**830† Studies in Roman Drama G 5**

Critical study of one or more of the Roman dramatists: Plautus, Terence, Seneca.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**831 Studies in the Roman Historians G 5**

Selected topics in Roman historiography: Caesar, Sallust, Livy, Tacitus.

Wi Qtr. 2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**832 Studies in Latin Lyric and Elegy G 5**

Selected topics: poems of Catullus, the *Odes* and *Epodes* of Horace, or the elegies of Propertius, Tibullus, or Ovid.

Au Qtr. 2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**833† Studies in Roman Satire and Novel G 5**

Critical study of one or more of the Roman satirists and novelists: Lucilius, Horace, Persius, Petronius, Juvenal, Apuleius.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**835† Studies in Roman Epic G 5**

Selected topics in the history of Roman epic exclusive of Vergil: Ennius, Lucretius, Ovid, Lucan.

2 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**894 Group Studies G 1-6**

Repeatable to a maximum of 20 cr hrs.

**993 Individual Studies G 1-4**

Assigned reading and individual research.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**995 Seminar I G 5**

The seminar completes a two-qtr sequence (Au/Wi, Wi/Sp) begun with an 800-level intensive study of an author or genre; e.g. Cicero, Horace, Apuleius, or comedy; topic for 1988-89: Latin paleography and text criticism.

Sp Qtr. Repeatable to a maximum of 20 cr hrs.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Law

112 Law Building, 1659 North High Street, 292-2631

The College of Law is on a semester calendar. For 1989-90, the Fall Semester will begin August 21 and end December 21, 1989. The Spring Semester will begin January 8, 1990, and end May 11, 1990. The credits contained on the listing below are semester credit hours. The equivalent number of quarter credit hours can be determined by multiplying the semester hours by one and one-half.

## 502 Appellate Practice I P 0-1

Procedural and substantive aspects of appellate practice; the student prepares a brief and presents an oral argument on the basis of assigned research materials.

1st, 2nd Sem; 2-sem sequence. Progress graded 1st Sem; S or U mark given on completion of 2 sems.

## 503 Contracts P G 3

Remedies for breach; offer and acceptance; consideration; third party beneficiaries; assignment of rights and delegation of duties; conditions; impossibility and frustration; statute of frauds.

1st, 2nd Sem; 2-sem sequence. Progress graded 1st Sem; credit given on completion of 6 cr hrs.

## 504 Torts P G 5

Trespass to person; negligence; misrepresentation; nuisance, strict liability; liability insurance; alternatives to the fault system; and federal and state regulation of traffic safety.

1st Sem.

## 505 Property P G 3

Acquisition, incidents, and transfer of ownership; possessory, concurrent, marital, and future interests, and contractual modification of these results.

1st, 2nd Sem; 2-sem sequence. Progress graded 1st Sem; credit given on completion of 6 cr hrs.

## 507 Civil Procedure P G 3

Civil procedure in state and federal courts; development of equity; abolition of common law forms of action; merger of law and equity; jurisdiction; venue.

1st, 2nd Sem; 2-sem sequence. Progress graded 1st Sem; credit given on completion of 6 cr hrs.

## 510 Constitutional Law P G 5

Functional study of the major substantive, methodological, and federalistic limitations upon governmental power obtaining under practice of judicial review.

2nd Sem.

## 511 Legal Research P 1

Use of law books and computer legal retrieval systems; research methodology and citation form; introduction to legal analysis and writing.

1st Sem.

## 600 Appellate Practice II P 1-2

Preparation of a brief and presentation of several oral arguments; participation by second-year students as advisers in first-year Moot Court Program.

1 or 2 cr hrs by arrangement with instructor. Repeatable to a maximum of 2 cr hrs with permission of the instructor. S or U grade given on completion of second-year Moot Court Program.

## 603 Evidence P 3-4

Survey of rules of evidence; particularly demonstrative, testimonial, and circumstantial proof; qualification and examination of witnesses; privilege; relevancy; documents; hearsay rule and its exceptions.

## 605 Commercial Paper P G 2-3

Types of commercial or negotiable paper; liability of parties; transfer and payment.

## 606 Federal Income Taxation P G 3-5

Gross income; deductions; credits; attribution; timing; sales and other dispositions of property; characterization of income and deductions.

## 607 Business Associations P G 3-6

Formation, financing, governance, and regulation of corporations and partnerships, and including problems under the federal securities laws.

### 607.01 Business Associations

4 or 5 cl. Not open to students with credit for 607.02.

### 607.02 Business Associations—Extended

3 cl, 2 sem sequence. Progress graded 1st sem, cr given on completion of 2nd sem. Not open to students with credit for 607.01.

## 608 Advanced Business Association P G 2

Advanced study of problems of large publicly-held corporations; federal corporate law; corporate consolidations and distributions.

Prereq: 607.

## 609 Sales P G 2-3

A study of the Uniform Commercial Code and other statutes bearing on the sale of goods in the American market.

## 610 Secured Transactions P G 2-3

Creation and perfection of security interests in goods and intangibles under the Uniform Commercial Code; priorities and remedies.

Not open to students with credit for 612.

## 611 Debtor and Creditor Law P G 2-3

Debtor and creditor rights and remedies; emphasis on the Bankruptcy Code.

Not open to students with credit for 612.

## 612 Secured Transactions and Debtor and Creditor Law P G 4

Integrated treatment of secured transactions and debtor-creditor law.

Not open to students with credit for 610 or 611.

## 613 Employment Law P G 2-4

State and federal regulation of the employment relationship with primary focus upon minimum wage and overtime compensation, workers' disability and unemployment compensation, safety and health, retirement and pension security, and wrongful discharge.

## 614 Labor Law P G 3-5

Federal regulation of labor-management relations focusing upon employee organizational and representational rights, selection of bargaining representative, collective bargaining process, contract administration and enforcement, and internal union affairs.

3 to 5 cl. Prereq: 613. Not open to students with credit for 615 or 616.

## 615 Labor Law I P 2-3

Federal regulation of labor-management relations focusing on employee organizational and representational rights, selection of bargaining representative, and collective bargaining process.

2 to 3 cl. Prereq: Completion of first yr law. Not open to students with credit for 614.

## 616 Labor Law II P 2-3

Federal regulation of labor-management relations focusing upon collective bargaining process, contract administration and enforcement, and internal union affairs.

2 or 3 cl. Prereq: 615 and completion of first yr law. Not open to students with credit for 614.

## 618 Insurance P G 2

Insurance law and practice with particular reference to fire, life, and automobile insurance; insurable interest; warranties and representation; waiver and estoppel; construction standard policies.

**619 International Law P G 2-4**

International agreements; status of states and individuals; recognition; jurisdiction; international claims; expropriation; human rights; sovereign immunity; war and peace; law of the sea; presidential congressional power.

**620 Jurisprudence P 2-3**

Jurisprudential thought as represented by general theories of or about law; assessment of leading legal doctrines; relationship to social control policy and to legal precepts.

**621 Real Estate Finance P G 2-3**

Introductory study of real estate financing, emphasizing mortgages, deeds of trust, installment land contracts, rights and remedies of borrowers and lenders, and contemporary financing innovations.

**622 State and Local Taxation P G 2**

Legal problems arising in property, excise, income, and estate-inheritance taxation; tax administration and procedure.

**623 Federal Antitrust Law P G 3-4**

Combinations in restraint of trade; monopolization, attempts and conspiracies to monopolize; mergers, patent antitrust problems, and price discrimination under Sherman, Clayton, and Federal Trade Commission acts.

**625 Copyright Law P G 2-3**

Protection of literary and artistic property under the federal copyright statute, related legislation and unfair competition law.

**627 American Legal History P G 2-3**

The history of American law from its colonial antecedents until the twentieth century, emphasizing the relationship between law and the changing social, political, and economic conditions.

**628 Legal Problems of Financial Information P G 2-3**

Problems of financial information in the context of business enterprise law and tax law.

**629 Legislation P G 2-3**

Roles of the lawyer in the legislative process; legislative organization, jurisdiction, and procedure; formation of legislative policy; legislative drafting; statutory interpretation.

**633 Criminal Law P 3-4**

Substantive criminal law; functions and goals; legislative and judicial roles; constitutional limitations; fundamental concepts of culpability; defenses; definitions and functions of selected offenses.

**634 Juvenile Justice P G 3**

The law applicable to children, including a study of agency and juvenile court treatment of dependent, neglected, abused, unruly, and delinquent children.

**635 Family Law P G 3-4**

Legal concerns in marital relationships, including entrance into marriage, spousal relationships during marriage, annulment, divorce, custody, and post-divorce financial arrangements; legal concerns in quasi-marital living arrangements; communal living and homosexual relationships.

**636 Law and the Mentally Disabled P G 2-3**

Problem-oriented analysis of interaction between law and social science; emphasis on civil commitment, rights of institutionalized individuals, rights to community services (educational, residential, employment), and guardianship.

**637 Comparative Legal History P G 2-3**

Comparative studies in history of law and exploration of relationship between the development of legal systems and societal structures.

**639 Federal Criminal Law P G 2-3**

Advanced substantive and procedural study of the federal criminal law enforcement system including RICO (Racketeer Influenced and Corrupt Organizations), mail fraud, drug offenses, tax enforcement, bank secrecy, and civil rights.

3 cl. Prereq: 633.

**640 Criminal Procedure: Police Evidence Gathering Practices P 3**

Legality of police practices to gather evidence; emphasis on interrogation and search and seizure; some reference to identification procedures and entrapment.

**641 Criminal Procedure: The Pretrial Process P 3**

Study of the criminal justice system emphasizing the right to counsel, bail, preliminary proceedings, grand jury, speedy trial, discovery, and pleas.

**644 Agency and Employment P 2-3**

A system-descriptive approach to the common incidents of employment, partnership, and other agencies.

**646 Protection of Personality Interest P G 2-3**

Legal rights and remedies developed to protect interests in reputation, privacy, and other aspects of human dignity.

**647 Sex-Based Discrimination and the Law P G 2-3**

Law, legal institutions, and policy issues relevant to the redress of sex-based discrimination; constitutional, legislative, executive, and judicial avenues of redress.

**648 Land Use Planning Law P G 2-3**

Zoning, subdivision controls, and an introduction to municipal planning; topics vary, may include eminent domain, state and regional planning, government development, and private land use controls.

**649 Advanced Land Use Planning Law P G 2-3**

Study of public regulatory devices for land use and development; eminent domain; planned unit development; urban renewal; official maps; new towns; open space.

Prereq: 648.

**650 Local Government Law P G 2**

Types and organizations of local government units; intergovernmental relations; "home rule" power of Ohio municipalities; personnel; lawmaking; community planning; taxing and finance; contracts; legal liability.

**652 Banking Law P G 2-3**

Study of development of banking activities, structure, and regulation; emphasis on state and federal banking laws; interinstitutional competition, and laws relating to geographic and product expansion.

**656 Gratuitous Transfers P 2-3**

Gifts, wills, intestate succession, protection of spouse and other dependents, fiduciary administration, social security and other employee benefits, life insurance.

**657 Consumer Law P G 2-3**

In-depth study of consumer rights and remedies as provided by the common law and federal and state statutes, with particular emphasis on the Federal Truth in Lending Act.

**658 Advanced Constitutional Law P G 2-3**

Constitutional theory, with emphasis on competing views of judicial review and the judicial function; the methodologies and processes of constitutional decision making; and criteria for judicial justification.

**694 Group Studies P 1-4**

Group study in selected areas of the law.

Repeatable to a maximum of 13 cr hrs.

**697 Study at a Foreign Institution P 1-10**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

1st, 2nd Sem, Su Session. Arr. Prereq: Written permission of the Dean. Repeatable to a maximum of 30 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation; limited to students in education, law, medicine, nursing, social work, bio-medical sciences, and allied health professions.

Repeatable to a maximum of 4 cr hrs.

**700.01 Care of Patient/Client P G 1-2**

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

**700.03 Ethical Issues P G 1-2**

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, mind control, malpractice, and social responsibility of the professions.

**700.04 Interprofessional Practicum in Clinical Settings P G 1-3**

Interprofessional teamwork in clinical settings.  
2nd Sem.

**703 Legal Negotiation and Settlement P 2-4**

Study of the theory, law, and practice of transactional and settlement negotiations through actual negotiations by individual students in a variety of legal negotiation settings.

2 2-hr cl. Prereq: 736.01 or professional responsibility recommended. Enrollment limited to 16 students, class attendance mandatory.

**704 Trial Practice P 2-4**

Forensic skills developed through actual trial advocacy by individual students in civil or criminal cases.

Prereq: 603 or written permission of instructor.

**706 Conflict of Laws P G 2-3**

Private law pertaining to jural relations containing one or more foreign elements; jurisdiction; foreign judgments; domicile; choice of law; torts; workmen's compensation acts; contracts; property; family law; decedents' estates.

**707 Administration of Decedents' Estates P 2**

Probate and contests of wills; jurisdiction; effect and necessity of administration; inventory and assets; contracts; sales and investments by personal representatives; claims; accounting and distribution.

**708 Regulation of Security Distributions P G 2-3**

Analysis of Securities Act of 1933 and its pervasive effects on the issuance and transfers of securities.

**709 Advanced Securities P G 2-4**

Advanced topics in federal and state securities law.

Prereq: 607, and prereq or concur: 708.

**710 Federal Courts P 3-4**

The federal judicial system; jurisdiction of the district courts, courts of appeals, and United States Supreme Court.

**711 Law and Medicine P G 2-3**

Selected issues in the practice of medicine; medical malpractice, ethical issues, regulation of the health care industry, and use of medical testimony and proof in litigation.

**713 Appellate Practice IV P 1-4**

Procedural and substantive aspects of appellate practice; perfection of appeals; preparation of briefs and oral argument; participation by third-year students in various aspects of Moot Court Program.

1 to 4 cr hrs by arrangement with instructor. Repeatable to a maximum of 6 cr hrs with permission of the instructor. S or U grade given on completion of third-year Moot Court Program.

**715 Corporate Taxation P G 3-4**

Taxation of organizations; operations; sales and liquidations; divisions and reorganizations.

Prereq: 606.

**716 International Aspects of U.S. Income Taxation P 2-3**

United States taxation of transnational transactions, including taxation of foreign entities operating in the United States and taxation of United States entities operating in foreign countries.

Prereq: 606.

**718 Unfair Trade Practice P G 2-3**

Competitor, consumer, and administrative remedies for unfair business practices, including trademark infringement, trade secret appropriation, false advertising and disparagement, and copyright infringement.

**719 Natural Resources P 3**

The nature and incidents of public and private interests in water, minerals, oil and gas; conveyancing of natural resources, and mineral, oil, and gas leasing.

**720 Roman Law P 3**

Studies in the origins and development of Roman law based on original sources of translation.

Cross-listed in Classics as 607. This course is graded S/U.

**725 Deferred Compensation P 2-3**

Federal tax consequences of nonqualified deferred compensation plans and qualified pension, profit sharing, and stock bonus plans.

**727 Regulated Industries P G 3**

Legal and economic principles of rate regulation and entry requirements in utility, broadcasting, and transportation industries.

**728 International Transactions P G 2-4**

Legal problems in transnational context arising from doing business abroad; investments; establishment; exchange controls; trade, licensing; extraterritoriality of regulatory legislation; international agreements; European Common Market.

**729 Administrative Law P G 3-4**

A study of the creation, operation, and control of federal administrative agencies, emphasizing their legislative, investigative, and adjudicatory authority and its control through judicial review.

**731 Business Planning P G 2-4**

Advanced topics concerning business enterprises.

Prereq: 606 and 607.

**732 Environmental Law P G 2-4**

Federal environmental legislation, regulations, and judicial interpretation, including Natural Environmental Policy Act, the Clean Air Act, the Clean Water Act, and the Solid Waste Act, as amended.

**733 Political and Civil Rights: The First Amendment P G 2-3**

Advanced study of First Amendment precedent and doctrines governing the press, speech, association, and church-state relations.

**734 Political and Civil Rights: Equal Protection of the Law P G 2**

Advanced study of civil rights and legal problems of race relations in the contemporary social milieu; segregation; discrimination; equal protection; separatism; and affirmative action.

**735 Law Journal P 1-2**

Special studies covering diverse subjects of a legal nature participated in by the group selected for work on the *Law Journal*.

Prereq: Selection for *Law Journal* by editors. Repeatable to a maximum of 4 cr hrs. Students may earn up to 2 cr hrs for *Law Journal* participation prior to the beginning of the fifth semester, and may earn an additional 2 cr hrs for participation in the two final semesters of academic residence.

**736 Professional Responsibility**

Legal and ethical problems of the legal profession and the practicing lawyer.

Required course.

**736.01 Legal Profession P 1-2**

Unauthorized practice, bar admission, group legal services, malpractice, professional organization, and discipline.

1st and 2nd Sem, Su Session. 1-2 cl. Prereq: First year law course. This course is graded S/U.

**736.02 Legal Profession P 1-4**

A more comprehensive presentation of unauthorized practice, bar admission, group legal services, malpractice, professional organization, and discipline.

1st and 2nd Sem, Su Session. 4 cl. Prereq: First year law course. Not open to students with cr for 736.01.

**737\* Patent Law P G 2**

Fundamentals of substantive patent law relating to standards of patentability, patent claim interpretation and enforcement in patent litigation, and licensing.

**738 Study and Practicums in Legal Problems**

Pursuant to the New York Court of Appeals Rules for Admission to Practice, students who enroll for more than 8 cr hrs may be ineligible for admission to practice in New York. No student may enroll in more than 16 cr hrs.

Advanced study and training in performance of legal services for the poor under supervision of clinical faculty and staff attorney.

**738.01 Criminal Defense Practicum P 4**

Development of the basic knowledge and skills of criminal law practice.

Prereq or concur: 603 plus one or more of the following: 633, 640, 641; or written permission of instructor.

**738.02 Civil Law Practicum P 4**

Development of the basic knowledge and skills of civil law practice on behalf of the poor.

May not be taken simultaneously with any other practicum.

**738.04† Juvenile Law Practicum P 4**

Study of the intricacies of the juvenile intake process, difficulties of dealing with a total family situation involving child neglect or juvenile delinquency, and substantive legal problems of the juvenile area.

Prereq: None; 634, 640 and/or 641 recommended.

**738.07 Civil Liberties Practicum P 4**

Supervised clinical course involving study of problems peculiar to civil liberties law practice, including handling of selected cases involving civil liberties.

Prereq: None; 733 and 734 recommended.

**738.20 Selected Legal Problems Practicum P 1-6**

Topics will change as specially scheduled in any semester.

Repeatable to a maximum of 8 cr hrs.

**740 Taxation of Gifts, Trusts, and Estates P 2-3**

Tax treatment of gratuitous transfers, including gift, estate, and generation-skipping taxation, and income taxation of trusts, estates, and beneficiaries.

**742 Trusts and Future Interests P G 3-4**

Classification of interests, construction of limitations, destructibility rule, Doctrine of Worthier Title, Rule in Shelley's Case, Rule against Perpetuities, trusts, powers, and duties of trustees.

Prereq: 656.

**743 Remedies P G 2-4**

An integrated study of remedial theory and devices available in the context of torts, contracts, and property law.

**744 Employment Discrimination Law P G 2-3**

A constitutional and statutory study of federal and state laws that proscribe employment discrimination based upon race, color, religion, sex, national origin, age, and physical and mental handicap.

**745 Federal Taxation of Partnerships and Partners P G 2-3**

Federal income taxation of partners in general and limited partnerships.

Prereq: 606.

**746 Injunctions P 2**

Requirements for equitable jurisdiction, the collateral bar rule, interlocutory relief, procedures for granting, modifying, and appealing injunctions, and contempt.

**793 Individual Studies P G 1-4**

By special arrangement with the dean's office, special problems or projects may be taken for credit under the supervision of members of the faculty. The credit granted varies in proportion to the magnitude of the project. In general, assignment of special problems will be limited to instances of exceptional student specialization, scheduling difficulties, and curricular irregularity.

Repeatable to a maximum of 13 or hrs. S or U grade on completion of assigned work.

**794 Group Studies P G 1-4**

Group study in selected areas of the law.

Repeatable to a maximum of 13 cr hrs.

**796 Seminars P G 2-3**

Small group study and training in legal and non-legal research, expository writing, and various functions of the practicing lawyer.

**796.03 Constitutional Problems**

Advanced constitutional questions, including evolution of judicial review, intergovernmental relationships, protection of civil liberties, special problems under Ohio Constitution.

**796.07 Legal Regulation of Devolution of Property**

Socio-legal problems raised by devolution of wealth through such arrangements as public welfare programs, union welfare funds, insurance, foundations, charitable trusts, and pension trusts.

**796.08† Problems in the Law of Evidence**

Advanced evidentiary questions involved in preparation for and trial of cases.

**796.13 Medical-Legal Problems**

Conflict in concept between disciplines of law and medicine in matters of causation, injury, disability, prognosis, aggravation, and re-injury related to their use in proof of such elements in litigation.

**796.16 Right of Privacy**

Individual's interests in freedom from publicity and in physical seclusion; particularly legal response to social and technological changes which threaten these interests.

**796.19† Selected Problems in Criminal Law and Procedure P 2**

Topics vary and will be announced each semester.

**796.20 Research Seminar in Law**

Topics will change as specially scheduled in any quarter.

Repeatable to a maximum of 6 cr hrs.

**796.39 Business Planning**

Planning and drafting in field of business association; principally concerned with problems in general and limited partnerships, business trusts, and closely-held corporations.

**796.44 Legislative Planning**

Role of lawyer in advocating or opposing state and federal legislation; problems selected from past and current proposals before legislature.

Prereq: 629. Repeatable to a maximum of 6 cr hrs.

**796.47 Securities Regulation**

Study of recent legal developments affecting security trading market, brokers, exchanges and NASD, investment companies, and other institutional investors.

Prereq: 709. Must enroll to a maximum of 4 cr hrs.

**796.48 Trade Regulation**

Study of current problems of trade regulations, e.g. antitrust, unfair trade practices, patents, food and drug law.

Prereq: By designation of instructor.

**796.51† Social and Environmental Litigation**

Study of impact of law on social and environmental problems with emphasis on procedure and choice of remedies.

Prereq: None; 710 and 719 recommended.

**796.52 Federal Criminal Law**

The relationship of federal and state criminal law; historical role and specialized problems of federal criminal law.

**796.55† Consumer Credit**

Consumer credit; statutory and judicial regulation, with particular emphasis on the problems of the poor consumer.

Prereq: 605, 609, or 610.

**796.58 Law and the Political Process**

Exploration of the lawyer's role in the political process; the relationship of political parties to the election process; and the interplay of legal requirements and the campaign and voting procedures.

**796.61 Society, Deviance, and the Law**

How certain members of society are labeled as deviant and how society reacts to that label with legal sanctions and social management techniques.

Prereq: Permission of instructor.

**796.62 Commercial Law**

In-depth consideration of commercial law, focusing primarily on the Uniform Commercial Code.

Prereq: 605, 609, and 610.

**796.63 Problems in Torts**

Exploration of current and emerging problems in the law of torts.

**797 Interdepartmental Seminars P 1-5**

## Linguistics

204 Cunz Hall, 1841 Millikin Road, 292-4052

See also English, the foreign languages, Romance Linguistics, and Sanskrit.

**201 Introduction to Language U 5**

A survey of language as a system of human communication; topics include meaning, language structure, sound systems, language change and acquisition, language in society.

Su, Au, Wi, Sp Qtrs. 5 cl. H201 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course.

**203 Language Differences and Language Universals U 5**

Differences in sound systems, word structure, and grammar; illustrations from foreign accents; language types; universal principles of structure.

Wi Qtr. 5 cl. Prereq: 201 and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**230 Language and the Sexes U 5**

Types of sex differentiation in different languages and their social and symbolic consequences.

Sp Qtr. 5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**265 Language, Thought, and Culture U 5**

Investigation of the role of language in social behavior and of the interrelationships among language, culture, and patterns of thought, including Whorf's linguistic relativity hypothesis.

Sp Qtr. 5 cl. Prereq: English 110 or 111 or equiv. BER/LAC/LAR course.

**271 Elements of Psycholinguistics U 5**

Linguistics and the structure, acquisition, function, and malfunction of language.

Sp Qtr. 5 cl. Prereq: 201 and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**285 Language Change and Development U 5**

Survey of the kinds of linguistic change; discussion of the external influences (social, cultural, political, etc.) that affect the historical development of languages.

Au Qtr. 5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**294 Group Studies U 5**

Introductory topics in linguistics.

Repeatable to a maximum of 10 cr hrs.

**600 Phonetics U G 5**

Principles of articulatory phonetics, with some discussion of acoustic phonetics; practice in the production, recognition, and transcription of sounds in various languages of the world.

Au Qtr. 5 cl. Prereq or concur: 601 or an equiv course in linguistics or phonetics.

**601 Introduction to Linguistics U G 5**

A broad introduction to general linguistics: survey of phonological, morphological, syntactic, and semantic analysis, and of historical and comparative linguistics.

Au, Wi, Sp Qtrs. 5 cl.

**602 Introduction to Syntax U G 5**

Theories of syntax; principles of syntactic description.

**602.01 Introduction to Syntax I**

Au Qtr. 5 cl. Prereq: 601.

**602.02 Introduction to Syntax II**

Wi Qtr. 5 cl. Prereq: 602.01.

**603 Introduction to Phonology U G 5**

Introduction to phonological analysis and the principles governing the structure, acquisition, and change of phonological systems; survey of major phonological theories.

**603.01 Introduction to Phonology I**

Wi Qtr. 5 cl. Prereq: 600 and 601.

**603.02 Introduction to Phonology II**

Sp Qtr. 5 cl. Prereq: 603.01.

**609 Morphology U G 5**

The grammatical and phonological analysis of words, and their significance in linguistic structure.

Sp Qtr. 5 cl. Prereq: 601 or permission of instructor.

**611 Introduction to Historical Linguistics U G 5**

Introduction to the methods and principles of historical linguistics.

Sp Qtr. Prereq: 601 and 603.01, or background in phonology with permission of instructor.

**623†\* Topics in Indic Linguistics U G 3, 5**

Possible topics include advanced classical Sanskrit, introductory Vedic Sanskrit, Indo-Iranian or Indo-Aryan linguistics, or studies in the ancient Indian grammarians.

Au Qtr. 3, 5 cl. Prereq: 622 or Sanskrit 622 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**650 Field Methods in Linguistics U G 5****650.01 Field Methods I**

Methodology for determining the phonological system of a previously unknown language through the use of a native informant.

Wi Qtr. 5 cl. Prereq: 600 or permission of instructor. Repeatable to a maximum of 40 cr hrs.

**650.02 Field Methods II**

Methodology for determining the morphological and syntactic system of a previously unknown language through the use of a native informant.

Sp Qtr. 5 cl. Prereq: 650.01. Repeatable to a maximum of 40 cr hrs.

**661 Sociolinguistics U G 5**

Description and explanation of the interaction between linguistic and social factors in language.

Sp Qtr. 5 cl. Prereq: 601 or permission of instructor.



**671 Psycholinguistics U G 5**

The contribution of linguistic theory to the study of the acquisition, maturation, and functioning of language skills.  
Wi Qtr. 4 cl. Prereq: 603.02.

**672 Language Description U G 3-5**

Informant techniques and (if available) textbooks and published linguistic analyses are employed in analyzing and describing a language.  
Wi Qtr. 3-5 cl. Prereq: 601. Repeatable to a maximum of 30 or hrs.

**681† Algebraic Linguistics U G 5**

Formal properties of grammar and automata; relations between linear, context-free and context-sensitive grammars and finite, pushdown-storage and linear-bounded automata; properties of transformational grammars.  
5 cl. Prereq: 601 and permission of instructor.

**683 Linguistic Semantics U G 5****683.01 Introduction**

Problems and methods of analysis in linguistic semantics and pragmatics; use of formal logic and semantic model theory in analyzing natural languages.

Au Qtr. 5 cl. Prereq: 681 or equiv. Not open to students with credit for 683 prior to Sp Qtr 1981.

**683.02 Montague Grammar**

Syntactic and model-theoretic analysis of natural languages as described by Richard Montague in *The Proper Treatment of Quantification in Ordinary English*.

Wi Qtr. 4 cl. Prereq: 681 or 683.01 or a course in symbolic logic.

**685 Languages in Contact U G 3, 5**

Study of the effects of language contact on the structure of the involved languages; of the characteristics of the individuals and communities involved in language contact.

Au Qtr. 3, 5 cl. Prereq: 601.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq or concur: 601 or permission of instructor. Repeatable to a maximum of 40 or hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Study of topics not regularly scheduled for seminars in linguistics, under the direction of a faculty member.

Prereq: 601. Repeatable to a maximum of 30 or hrs.

**695† Seminar in Anthropological Linguistics U G 5**

Prereq: Anthropol 675 or permission of instructor. Repeatable to a maximum of 30 or hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**H783 Honors Research U 3-5**

Informal conferences to allow full scope to the initiative of the student, who will prepare an honors thesis in consultation with the instructor.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing and the completion of departmental honors requirements with a grade of A in at least half of the linguist courses, including approved related courses; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in linguist. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**795 Seminar in Linguistics U G 3-5**

A selected group study, with emphasis on individual writing and presentation.

Au, Wi, Sp Qtrs. 3-5 cl. Prereq: 602 and 603, or permission of instructor. Repeatable to a maximum of 30 or hrs.

**800 Proseminar in Linguistics G 3**

Introduction to the problems, methods, and tools of linguistic research.

Sp Qtr. 2 cl. Recommended for all candidates for grad degrees. This course is graded S/U.

**801\* Historical Linguistics I G 5**

An introduction to the methods, conventions, and literature of comparative-historical linguistics with primary attention to the comparison and reconstruction of Indo-European phonological systems.

Au Qtr. 5 cl. Prereq: 601, and either 611 or written permission of instructor.

**802\* Historical Linguistics II G 5**

Advanced work in the comparison and reconstruction of morphological and syntactic systems, primarily Indo-European; detailed examination of some of the results of past and current scholarship.

Wi Qtr. 5 cl. Prereq: 801.

**803†\* Topics in Indo-European G 5**

Study of various Indo-European languages and language families and exploration in depth of specific problems in Indo-European grammar.

5 cl. Prereq: 802. Repeatable to a maximum of 30 or hrs.

**809 Seminar in Morphology G 3, 5**

Advanced topics in morphological analysis.

Au, Sp Qtrs. Arr. Prereq: 609. Repeatable to a maximum of 30 or hrs.

**812 Seminar in Semantics G 5**

Accounts of semantic judgments in languages, especially within the theory of generative grammar; relationships between syntax, semantics, and language use.

Sp Qtr. 5 cl. Prereq: 602.02; a course in symbolic logic recommended. Repeatable to a maximum of 30 or hrs.

**814 Seminar in Pragmatics G 5**

An intensive examination of one or more major problems in pragmatics, such as speech acts, implicature, or presupposition.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 or hrs.

**820 Seminar in Syntax G 5**

Advanced topics in syntactic analysis.

Au, Wi, Sp Qtrs. Prereq: 602.02. Repeatable to a maximum of 30 or hrs.

**821 Seminar in Phonology G 5**

Advanced topics in phonological analysis.

Sp Qtr. Prereq: 603.02. Repeatable to a maximum of 30 or hrs.

**822† Seminar in Historical Linguistics G 5**

Advanced topics in methods and principles of diachronic analysis.

Prereq: 611 or permission of instructor. Repeatable to a maximum of 30 or hrs.

**825 Seminar in Advanced Phonetics G 5**

Study of specific problems in articulatory and acoustic phonetics at an advanced level.

Sp Qtr. 3 cl, 2 lab hrs. Prereq: 600. Repeatable to a maximum of 30 or hrs.

**830 Teaching Introductory Linguistics G 3**

Designed to train instructors in the techniques and materials used to teach introductory linguistics courses.

Sp Qtr. 3 cl. Prereq: 601 or equiv. This course is graded S/U.

**861 Seminar in Sociolinguistics G 3-5**

Advanced topics in sociolinguistics.

Wi Qtr. Arr. Prereq: 661. Repeatable to a maximum of 30 or hrs.

**871 Seminar in Psycholinguistics G 3-5**

Advanced topics in psycholinguistics.

Au Qtr. Arr. Prereq: 671. Repeatable to a maximum of 30 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Au Qtr. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**993 Individual Studies G 1-5**

Assigned reading and individual research.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**999 Research in Linguistics G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Master of Business Administration

112 Hagerty Hall, 1775 College Road, 292-8511

**800 Financial Accounting and Reporting G 4**

Mechanics of income statement, balance sheet, and fund flows; accounting policy choices; financial statement analysis using fund flows; ratios, quality of earnings, sustainable growth rates, and inflation adjustments.

Au Qtr. Prereq: Enrollment in the structured MBA.

**801 Accounting for Decision Making G 4**

Cost data for inventory valuation; cost data for decision making (pricing, product-mix, make or buy); cost data for performance evaluation and control.

Au, Wi Qtrs. Prereq: Enrollment in the structured MBA.

**810 Financial Management G 4**

The development of an understanding of financial terminology, instruments, and foundations for analyzing and dealing with the financial management problems of business enterprises.

Sp Qtr. Prereq: Enrollment in structured MBA.

**811 Financial Decision Making G 4**

Analysis of financial management through case study; financial concepts and techniques used to identify problems, feasible alternatives, and recommendations of best course of action.

Au, Wi Qtrs. Prereq: Enrollment in structured MBA.

**820 Management of Human Resources G 4**

Study of human resources policies and practices including legal environment, compensation, performance appraisals, and unionism as they relate to individual performance and organizational effectiveness.

Su, Sp Qtrs. 2 2-hr cl. Prereq: Enrollment in the structured MBA.

**830 Information Processing: Concepts and Technology G 4**

An introduction to the fundamental concepts and terminology which a manager needs to personally utilize information processing technology in a variety of decision-making contexts.

Au Qtr. Prereq: Enrollment in structured MBA.

**831 Information Systems for Management Decision Making G 4**

The study of the role of the information systems function in organizations and the role of information in the management decision-making process.

Au, Wi Qtr. Prereq: Enrollment in structured MBA.

**832 Information Systems Support for Group Decision Making G 4**

Information systems used in organizations as decision support mechanisms for group decision making.

Au Qtr. Prereq: 831.

**833 Economic Evaluation of Management Information System G 4**

An examination of both the benefits and costs of acquiring an information system to support management decision making.

Wi Qtr. Limited to students in MBA program or permission of instructor.

**840 Marketing Management G 4**

Focuses on the interrelated elements of the marketing mix, its relationship with the other functional areas of management, and marketing responses to the external environment.

Sp Qtr. Prereq: Enrollment in structured MBA.

**842 Product Management Strategy G 4**

Comprehensive examination of product and communication design decisions facing product managers in consumer and industrial firms; case studies and industry-sponsored project; new product development and positioning.

Wi Qtr. Prereq: 840 or equiv and enrollment in structured MBA; others with permission of instructor.

**843 Sales and Channel Management G 4**

Activities and problems of first-line sales manager; organizing the sales force, recruiting, training, compensating and motivating the sales force, forecasting, and territory design.

Wi Qtr. Prereq: 840 and Bus-Mktg 850, or permission of instructor.

**844 Applied Marketing Planning G 4**

Basic, practical elements of integrated strategic planning, current, and future planning techniques.

Sp Qtr. Prereq: 840, 842, and 843; or permission of instructor.

**845 International Marketing Strategy G 4**

Analysis of strategic, political, and philosophical issues faced by management and governments involved in international trade; emphasis on case analysis.

Sp Qtr. Prereq: 840 or Bus-Mktg 850 or permission of instructor; and Bus-Adm 856.

**850 Operations Management G 4**

Introduction to basic operations principles; exploration of major operating problems; strategic and tactical decision making; emphasis on determination of policy for managing productive resources; role of operations manager.

Su, Sp Qtrs. Prereq: Enrollment in structured MBA.

**860 Management and Individual Behavior G 4**

An overview of factors that influence individual work performance and techniques to improve it; analytical frameworks for determining effectiveness of given techniques in specific circumstances.

Au, Sp Qtrs. Prereq: Enrollment in structured MBA.

**870 Statistical Analysis for Decision Making G 4**

Introduction to statistical inference and its use in decision making; major emphasis on achieving an application-oriented understanding of regression analysis.

Au Qtr. Prereq: Enrollment in structured MBA.

**871 Modeling for Decision Making G 4**

The use of quantitative techniques in practical decision-making situation; emphasis on concepts with relatively little mathematics utilized to describe the techniques.

Wi Qtr. 2 2-hr cl. Prereq: Enrollment in structured MBA.

**880 Legal and Regulatory Environment G 4**

Focuses on the application of law to managerial decisions; designed to provide an appreciation and understanding of the relationship between legal and business strategy.

Wi Qtr. 2 2-hr cl. Prereq: Enrollment in structured MBA.

**893 Individual Studies G 1-5**

Individual study projects in selected areas in business not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 16 cr hrs. This course is graded S/U.

**894 Group Studies G 1-5**

Students are given an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 16 cr hrs.

**980 Strategy Formulation and Implementation I G 4**

Introduction to the nature of corporate strategy, development of a conceptual framework for understanding competition in industries, and the factors that shape competitive success or failure.

Au Qtr. Prereq: Successful completion of the 1st yr of structured MBA.

**981 Strategy Formulation and Implementation II G 4**

Introduction to the strategic significance of social, political, and governmental forces as well as the role financial control systems play in implementing and evaluating strategy.

Wi Qtr. Prereq: 980.

**982 Strategy Formulation and Implementation III G 4**

Focuses on the role of top management in implementing strategy; special emphasis on organizational culture, management style, and the nature of decisions.

Sp Qtr. 2 2-hr cl. Prereq: 981.

## Materials Science and Engineering

177 Watts Hall, 2041 College Road, 292-2960

**201 Introduction to Ceramic Engineering U 3**

Introductory course for ceramic engineering students and a survey of ceramic products, their testing, and their uses for students in disciplines other than ceramic engineering.

Au Qtr. 3 cl. Not open to students with credit for Ceram En 201.

**293 Individual Studies U 1-6**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**293.01 Individual Studies in Ceramic Engineering**

Individual study in ceramic area utilizing library and laboratory facilities under the direction of a staff member, for engineering and non-engineering students.

Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs including cr hrs earned in Ceram En 293.

**293.02 Individual Studies in Metallurgical Engineering**

Special topics in metallurgical engineering of individual interest at the undergraduate level, for engineering and non-engineering students.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs including cr hrs earned in Metal En 293.

**294 Group Studies U 1-5**

Group study utilizing library and laboratory facilities under the direction of a staff member.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs including cr hrs earned in Ceram En 294.

**310 Cast Metal Technology U 4**

Introduction to metal casting technology, molding materials and methods, gating and risering of castings, solidification, and casting design.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Chem 204. Industrial type safety glasses must be worn in laboratory. Open to non-engineering students. Not open to students with cr for Metal En 310.

**400 Materials Engineering U 4**

Survey of properties and behavior of metallic, ceramic, and polymer materials; dependence on physical and chemical environment, selected materials systems, materials selection, and failure analysis.

Su, Wi, Sp Qtrs. 4 cl. Prereq: Chem 204 or Chem 122 and Physics 133. Not open to students with credit for Metal En 400.

**401 Thermodynamics of Materials U 4**

Basic thermodynamic concepts, laws, derivations, equations, data bases, and methods of problem solution in metallurgical and ceramic systems; emphasis on use of data in reaction analyses.

Su, Sp Qtrs. 3 cl, 1 2-hr recit. Prereq: Physics 132, Math 254; prereq or concur: Chem 205 or 123, and a minimum cumulative pt-hr ratio of 2.00. Not open to students with credit for Metal Eng 401.

**402 Principles of Ceramic Engineering U 5**

An introduction to the concepts involved in, and the relationships between chemistry, structure, processing, and properties of ceramic materials as compared to metals and polymers.

Sp Qtr. 5 cl. Prereq: Chem 122 or 205, Math 152, minimum of 2.00 cumulative pt-hr ratio and acceptance as a Ceramic Engineering major or written permission of the dept. Not open to students with credit for 202 or 402.

**422 Ceramic Phase Equilibria U 3**

Basic principles of phase diagrams, the usefulness of equilibrium diagrams in problems relevant to ceramic engineering. Kreidler.

Au Qtr. 3 cl. Prereq: 402 and En Graph 200. Not open to students with credit for Ceram En 402.

**423 Fundamentals of Ceramic Engineering I: Materials U 3**

A study of ceramic raw materials, including physical and chemical characteristics; powder preparation, mixing, milling, and batch calculations.

Au Qtr. 3 cl. Prereq: 402. Not open to students with credit for Ceram En 423.

**424 Fundamentals of Ceramic Engineering II: Processing U 3**

Basic principles of ceramic processing including: dry pressing, colloidal and rheological properties of ceramic bodies, plastic forming, and other fabrication methods.

Wi Qtr. 3 cl. Prereq: 423. Not open to students with credit for Ceram En 424.

**425 Fundamentals of Ceramic Engineering III—Thermal Processing U 3**

Ceramic drying and firing processes, emphasis is on microstructure development: calcining, solid state sintering, liquid phase sintering, vitrification, and grain growth.

Sp Qtr. 3 cl. Prereq: 424. Not open to students with credit for Ceram En 425.

**440 Physical Metallurgy I U 3**

Crystallography; bonding; physical properties of single crystals, polycrystals; defects in crystals; diffusion.

Su, Sp Qtrs. 3 cl. Prereq: Math 153, Physics 132, and a minimum cumulative pt-hr ratio of 2.00. Not open to students with credit for Metal En 440.

**450 Introductory Ceramic Laboratory U 3**

An introduction to laboratory procedures, and to the construction and operating principles of ceramic manufacturing equipment and process instrumentation.

Sp Qtr. 2 1-hr cl, 1 3-hr lab. Prereq or concur: 402. Not open to students with credit for 451.01 and 451.02. Not open to students with credit for Ceram En 450.

**452 Ceramic Laboratory U 1**

General laboratory in ceramic process and property measurements.

1 3-hr lab.

**452.01 Materials and Characterization**

Au Qtr. Prereq or concur: 423. Not open to students with credit for 451.03. Not open to students with credit for Ceram En 452.01.

**452.02 Wet Processing**

Wi Qtr. Prereq or concur: 424. Not open to students with credit for 451.04 or Ceram En 452.02.

**452.03 Reactions and Kinetics**

Sp Qtr. Prereq or concur: 425. Not open to students with credit for 451.06 or Ceram En 452.03.

**452.04 Mechanical Properties**

Au Qtr. Prereq or concur: 615. Not open to students with credit for 451.09 or Ceram En 452.04.

**452.05 Sintering and Transport Properties**

Wi Qtr. Prereq: 450, prereq or concur: 613. Not open to students with credit for 451.07 or Ceram En 452.05.

**452.06 Physical Properties**

Sp Qtr. Prereq or concur: 614. Not open to students with credit for 451.08 or Ceram En 452.06.

**460 Physical Metallurgy II U 3**

Recovery, recrystallization, and grain growth; binary and ternary phase diagrams.

Au Qtr. 3 cl. Prereq: 440; concur 480A. Open only to ENG majors or with written permission of dept. Not open to students with credit for Metal En 450.

**480 Physical Metallurgy Laboratories U 1**

A—Introduction to metallography and related experimental techniques. Au Qtr. Prereq or concur: 460.

B—Recrystallization, age hardening, cast, and welded microstructures. Wi Qtr. Prereq or concur: 550.

C—Isothermal transformation; quenching, tempering, and hardenability. Sp Qtr. Prereq or concur: 551.

Repeatable to a maximum of 4 cr hrs including cr hrs earned in Metal En 480. Courses must be scheduled in the order listed. Not more than one course per quarter permitted.

**489 Professional Practice in Industry U 2**

Preparation of a comprehensive report based on employment experience in a co-op job in industry.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Admission to co-op program. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**510 Thermodynamics of Ceramic Materials U G 3**

Applications of thermodynamics to ceramic systems, including solution theory, surfaces and interfaces and high temperature electrochemical cells.

Wi Qtr. 3 cl. Prereq: 401, and prereq or concur: Math 255. Not open to students with credit for Ceram En 510.

**512 Structure of Ceramic Materials U G 3**

Structure of crystalline, inorganic, non-metallic materials including silicates and technical ceramics, crystal chemistry and physics, and introduction to glassy state. Drummond.

Au Qtr. 3 cl. Prereq: 402, and prereq or concur: Geol&Min 414.

**513 Ceramic Reactions and Processes U 3**

Application of macroscopic principles of thermodynamics and heat and mass transport to ceramic reactions and processes including firing, drying, glass melting, and corrosion.

Sp Qtr. 3 cl. Prereq: 510 and Math 255. Not open to students with credit for Ceram En 513.

**525 Metallurgical Material and Energy Balance Calculations U G 4**

Introduction to chemical process metallurgy, stoichiometry, mass and heat balances, fuel usage and energy balance and storage, non-steady-state processes.

Au Qtr. 3 cl, 1 2-hr recit. Prereq: 401, En Graph 200, and Math 255. Open only to ENG majors or with written permission. Not open to students with credit for Metal En 525.

**526 Advanced Chemical Metallurgy U G 3**

Advanced metallurgical thermodynamics and kinetics, including solution theory, electro-chemical principles, graphical representation of phase equilibria, gas-solid reactions, and heterogeneous catalysts.

Sp Qtr. 3 cl. Prereq: 525 or equiv. Not open to students with credit for Metal En 526.

**529† Ceramic Process and Product Control U 4**

The application of control methods for processes and products.

Wi Qtr. 4 cl. Prereq: 424. Not open to students with credit for Ceram En 529.

**530 Process Metallurgy I U G 3**

Transport phenomena in metallurgy; fluid flow and heat-transfer as applied to metallurgical processes and metal production and refining.

Wi Qtr. 3 cl. Prereq: 525 or equiv. Not open to students with credit for Metal En 530.

**531 Glass Science U G 3**

The science of glass including glass structure and formation related to composition, kinetics of crystallization, phase separation, glass transition, and viscosity. Drummond.

Wi Qtr. 3 cl. Prereq: 512. Not open to students with credit for Ceram En 531.

**550 Physical Metallurgy III U G 3**

Principles of phase transformations in the solid state.

Wi Qtr. 3 cl. Prereq: 401 and 460. Not open to students with credit for Metal En 550.

**551 Physical Metallurgy IV U G 3**

Physical metallurgy of plain-carbon and alloy steels.

Sp Qtr. 3 cl. Prereq: 550.

**553 Instrumental Characterization of Ceramic Materials U 3**

Analysis techniques applied to investigations of the structure and chemistry of ceramic materials, including electron/optical microscopic methods and thermal measurements. Lee.

Au Qtr. 3 cl. Prereq: 641. Not open to students with credit for Ceram En 553.

**565 Mechanical Metallurgy I: Microstructural Effects on Mechanical Properties of Metals U G 3**

Introduction to the relationships between the microstructure and mechanical properties of metals and alloys.

Sp Qtr. 3 cl. Prereq: Eng Mech 420 and prereq or concur: 551. Not open to students with credit for Metal En 565.

**575 Chemical Metallurgy Laboratory U 2**

Experiments in the fundamentals of fluid flow and heat transfer as applied to metallurgical engineering.

Wi Qtr. 1 3-hr lab. Prereq or concur: 530. Not open to students with credit for Metal En 575.

**589 Industrial Experience U 2**

This course is graded S/U.

**589.01 Industrial Experience in Ceramic Engineering**

Ten weeks industrial experience or its equiv in a ceramic manufacturing, research, or development organization; grade determined on written report of experience.

Su, Au, Wi, Sp Qtrs. Not available for technical elective cr. Repeatable to a maximum of 4 cr hrs including cr hrs earned in Ceram En 589.

**589.02 Industrial Experience in Metallurgical Engineering**

Register for course and submit report on experience during the quarter following the one in which industrial experience was obtained.

Su, Au, Wi, Sp Qtrs. 2 cr hrs for each summer's work. Repeatable to a maximum of 8 cr hrs including cr hrs earned in Ceram En 489. Register for course and submit report on experience during the Autumn Quarter following the summer in which industrial experience was obtained; one summer or 10 weeks of approved work in metallurgical industries. This course is graded S/U.

**613 Ceramic Science: Physical Processes U G 3**

Materials science in areas of structural imperfections, surfaces, atomic mobility, phase transformations, reactions, grain growth, sintering, glass formation, and vitrification. Ready.

Wi Qtr. 3 cl. Prereq: 425 and 510. Not open to students with credit for Ceram En 613.

**614 Ceramic Science: Physical Properties U G 3**

Materials science in areas of thermal, optical, electrical, dielectric, and magnetic properties. Cawley.

Sp Qtr. 3 cl. Prereq: 641. Not open to students with credit for Ceram En 614.

**615 Ceramic Science: Mechanical Properties U G 3**

Materials science in areas of brittle behavior, flaw sensitivity, and microstructural influences on mechanical properties. Drory.

Au Qtr. 3 cl. Prereq: 402 and Eng Mech 215 or equiv. Not open to students with credit for Ceram En 615.

**630 Process Metallurgy II U G 3**

Mass transfer as applied to metallurgical processes, reactor design, analysis and design of processes for extracting and refining metals.

Au Qtr. 3 cl. Prereq: 530 and 526. Not open to students with credit for Metal En 630.

**631†\* Glass Technology U G 3**

Technology of glass manufacturing: raw materials, melting and fining, forming and annealing, and properties and application of glasses. Drummond.

Sp Qtr. 3 cl. Prereq: 531.

**633 Refractories Technology U G 3**

An introduction to refractory raw materials and their formulation as industrial refractories; consideration of applications, testing, engineering, and technical concepts.

Au Qtr. 3 cl. Prereq: 422 or equiv or permission of instructor. Not open to students with credit for Ceram En 633.

**635 Electronic Ceramics U G 3**

Ceramic materials science related to the application of ceramics in electronic and electrical application; emphasis on relationship between the structure, processing, and properties of ceramics. Ready.

Sp Qtr. 3 cl. Prereq: 402, Physics 133, and prereq or concur: 401 or permission of instructor. Not open to students with credit for Ceram En 635.

**636†\* Ceramics in Energy Technology U G 3**

Examination of the U.S. energy supply; principles of new energy technologies; conversion, fusion, fission, solar energy, storage, and roles of ceramic materials. Ready.

Au Qtr. 3 cl. Prereq: 402 and prereq or concur: 401 or permission of instructor. Not open to students with credit for Ceram En 636.

**640 X-Ray Diffraction and Electron Microscopy U G 3**

Principles of X-ray diffraction and scanning electron microscopy and their applications to the study of materials.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 565. Not open to students with credit for Metal En 640.

**641 Electronic Properties of Materials U G 3**

Electrical and magnetic properties of materials; properties of semiconductors and simple semiconducting devices.

Wi Qtr. 3 cl. Prereq: 402 or 440, and Physics 133. Not open to students with credit for Ceram En 641 or Metal En 641.

**655 Nonferrous and Powder Metallurgy U G 3**

Physical metallurgy of aluminum, magnesium, titanium, and copper-base alloys; introduction to powder metallurgy, powder production, powder characteristics, compaction sintering, and engineering properties.

Au Qtr. 3 cl. Prereq: 565. Not open to students with credit for Metal En 655.

**665 Mechanical Metallurgy II: Elastic and Plastic Behavior of Materials U G 3**

Continuum behavior of metal subjected to simple and combined stress systems; elastic behavior, plastic behavior, and high temperature deformation properties.

Au Qtr. 3 cl. Prereq: 565. Not open to students with credit for Metal En 665.

**666 Mechanical Metallurgy III: Deformation Processing U G 3**

Application of principles of the continuum behavior of metals to the analysis of a range of common forming operations; slab calculations, ideal work methods, upperbound analysis.

Wi Qtr. 3 cl. Prereq: 665. Not open to students with credit for Metal En 666.

**667 Mechanical Metallurgy IV: Fracture Modes and Failure Analysis U G 3**

Application of microstructural and continuum principles of metals and alloys to the prediction, modification, and interpretation of in-service failures of components.

Sp Qtr. 3 cl. Prereq: 666. Not open to students with credit for Metal En 667.

**675 Chemical Metallurgy Lab II U G 2**

Laboratory experiments on the extraction and refining of metals; preparation of written technical reports.

Au Qtr. 1 3-hr lab. Prereq: 526. Not open to students with credit for Metal En 675.

**678 Mechanical Metallurgy Laboratory U G 2**

Selected laboratory experiments on elastic properties, mechanical properties, and modeling of mechanical forming processes.

Wi Qtr. 1 3-hr lab. Prereq: 665. Not open to students with credit for Metal En 678.

**681 Corrosion U G 3**

Introduction to the principles of corrosion engineering; definitions, modern principles; types of corrosive attack and methods of minimization or prevention.

Au, Wi Qtrs. 2 cl, 1 2-hr lab. Prereq: Eng 4th yr standing or permission of instructor. Not open to students with credit for Metal En 681.

**685 Materials Selection U G 3**

Material property data and engineering design and economic criteria are combined to select appropriate materials for applications; emphasis is on metal/alloy selection.

Sp Qtr. 3 cl. Prereq: 665 and 681. Not open to students with credit for Metal En 685.

**690 Senior Seminar U 1**

Preparation and delivery of technical presentations and participation in departmental seminars.

Au Qtr. 1 cl. Prereq: Sr standing in ceram en program. Not open to students with credit for Ceram En 690.01.

**691 Senior Seminar U 2**

Oral presentations of current technical metallurgical problems.

Sp Qtr. 1 cl, 1-hr recit. Prereq: Metal En sr standing.

**693 Individual Studies U G 1-6**

Su, Au, Wi, Sp Qtrs. this course is graded S/U.

**693.01 Individual Studies in Ceramic Engineering**

Ceramic investigations in areas of advanced non-thesis research.

Su, Au, Wi, Sp Qtrs. Conf, library, and lab work. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs including cr hrs earned in Ceram En 693. This course is graded S/U.

**693.02 Individual Studies in Metallurgical Engineering**

All studies (library and/or research investigations) are under the close direction of instructors; comprehensive report required.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs including cr hrs earned in Metal En 693. This course is graded S/U.

**694 Group Studies U G 1-6**

Special topics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs including cr hrs earned in Ceram En 694 and Metal En 694.

**695 Senior Design Project in Ceramic Engineering**

An in-depth ceramic design project to foster independent thinking and develop problem solving skills.

Au, Wi, Sp Qtrs. Arr. Prereq: Sr Standing in ceram en. Must be scheduled in the first 2 qtrs of academic year of projected graduation.

**695.01 Senior Design Project I U 1**

Analysis and development of an approach to a given engineering design problem under the guidance of a faculty member.

**695.02 Senior Design Project II U 2**

Execution of experimentation designed to solve an engineering design problem under the guidance of a faculty member; includes written and oral presentations.

Prereq: 695.01.

**699 Senior Project U 1-6**

Students plan and pursue independent research project of two qtrs duration.

Su, Au, Wi, Sp Qtrs. Prereq: Sr standing in metal en and a cumulative pt-hr ratio of 3.40, or permission of instructor. Proposals must be approved by adviser prior to registration. Repeatable to a maximum of 6 cr hrs including cr hrs earned in Metal En 699.

**710 Casting Defects U G 3**

Identification of defects frequently found in castings and welds, discussion of causes and methods for eliminating these defects.

Wi Qtr. 3 cl. Prereq: 310 or equiv or permission of instructor. Not open to students with credit for Metal En 710.

**711 Solidification of Metals and Alloys U G 3**

Study of heat and mass transport associated with solidification of alloys; grain morphologies and composition variations in casting and welds are related to solidification mechanisms.

Au Qtr. 3 cl. Prereq: 550 or permission of instructor. Not open to students with credit for Metal En 711.

**715 Introduction to Electron Optical Techniques U G 3**

An introduction to the theory and application of important electron optical techniques used in the study of materials.

Sp Qtr. 3 cl. Prereq: 402 or 440, and Math 255 or equiv. Not open to students with credit for Metal En 715 or Ceram 715.

**720 Metals Processing I U G 3**

Mechanisms of reactions in liquid alloys; applications of thermodynamics, kinetics, and mass transport in the analysis of metal extraction and refining.

Sp Qtr. 3 cl. Prereq: 730. Not open to students with credit for 820 or Metal En 720.

**721†\* Metallurgical Transport Phenomena U G 3**

Momentum, mass, and heat transport as related to metallurgical processing with computer computation of complex problems.

Sp Qtr. 3 cl. Prereq: 525, En Graph 200, and Math 255. Not open to students with credit for Metal En 721.

**722†\* Advanced Phase Equilibria U G 3**

Advanced aspects of phase equilibria; thermodynamic foundations, noncondensed systems, ternary solid solubility, experimental determination, and calculation of phase diagrams. Kreidler.

Au Qtr. 3 cl. Prereq: 422 or permission of instructor. Not open to students with credit for Ceram En 722.

**730 Advanced Chemical Metallurgy I U G 4**

Thermodynamics of mixtures and phase equilibria relevant to metallurgy and materials science.

Au Qtr. 2 2-hr cl. Prereq: 526 and 550 or equiv. Not open to students with credit for Metal En 730.

**731\* Physical Properties of Glass U G 3**

Viscosity, chemical durability and thermal, electrical, optical, and mechanical properties of commercial glasses, with emphasis on effects of thermal history and composition. Drummond.

Sp Qtr. 3 cl. Prereq: 531. Not open to students with credit for Ceram En 731.

**732 Advanced Chemical Metallurgy II U G 4**

Statistical mechanics of equilibrium systems-metallurgical examples; theory and analyses of metallurgical kinetics.

Wi Qtr. 2 2-hr cl. Prereq: 730. Not open to students with credit for 831 or Metal En 731.

**735 Advanced Corrosion U G 3**

Theories and mechanisms of corrosion.

Wi Qtr. 3 cl. Prereq: 681. Not open to students with credit for Metal En 735.

**736 High Temperature Corrosion U G 3**

Fundamental study of the corrosion of metals and alloys in high-temperature gases and salts.

Sp Qtr. 3 cl. Prereq: 401. Not open to students with credit for Metal En 736.

**737†\* Corrosion Mechanisms U G 3**

Mechanism of the initiation and development of pitting, crevice, and stress corrosion cracking of different alloys in various environments.

Au Qtr. 3 cl. Prereq: 681. Not open to students with credit for Metal En 737.

**741 Transmission Electron Microscopy of Materials G 1**

An introduction to the application of transmission electron microscopy of materials with emphasis on practical experimental methods.

Au, Wi, Sp Qtrs. 1 3-hr lab. Prereq: 715 or equiv. Not open to students with credit for Metal En 741 or Ceram En 741.

**745 Advanced Physical Metallurgy I U G 4**

Fundamentals of diffusion in solids—mathematics and mechanisms; structure and properties of internal interfaces.

Au Qtr. 2 2-hr cl. Prereq: 551 or equiv. Not open to students with credit for Metal En 745.

**747†\* Analysis and Modeling in Materials Science U G 3**

Applications of mathematical concepts most frequently used in designing and processing of materials with emphasis on translation of materials problems into mathematical problems.

Au Qtr. 3 cl. Prereq: Math 255, sr standing in ceram en. Not open to students with credit for Ceram En 747.

**750 Advanced Physical Metallurgy II U G 4**

A phenomenological and theoretical treatment of solid state transformations: recovery, recrystallization; grain growth, martensitic and diffusion-controlled phase transformation.

Wi Qtr. 2 2-hr cl. Prereq: 745. Not open to students with credit for Metal En 750.

**760 Elastic Fields of Defects in Solids U G 3**

Elastic fields of defects in solids including energy and interactions: dislocations, point defects, inclusions, and cracks.

Au Qtr. 3 cl. Prereq: Math 255 or permission of instructor. Not open to students with credit for Metal En 760.

**761 Plastic Response of Metals U G 3**

Phenomenological treatment of plastic response of metals, yielding criteria, constitutive relations, tensile deformation, plastic instability, and notch ductility.

Sp Qtr. 3 cl. Prereq: 665 or equiv. Not open to students with credit for Metal En 761.

**762†\* Deformation Mechanisms in Crystals U G 2**

Deformation of crystals as controlled by crystal defects: slip, twinning, creep, and grain boundary sliding.

Wi Qtr. 3 cl. Prereq: 761. Not open to students with credit for Metal En 762.

**764 Mechanisms of Fracture U G 3**

Examination of the relation between microstructure and fracture behavior and the use of fracture mechanics as an interpretive tool.

Wi Qtr. 3 cl. Prereq: 665 or equiv. Not open to students with credit for Metal En 764.

**793 Individual Studies U G 1-6**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs including cr hrs earned in Metal En 793. This course is graded S/U.

**795 Graduate Seminar in Metallurgical Engineering U G 1**

Discussion of current thesis problems and outstanding current literature in metallurgical engineering; round table discussion of selected metallurgical topics.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs including cr hrs earned in Metal En 795.

**815†\* Mechanical Behavior of Brittle Materials G 3**

A theoretical and phenomenological treatment of the fracture of brittle solids, including criteria for crack growth, toughening, statistical reliability, and environmental effects.

Sp Qtr. 3 cl. Prereq: 615 or equiv. Not open to students with credit for Ceram En 815.

**831†\* Advanced Physics and Chemistry of Glasses G 3**

Glass structure and formation related to composition, kinetics of crystallization, phase separation, glass transition, relation of physical properties such as density, viscosity, and transport properties to glass structure and composition. Drummond.

Au Qtr. 3 cl. Prereq: 531 and 614, or equivs with permission of instructor. Not open to students with credit for Ceram En 852.

**832†\* Metal Processing II G 2**

Application of rate theory of reaction steps and transport phenomena in metallurgical processes.

Wi Qtr. 3 cl. Prereq: 720 and 732. Not open to students with credit for Metal En 832.

**835†\* Point Defects in Crystalline Materials G 3**

A thermodynamic and electrochemical treatment of the formation, concentrations, mobilities, and interactions of atomic, ionic, and electronic point defects in materials at high temperatures.

Wi Qtr. 3 cl. Prereq: 730 or permission of instructor. Not open to students with credit for Metal En 835.

**842†\* Metal Physics G 2**

Metallurgical application of solid state physics.

Sp Qtr. 3 cl. Prereq: Physics 780.20. Not open to students with credit for 842.

**852\* Relations of Properties to Microstructure G 3**

The strength of alloys; effects of solid solutions, precipitates, and dispersed second-phase particles.

Wi Qtr. 3 cl. Prereq: 750. Not open to students with credit for Metal En 852.

**853\* Advanced Ceramic Engineering G 3**

Quantitative modeling of reaction kinetics including powder preparation, reactions, sintering, drying, and grain growth. Readey.

Wi Qtr. 3 cl. Prereq: 613 or permission of instructor. Not open to students with credit for Ceram En 853.

**854 Advanced Ceramic Physics and Chemistry G 4**

Special properties of crystals; organic chemistry, ultrasonics, and thermodynamics applied to ceramics; nonoxide ceramics. Alexander.

Sp Qtr. 4 cl. Prereq: 614 or equiv with permission of instructor. Not open to students with credit for Ceram En 854.

**855\* Electron Diffraction G 2**

Application of electron diffraction theory to the study of materials with emphasis on diffraction and image contrast in the transmission electron microscope.

Au Qtr. 3 cl. Prereq: 715 or permission of instructor. Not open to students with credit for Metal En 855 or Ceram En 855.

**889 Graduate Seminar in Ceramic Engineering G 1**

Conference and reports on problems in ceramic science, technology, and engineering; topics chosen to cover the development of the ceramic industry.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs including cr hrs earned in Ceram En 899.

**893 Individual Studies G 1-6**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs including cr hrs earned in Ceram En 893. This course is graded S/U.

**894 Group Studies G 1-6**

Special advanced topics.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Cum pt-hr ratio of 3.00 or permission of instructor. Repeatable to a maximum of 12 cr hrs.

**999 Research in Materials Science and Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Mathematics

100 Mathematics Building, 231 West 18th Avenue, 292-4975

**050 Precollege Mathematics I U 5**

Arithmetic of fractions and decimals, basic algebra, graphing equations, geometry, exponents, applications of exponents, lines and slopes, area.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 100. Credit will not count toward graduation in any degree program.

**075 Precollege Mathematics II U 4**

Systems of equations, arithmetic of polynomials, factoring, fractional equations, variation, quadratic equations, functions, graphs, right angle trig.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 050 or 100 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for any math course except 050 or 100. Credit will not count toward graduation in any degree program.

**076 Reentry Precollege Mathematics U 4**

Systems of equations, arithmetic of polynomials, factoring, fractional equations, variation, quadratic equations, functions, graphs, and right angle trig.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: At least one yr of high school algebra, out of high school for 5 or more yrs at time of university enrollment, no formal training in math in the past 5 yrs, and written permission of Dept of Mathematics Office. Not open to students with a mark in any Ohio State math course within the past 5 yrs. Credit will not count toward graduation in any degree program.

**104 Basic College Mathematics U 5**

Systems of equations, arithmetic of polynomials, rational expressions, factoring, fractional equations, inequalities, exponents, quadratic equations, absolute values, functions, and graphs.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 050 or satisfactory score on Ohio State Math Placement Test or permission of dept. Not open to students with credit for 116, 130, or 148. Credit may not count toward graduation in some degree programs.

**105 Mathematics for Elementary Teachers I U 5**

Development of basic ideas of arithmetic, algebra, and geometry as appropriate for elementary school teachers.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 075 or 076 or 102 or satisfactory score on Ohio State Math Placement Test.

**106 Mathematics for Elementary Teachers II U 5**

Continuation of 105.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 105 or written permission of dept.

**107 Topics in Mathematics for Elementary Teachers U 5**

Further topics in mathematics selected by the instructors to broaden the mathematical perspectives of elementary teachers.

Wi Qtr. 5 cl. Prereq: 106 or written permission of dept.

**116 Survey of College Algebra U 5**

The sequence 116-117 treats topics applicable to non-physical sciences; topics in 116 include college algebra, analytic geometry, linear algebra, and linear programming.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 075 or 076 or 102 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 130, 148, 150, or math courses having these as prereqs. This course is available for EM credit.

**117 Survey of Calculus U 5**

An introduction to differential and integral calculus.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 116 or 130 or 148 or 150 or equiv with written permission of dept. Not open to students with credit for 132 or 151. This course is available for EM credit.

**130 Elements of Algebra U 4**

Equations, inequalities, absolute value, functions, exponential and logarithmic functions, systems of equations, and matrix algebra.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 075 or 076 or 102 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 116, 148, or 150. This course is available for EM credit.

**131 Elements of Calculus I U 4**

Limits, tangent lines, continuity, differentiability, derivatives of the logarithmic and exponential functions, graphing techniques, applications of calculus to business.

Su, Au, Wi, Sp Qtrs 4 cl. Prereq: 130 or 148 or 150 or written permission of dept. Not open to students with credit for 151. This course is available for EM credit.

**132 Elements of Calculus II U 4**

Antidifferentiation, definite integral, integral of the logarithmic and exponential functions, techniques of integration, areas, partial derivatives, LaGrange multipliers, applications of calculus to business.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 131 or 151 or written permission of dept. Not open to students with credit for 152. This course is available for EM credit.

**148 College Algebra U 4**

Rational exponents, inequalities, functions, graphs of polynomial and rational functions, conic sections, zeros of polynomials.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 104 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 150. This course is available for EM credit.

**150 Elementary Functions U 5**

Inverse functions, logarithmic, exponential and trigonometric functions, and their graphs; complex numbers.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 148 or satisfactory score on Ohio State Math Placement Test or permission of dept. This course is available for EM credit.

**151 Calculus and Analytic Geometry U 5**

Limits, continuity, derivatives, Mean Value theorem, extrema, curve sketching, related rates, differentiation of the trig, log, and exponential functions.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 150 or satisfactory score on Ohio State Math Placement Test. Not open to students with credit for 161. This course is available for EM credit.

**152 Calculus and Analytic Geometry U 5**

Integral, area, fundamental theorems of calculus, logarithmic and exponential functions, trigonometric and inverse trigonometric functions, methods of integration, applications of integration, polar coordinates.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 151. Not open to students with credit for 162. This course is available for EM credit.

**153 Calculus and Analytic Geometry U 5**

Indeterminate forms, Taylor's formula, improper integrals, infinite series, parametric curves, and vectors in the plane; vectors, curves, and surfaces in space.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 134 or 152. Not open to students with credit for 263. This course is available for EM credit.

**161 Accelerated Calculus with Analytic Geometry U 5**

Functions, limits and continuity, derivatives, applications of the derivative, the integral, inverse functions.

Au Qtr. 5 cl. H161 (honors) may be available to students enrolled in an honors program; others by written permission of dept. Prereq: Course Code L placement and high school calculus experience, or permission of dept. Not open to students with credit for 152. The sequence 161-162-263 covers calculus at an accelerated pace for students with superior algebraic and geometric skills, with previous calculus experience.

**162 Accelerated Calculus with Analytic Geometry U 5**

Techniques of integration; improper integrals; applications of the integral; polynomial approximations and Taylor's theorem; infinite sequences and series; tests for convergence; vectors, lines and planes.

Wi Qtr. 5 cl. H162 (honors) may be available to students enrolled in an honors program; others by written permission of dept. Prereq: 161 or written permission of Math Counseling Office. Prereq for H162: H161 with a grade of C or better or written permission of Honors Committee chairperson. Not open to students with credit for 153.

**187 Topics in Mathematics U 2-5**

An enrichment course for interested and capable students.

Au Qtr. H187 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: Permission of dept. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

**H190 Elementary Analysis I U 5**

Special course sequence for superior students.

Au Qtr. 5 cl. Prereq: Permission of dept. H190, H191, and H264 substitute for 151, 152, 153, 254, and 551.

**H191 Elementary Analysis II U 5**

Continuation of H190.

Wi Qtr. 5 cl. Prereq: H190 with a grade of C or better or written permission of Honors Committee chairperson.

**254 Calculus and Analytic Geometry U 5**

Partial differentiation, Lagrange multipliers, multiple integrals, line integrals, and Green's theorem.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 153. Not open to students with credit for 263. This course is available for EM credit.

**255 Differential Equations and Their Applications U 5**

Basic concepts and methods in solving ordinary differential equations, first and second order, linear differential equations, series solutions, numerical methods, Laplace transforms, physical applications.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 256, 415, or 556.

**263 Accelerated Calculus with Analytic Geometry U 5**

Multivariable calculus (vector approach), line and surface integrals, vector differential operators.

Sp Qtr. 5 cl. H263 (honors) may be available to students enrolled in an honors program; others by written permission of dept. Prereq: 162 or written permission of Math Counseling Office. Prereq for H263: H162 with a grade of C or better or written permission of Honors Committee chairperson.



**H264 Elementary Analysis III U 5**

Continuation of H191; a rigorous treatment of multivariable calculus including gradients, multiple integrals, line and surface integrals, Green's theorem, the divergence theorem, and Stokes' theorem.

Sp Qtr. 5 cl. Prereq: H191 with a grade of C or better or written permission of Honors Committee chairperson.

**283 Number Theory U 6**

An intensive introduction to mathematics as problem-solving; experimentation, conjecture and proof; divisibility, quadratic fields, geometry of numbers.

Su Qtr. 5 cl, 3 sems for 8 wks. Prereq: Written permission of instructor and performance on a take-home problem set. Repeatable to a maximum of 12 cr hrs.

**294 Special Topics in Mathematics U 2-5**

Designed to give groups of able students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. H294 (honors) may be available to students in an honors program; others by permission of Honors Committee chairperson. Prereq: Permission of dept. Repeatable to a maximum of 10 cr hrs.

**345 Foundations of Higher Mathematics U 4**

Designed to prepare students for higher mathematics; an introduction to logic, proof techniques, set theory, number theory, integers, real numbers.

Au, Sp Qtrs. 4 cl. Prereq: 254 or equiv with written permission of dept.

**366 Discrete Mathematical Structures I U 3**

Mathematical formalization and reasoning, mathematical induction; sets, mappings, binary relations, binary operations; Boolean algebra, logic; elementary counting principles; monoids, groups; graphs.

Su (1st term) Au, Wi, Sp Qtrs. 3 cl. Prereq: 153 or permission of dept. Not open to students with credit for 576.

**415 Ordinary and Partial Differential Equations U 5**

Ordinary, partial, linear, and nonlinear differential equations, Fourier series, boundary value problems, eigenvalue theory, and Bessel functions.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 255, 256, or 556.

**416 Vector Analysis and Complex Variables U 5**

Vector algebra and vector operators, line integrals, analytic functions, complex integral theorems, power series, residues, and conformal mapping.

Au Qtr. 5 cl. Prereq: 254. Not open to students with credit for 513, 514, 551, or 552.

**471 Matrices and Linear Algebra U 5**

Matrices, systems of equations,  $R^n$ , determinants, vector spaces; applications.

Wi Qtr. 5 cl. Prereq: 153 or equiv with written permission of dept. Not open to students with credit for 568 or 571 or 576.

**H487 Advanced Problem Solving U 2**

An advanced enrichment course for interested and capable students.

Au Qtr. 2 cl. Prereq: Permission of dept. Not open to students with 6 cr hrs in 487. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**501 Fundamentals of Mathematics I U G 4**

The integrated sequence 501-502-503 covers the calculus of one and several variables.

Wi Qtr. 4 cl. Prereq: Written permission of dept. Not open for grad credit to majors in math. This course is intended for advanced students in areas other than the mathematical and physical sciences. This course is graded S/U.

**502† Fundamentals of Mathematics II U G 4**

A continuation of 501.

Wi Qtr. 4 cl. Prereq: 501. This course is graded S/U.

**503† Fundamentals of Mathematics III U G 4**

A continuation of 502.

Sp Qtr. 4 cl. Prereq: 502. This course is graded S/U.

**504 History of Mathematics U G 5**

Development of mathematics from primitive origins to present form; topics include: development of arithmetic, algebra, geometry, trigonometry, and calculus.

Sp Qtr. 5 cl. Prereq: 580 or 568 or 507 or equiv with written permission of dept.

**507 Advanced Geometry U G 5**

Advanced topics from Euclidean Geometry.

Au, Wi Qtrs. 5 cl. Prereq: 152.

**510 Topics in Mathematics for Elementary School Teachers U G 2-5**

Special topics in mathematics appropriate for teachers in the primary and intermediate grades.

Su, Au, Wi, Sp Qtrs. Prereq: 1 yr teaching experience or permission of instructor. Repeatable to a maximum of 10 cr hrs for each decimal subdivision with written permission of dept. Designed for in-service teachers.

**510.01 Geometry****510.02 Properties of Numbers****510.03 Numerical Methods****512 Partial Differential Equations and Boundary Value Problems U G 3**

Fourier series, orthogonality relations, vibrating string, steady state heat, Laplace transform, and applications.

Su (1st term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 255 or 256 or 415 or 556 or equiv with written permission of dept. Not open to students with credit for 557.

**513 Vector Analysis for Engineers U G 3**

Vector algebra, vector operators, line integrals, vector integral theorems, curvilinear coordinates; applications.

Wi Qtr. 3 cl. Prereq: 254. Not open to students with credit for 551.

**514 Complex Variables for Engineers U G 3**

Introduction to complex variables, analytic functions, complex integral theorems, power series, residues, conformal mapping.

Sp Qtr. 3 cl. Prereq: 254 or equiv with written permission of dept. Not open to students with credit for 416, 552, or 654.

**H520 Linear Algebra U 5**

Vector spaces, linear transformations, systems of equations, determinants, eigenvalues, spectral theorem, and Cayley-Hamilton theorem.

Au Qtr. 5 cl. Prereq: H263 with a grade of C or better, or H264 with a grade of C or better, or written permission of Honors Committee chairperson. Not open to students with credit for H290.

**H521 Differential Equations U 5**

Ordinary, linear and nonlinear differential equations, existence and uniqueness theorems, Fourier series, boundary value problems, systems, Laplace transforms, phase space, stability, and periodic orbits.

Wi Qtr. 5 cl. Prereq: H290 with a grade of C or better or written permission of Honors Committee chairperson. Not open to students with credit for H291.

**H522 Complex Analysis U 5**

Analytic functions, Cauchy integral theory, residue calculus, series representations, and conformal mapping.

Sp Qtr. 5 cl. H291 with a grade of C or better or written permission of Honors Committee chairperson. Not open to students with credit for H292. The sequence H520-H521-H522 substitutes for 568 and 569; 255 or 415; 416 or 514 or 552.

**530 Probability I U G 3**

Combinatorial probability, random variables, independence, expectations, variance.

Au Qtr. 3 cl. Prereq: 254. Not open to students with credit for Stat 520.

**531 Probability II U G 3**

Markov chains, classification of states and chains, stationary distributions, random walks, simple stochastic processes, Poisson process, birth and death processes, applications to genetics, diffusion, and queueing theory.

Sp Qtr. 3 cl. Prereq: 530 or Stat 520.

**H540† Geometry and Calculus in Euclidean Spaces and on Manifolds I U G 5**

The topology of  $E^n$ , differentiation of vector valued functions, inverse and implicit function theorems, Riemann and Lebesgue integration in  $E^n$ .

Wi Qtr. 5 cl. Prereq: H290 or H520, or H263 and 569, or permission of instructor.

**H541† Geometry and Calculus in Euclidean Spaces and on Manifolds II U G 5**

Curves and line integrals in  $E^n$ , tensor and exterior algebras, differential forms, integration on manifolds, divergence and Stokes' theorem and applications.

Sp Qtr. 5 cl. Prereq: H540 or permission of instructor.

**547 Introductory Analysis I U G 3**

547-548-549 is an integrated sequence in advanced calculus covering sequences, limits, continuous functions, differentiation, Riemann integral; infinite series, sequences and series of functions, Taylor series, improper integrals.

Au, Wi Qtrs. 3 cl. Prereq: 254 or equiv with written permission of dept. Not open to students with credit for 615.

**548 Introductory Analysis II U G 3**

Continuation of 547.

Wi, Sp Qtrs. 3 cl. Prereq: 547 or equiv with written permission of dept.

**549 Introductory Analysis III U G 3**

Continuation of 548; the Riemann-Stieltjes integral; an introduction to the calculus of several variables.

Au, Sp Qtrs. 3 cl. Prereq: 548 or equiv with written permission of dept.

**551 Vector Analysis U G 5**

Vector operations in three dimensions, vector operators, surface area, the theorems of Green and Stokes, the divergence theorem; applications.

Au, Sp Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 416 or 513.

**552 Introduction to the Theory of Functions of a Complex Variable U G 5**

Topics discussed include power series expansions, the formula of Cauchy, residues, conformal mappings, and elementary functions in the complex domain.

Su, Wi Qtrs. 5 cl. Prereq: 254. Not open to students with credit for 416 or 514.

**556 Differential Equations I U G 3**

Systems of linear, first-order differential equations, existence and uniqueness theorems, numerical methods, qualitative theory (phase plane analysis, linearization, stability, limit cycles), and physical applications.

Wi Qtr. 3 cl. Prereq: 255, prereq or concur 572.

**557 Differential Equations II U G 3**

Sturm-Liouville theory, partial differential equations in three or more variables, nonhomogeneous problems, Green's functions, physical applications.

Sp Qtr. 3 cl. Prereq: 556.

**558 Differential Geometry of Curves and Surfaces U G 3**

Introduction to the classical differential geometry of curves and surfaces, both in its local and global aspects.

Wi Qtr. 3 cl. Prereq: H292; or 568, and either 547 or 551.

**560 Point-set Topology U G 4**

Sets and functions, metric spaces, topological spaces, subspaces, limits, closure, interior, sequences, convergence, separation axioms, continuity, connectedness, compactness, product spaces, Euclidean spaces.

Sp Qtr. 4 cl. Prereq: 254 or written permission of dept.

**566 Discrete Mathematical Structures II U G 3**

Elementary number theory, coding theory, continuation of groups, graphs, and enumeration from 366 with applications to topics in computer science.

Su (2nd term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 366 or permission of dept. Not open to students with credit for 576.

**568 Introductory Linear Algebra I U G 3**

The space  $R^n$  and its subspaces; matrices as mappings; matrix algebra; systems of equations; determinants; dot product in  $R^n$ ; geometric interpretations.

Su (1st term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 153 or equiv with written permission of dept. Not open to students with credit for 471 or 571 or 577.

**569 Introductory Linear Algebra II U G 3**

Vector spaces over  $R$  and  $C$ ; linear transformations; the polynomial ring  $R[x]$ ; characteristic values and vectors; inner product spaces; quadratic form reduction; principal axis theorem.

Su (2nd term), Au, Wi, Sp Qtrs. 3 cl. Prereq: 568 or equiv with written permission of dept. Not open to students with credit for 572 or 577.

**571 Linear Algebra for Applications I U G 3**

Linear systems of equations; vector spaces, matrices, linear operators; inner products, projections and least squares, approximations or eigenvalue problems; applications.

Su (1st term), Au, Sp Qtrs. 3 cl. Prereq: 254. Not open to students with credit for 569 or 601.

**572 Linear Algebra for Applications II U G 3**

The eigenvalue problem or inner product spaces, projections and least squares approximation; classification of operators and quadratic forms; applications.

Su (2nd term), Wi Qtrs. 3 cl. Prereq: 571 or written permission of dept. Not open to students with credit for 601.

**573 Elementary Number Theory U G 5**

Utilization of concrete examples to introduce concepts of modern algebra; prime numbers, congruences, Diophantine equations, elementary combinatorial analysis.

Sp (odd-numbered yrs only) Qtr. 5 cl. Prereq: 153 or permission of dept.

**574 Geometry U G 5**

Euclidean and non-Euclidean geometry, emphasizing algebraic connection; Affine and projective planes, duality; topics from: geometry of groups; finite planes, Hilbert's postulates,  $n$ -dimensional spaces.

Sp (even-numbered yrs only) Qtr. 5 cl. Prereq: 568 or equiv with written permission of dept.

**575 Combinatorial Mathematics and Graph Theory U G 5**

Some classical puzzles of recreational mathematics; matching theory, graph theory, network flows, and optimization; enumeration techniques; combinatorial designs and coding theory.

Wi, Sp Qtrs. 5 cl. Prereq: 568 or written permission of dept.

**578 Discrete Mathematical Models U G 5**

Analysis and solution of various applied problems using discrete mathematical models; methods used include graph theory, linear optimization, Markov chains and queues.

Au, Sp Qtrs. 5 cl. Prereq: 530 or Stat 425 or equiv, 568, and Cprr/Inf 221.

**580 Algebra I U G 3**

The integrated algebra sequence 580-581-582 includes elementary number theory, group theory, vector spaces, and linear transformations, field theory.

Au, Wi Qtrs. 3 cl. Prereq or concur: 568 or equiv with written permission of dept. Not open to students with credit for 573, 613, or H590.

**581 Algebra II U G 3**

Continuation of 580.

Wi, Sp Qtrs. 3 cl. Prereq: 580.

**582 Algebra III U G 3**

Continuation of 581.

Sp Qtr. 3 cl. Prereq: 581.

**H590 Algebraic Structures I U G 5**

Integers, congruence relations, structure preserving maps, topics from groups, rings, modules, vector spaces, fields.

Au Qtr. 5 cl. Prereq: H292 or H522 with a grade of C or better or written permission of Honors Committee chairperson. The sequence H590-H591-H592 substitutes for the sequence 580-581-582.

**H591 Algebraic Structures II U G 3**

A continuation of H590.

Wi Qtr. 3 cl. Prereq: H590 with a grade of C or better or written permission of Honors Committee chairperson.

**H592 Algebraic Structures III U G 3**

Continuation of H591; further topics in group and field theory and their interrelation; Galois theory.

Sp Qtr. 3 cl. Prereq: H591 with a grade of C or better or written permission of Honors Committee chairperson.

**593 Individual Studies U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**594 Group Studies U 2-5**

Designed to give groups of advanced undergraduate students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. H594 (honors) may be available to students in an honors program; others by permission of Honors Committee chairperson. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**601 Mathematical Methods in Science I U G 5**

Real and complex vector spaces, inner product spaces, linear operators, matrices, eigenvalue problems, normal operators, real and Hermitian forms; applications to physics and engineering.

Au Qtr. 5 cl. Prereq: 15 cr hrs in math at the 400-500 level or permission of dept. The recommended preliminary courses are 514 and 513 or 551.

**602 Mathematical Methods in Science II U G 5**

Linear differential equations, solutions about singular points; Sturm-Liouville problems; Bessel functions, Legendre functions; Green's functions; Orthogonal expansions; Laplace's equation and boundary value problems.

Wi Qtr. 5 cl. Prereq: 601.

**604 Introduction to Continuous Applied Mathematics I U G 3**

Formulation, solution, and interpretation of selected problems in applied mathematics: equilibrium, stability, and phase plane analysis (mechanics and ecology); method of characteristics (traffic flow).

Au Qtr. 3 cl. Prereq: 255 or 415 or 556 or equiv with written permission of dept.

**605 Introduction to Continuous Applied Mathematics II U G 3**

Elementary partial differential equations of mathematical physics (heat, wave, and Laplace's equations); separation of variables, Fourier series, Sturm-Liouville boundary value problems.

Wi Qtr. Prereq: 604 and 651 or written permission of dept.

**606 Introduction to Numerical Analysis of Partial Differential Equations U G 3**

Classification of partial differential equations; finite difference methods for elliptic, parabolic and hyperbolic PDE's; stability, convergence, error estimates; introduction to finite elements.

Wi Qtr. Prereq: 568 or equiv, and 602 or 605 or written permission of dept.

**607 Essentials of Numerical Analysis U G 5**

Standard problems of numerical analysis, error analysis, and actual computational algorithms.

Su Qtr. 3 2-hr cl. Prereq: 548 or 652 or permission of the Graduate Studies Committee. Not open to students with credit for this topic under 694.

**610 Topics in Mathematics for Teachers**

Special topics in mathematics for teachers at the secondary level.

Su, Au, Wi, Sp Qtrs. Prereq: 1 yr teaching experience or permission of instructor. Each decimal subdivision, except 610.25, repeatable to a maximum of 10 cr hrs with written permission of dept. Designed for in-service teachers.

**610.01 Geometry U G 1-5****610.02 Algebra U G 1-5****610.03 Approximation Methods U G 1-5****610.04 Probability U G 1-5****610.25 Special Projects U G 1**

Prereq: Enrollment in mathematics MA specialization or written permission of dept. This decimal subdivision is graded S/U.

**611 Geometric Linear Algebra U G 4**

Two- and three-dimensional linear algebra over the real numbers; geometric interpretations, both Euclidean and affine.

Wi Qtr. Prereq: 568 or equiv with written permission of dept; enrollment in mathematics MA specialization. Recommended for secondary school teachers. Course will next be offered Su Qtr 1990.

**612 Elementary Geometry from an Advanced Standpoint U G 4**

Axiomatic development of elementary geometry of plane and space, introduction to non-Euclidean geometry.

Su Qtr. Prereq: 507 or equiv with written permission of dept; enrollment in mathematics MA specialization. Recommended for secondary teachers. Course will next be offered Sp Qtr 1991.

**613 Number Theory and Algebra U G 4**

Arithmetic and order properties of the integers, unique factorization, congruence arithmetic, Chinese Remainder Theorem, unit groups; polynomial algebra, roots of unity, non-unique factorization.

Au Qtr. Prereq: 580 or equiv with written permission of dept; enrollment in mathematics MA specialization. Not open to students with credit for 670. Recommended for secondary school teachers.

**614 Calculus from a Numerical Viewpoint U G 4**

A review of major concepts and theorems of differential and integral calculus using a numerical approach.

Au Qtr. Prereq: 254 or equiv with written permission of dept; enrollment in mathematics MA specialization. Recommended for secondary school teachers. Course will next be offered Su Qtr 1990.

**615 Foundations of Calculus U G 4**

Real number system, Dedekind cuts, basic set theory, introductory metric topology, connectedness, limits, continuity, the derivative, properties of differentiable functions, Riemann sums, integration.

Au Qtr. Prereq: 614 or equiv with written permission of dept; enrollment in mathematics MA specialization. Not open to students with credit for 651. Recommended for secondary school teachers. Course will next be offered Su Qtr 1989.

**616 Numerical Methods in Actuarial Mathematics U G 4**

Finite differences, difference operators, interpolation, summation, difference equations; applications to actuarial science and finance.

Au Qtr. 2 2-hr cl. Prereq: 254 and 471 or 569; or permission of instructor.

**618 Theory of Interest U G 3**

Mathematical techniques of use in analyzing financial transactions involving interest: measurement of interest, force of interest, annuities-certain, applications to actuarial science.

Sp Qtr. 2 1¼-hr cl. Prereq: 254 or permission of instructor.

**621 Probability U G 4**

A problem oriented approach to major probability concepts: independence, conditional probabilities, expected values, binomial, normal, and other distributions, law of large numbers. Sp Qtr. Prereq: 254 or equiv with written permission of dept; enrollment in mathematics MA specialization. Recommended for secondary school teachers. Course will next be offered Sp Qtr 1990.

**630 Mathematics of Life Contingencies I U G 3**

Individual risk models; survival distributions and life tables; life insurance and life annuities.

Au Qtr. 2 1¼-hr cl. Prereq: 618 and Stat 520 or equiv, or permission of instructor.

**631 Mathematics of Life Contingencies II U G 3**

Continuation of 630; net premiums and net premium reserves; multiple life functions; multiple decrement models.

Wi Qtr. 2 1¼-hr cl. Prereq: 630.

**632 Mathematics of Life Contingencies III U G 3**

Continuation of 631; valuation theory for pension plans; insurance models including expenses; nonforfeiture benefits and dividends; topics of current interest in life and casualty contingencies.

Sp Qtr. 2 1¼-hr cl. Prereq: 631.

**634 Linear Mathematical Models U G 4**

Linear equations, inequalities, convex sets, matrix algebra, linear programming, duality, applications of linear mathematical models to business, transportation flow, and the social and behavioral sciences.

Au Qtr. 4 cl. Prereq: 117 or 131 or 151 or permission of dept.

**635 Game Theory U G 3**

Concept of a game, minimax theorem; linear programming.

Su Qtr. 3 cl. Prereq: 568 or equiv or permission of dept.

**640 Introductory Topology U G 3**

The topology of the line, plane, Euclidean  $n$ -space, and metric spaces; emphasis on elementary ideas in topology.

Su Qtr. 3 cl. Prereq: 254 or equiv. Not open to students with credit for 655.

**645 Foundations of Higher Mathematics U G 3**

Introduction to logic, set theory, and methods of proof; the real numbers, natural numbers, induction, well-ordering, the integers, uncountability of the reals.

Su Qtr. 3 cl. Prereq: Written permission of dept.

**647 Set Theory U G 4**

Axiomatic set theory, transfinite induction and theory of ordinals, order type characterizations, cardinal arithmetic and structure, principles of choice, fundamental infinite combinatorial principles.

Sp Qtr. 4 cl. Prereq: 547 or 580 or equiv with permission of dept.

**648 Mathematical Logic I U G 3**

The syntax and semantics of sentential logic and first order logic; completeness and compactness theorems for first order logic.

Au Qtr. 3 cl.

**649 Mathematical Logic II U G 3**

Continuation of 648; decidability and undecidability of systems and structures for number theory; Gödel's incompleteness theorems and recursive functions; second order logic.

Wi Qtr. 3 cl. Prereq: 648 or permission of instructor.

**650 Principles of Mathematical Analysis U G 5**

Riemann-Stieltjes integral; uniform convergence and interchange of limit processes, special functions, Fourier series.

Su Qtr. 5 cl. Prereq: 547 or permission of Graduate Advising Committee.

**651 Introduction to Real Analysis I U G 5**

Real numbers, infinite sequences, and series.

Au Qtr. 5 cl.

**652 Introduction to Real Analysis II U G 5**

Continuous functions, differentiable functions and functions of bounded variation; Riemann-Stieltjes integral.

Wi Qtr. 5 cl. Prereq: 651.

**653 Introduction to Real Analysis III U G 5**

Measurable sets and functions, elementary theory of the Lebesgue integral.

Sp Qtr. 5 cl. Prereq: 652.

**654 Complex Variables U G 3**

Complex arithmetic, geometry, conformal mapping, analytic functions, and residues.

Su Qtr. 3 cl. Prereq: Permission of dept. Recommended primarily for grad students in science and engineering. Not open to students with credit for 514 or 552.

**655 Elementary Topology I U G 4**

Continuity, compactness, connectedness in metric and general topological spaces, completeness in metric spaces.

Au Qtr. 4 cl. Prereq: Permission of dept.

**656 Elementary Topology II U G 4**

Continuation of 655; products, quotients, separation axioms, convergence, metrization and compactifications for general topological spaces.

Wi Qtr. 4 cl. Prereq: 655.

**657 Elementary Topology III U G 4**

Continuation of 656; fundamental group and covering spaces.

Sp Qtr. 4 cl. Prereq: 656.

**665 Modern Mathematical Methods in Relativity Theory I U G 4**

Geometry in Minkowski space-time; physical interpretations; tensors; exterior calculus; manifolds; Lie derivatives; parallel transport; torsion; curvature; Cartan's two structural equations; Einstein Field equations.

Wi Qtr. 4 cl. Prereq: 254 and Physics 133 or equiv with permission of dept.

**666 Modern Mathematical Methods in Relativity Theory II U G 4**

Fluid dynamics, Hamilton-Jacobi theory in curved geometries; geometry and dynamics of homogeneous cosmologies; black holes; local-global properties; entropy; gravitational collapse; space-time symmetries.

Sp Qtr. 4 cl. Prereq: 665 or equiv with permission of dept.

**669 Introduction to Number Theory U G 5**

Basic concepts of divisibility, congruence, reciprocity, and primitive roots as introduction to algebra with emphasis on techniques of proof.

Su Qtr. 5 cl. Prereq: 254 or equiv.

**670 Algebra I U G 5**

Elementary theory of groups, permutation groups, Polya theory of counting, rings and ideals, polynomials.

Au Qtr. 5 cl. Prereq: Permission of dept.

**671 Algebra II U G 5**

Continuation of 670; vector spaces, linear transformations, canonical forms for matrices, linear programming, orthogonality.

Wi Qtr. 5 cl. Prereq: 670 or permission of dept.

**672 Algebra III U G 5**

Continuation of 671; quadratic forms, finite fields, various applications.

Sp Qtr. 5 cl. Prereq: 671 or permission of dept.

**674 Survey of Combinatorial Mathematics U G 4**

Enumeration, equivalence relations, generating functions, graph theory, optimization, and combinatorial designs.

Su Qtr. 3 cl. Prereq: 569 or equiv with permission of instructor.

**675 Applied Discrete Mathematics I U G 4**

Graph theory, trees, cycles, coboundaries, electrical networks, network flows, transportation problems, linear programming, integer programming, use of algorithms will be stressed.

Au Qtr. 4 cl. Prereq: 672 or equiv with written permission of dept.

**676 Applied Discrete Mathematics II U G 4**

Combinatorial designs, applications in experiments, coding theory, computational complexity, enumeration theory with physical applications.

Wi Qtr. 4 cl. Prereq: 675 or equiv with permission of dept.

**677 Applied Discrete Mathematics III U G 4**

Topics in graph theory, designs, codes, enumeration problems, algorithms and computational complexity.

Sp Qtr. 4 cl. Prereq: 676 or equiv with permission of dept.

**693 Individual Studies U G 1-5**

Individual conferences, assigned readings, and reports on minor investigations.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 or hrs.

**701 Mathematical Methods in Science III U G 5**

Introduction to tensor analysis with applications to geometry; elements of the calculus of variations with applications to physical problems.

Sp Qtr. 5 cl. Prereq: 601 or equiv or permission of dept.

**702\* Integral Equations and Eigenvalue Problems I U G 3**

Orthogonal functions, linear integral equations of first and second kinds, relations to ordinary differential equations, Volterra's equation, boundary value problems, practical methods of solution.

Au Qtr. 3 cl. Prereq: 602.

**703\* Integral Equations and Eigenvalue Problems II U G 3**

Distribution of eigenvalues, self-adjointness, definiteness, Green's functions, minimal properties, approximation of eigenvalues, eigenfunction expansions, Ritz method, iteration method, matrix eigenvalue problems, finite differences.

Wi Qtr. 3 cl. Prereq: 702.

**707 Theoretical Numerical Analysis I U G 3**

Introduction to Banach, Hilbert, Sobolev spaces; approximation, interpolation, variational methods, finite element method, matrix iterative methods, approximate solution of differential and integral equations, error estimation.

Au Qtr. Prereq: 651 and 671, or 602, or equiv with permission of instructor.

**708 Theoretical Numerical Analysis II U G 3**

Continuation of 707.

Wi Qtr. Prereq: 707.

**709 Theoretical Numerical Analysis III U G 3**

Continuation of 708.

Sp Qtr. Prereq: 708.

**722 Theory of Probability I U G 4**

Introduction to basic concepts of measure-theoretic probability convergence concepts, conditioning, laws of large numbers, characteristic functions, and central limit theorem.

Au Qtr. 4 cl. Prereq: 653. Not open to students with credit for Stat 722. Cross-listed in Statistics.

**723 Theory of Probability II U G 4**

Characteristic functions, limit theorems, Markov processes, and stationary processes.

Wi Qtr. 3 cl, 1 lab hr. Prereq: 722.

**735 Seminar in Teaching College Mathematics for International Graduate Students G 3**

Preparation of international graduate students for the teaching of college level mathematics courses.

Su (2nd Term) Qtr. 3 2-hr cl. Prereq: Permission of Graduate Advising Committee. This course is graded S/U.

**736 Seminar in Teaching College Mathematics for Domestic Graduate Students G 3**

Preparation for teaching lower-division mathematics courses.

Su (2nd Term) Qtr. 3 2-hr cl. Prereq: Permission of Graduate Advising Committee. This course is graded S/U.

**750 Real Analysis I U G 5**

Relative extremes in partial orders; additive and countable additive set functions; extensions of set functions; integration, differentiation, applications.

Au Qtr. 5 cl. Prereq: 653.

**751 Real Analysis II U G 5**

Continuation of 750.

Wi Qtr. 5 cl. Prereq: 750.

**752 Real Analysis III U G 5**

Continuation of 751.

Sp Qtr. 5 cl. Prereq: 751.

**753 Introduction to Complex Analysis I U G 5**

Families of holomorphic and meromorphic functions, geometrical methods of the theory of functions, conformal transformations; including the Cauchy integral theorem, Runge's theorem, Riemann mapping theorem.

Wi Qtr. 5 cl. Prereq: 653.

**754 Introduction to Complex Analysis II U G 5**

Analytic continuation, general analytic functions, algebraic, entire, elliptic, the gamma and zeta function, Dirichlet's series, Picard's theorems, Mittag-Leffler's theorem, Stirling's formula.

Sp Qtr. 5 cl. Prereq: 753.

**760\* Ordinary Differential Equations I U G 3**

Introduction to theory of linear and non-linear ordinary differential equations; equations with singular points; stability theory, boundary value problems.

Au Qtr. 3 cl. Prereq: 569 and 653.

**761\* Ordinary Differential Equations II U G 3**

Continuation of 760.

Wi Qtr. 3 cl. Prereq: 760.

**763†\* Partial Differential Equations and Their Applications I U G 3**

First order partial differential equations, theory of characteristics; second order partial differential equations; elliptic, parabolic, hyperbolic equations; standard method of solution, Green's function; integral equations.

Wi Qtr. 3 cl. Prereq: 652 and permission of dept.

**764†\* Partial Differential Equations and Their Applications II U G 3**

Continuation of 763.

Sp Qtr. 3 cl. Prereq: 763.

**767\* Introduction to the Theory of Approximation I U G 4**

Approximation by polynomials and trigonometric polynomials, Chebyshev's theory of best approximation and its generalizations; interpolation processes and mechanical quadrature; orthogonal polynomials and elements of harmonic analysis.

Au Qtr. 4 cl. Prereq: 653 or equiv with permission of dept.

**768\* Introduction to the Theory of Approximation II U G 4**

A continuation of 767.

Wi Qtr. 4 cl. Prereq: 767 or equiv with permission of dept.

**770 Abstract Algebra I U G 5**

Permutation groups, solvable groups, composition series, polynomial rings, unique factorization domains, canonical forms, bilinear forms, free modules, tensor products, Galois theory, algebraic closure, transcendental extensions.

Au Qtr. 5 cl. Prereq: 672 or equiv with permission of instructor.

**771 Abstract Algebra II U G 5**

A continuation of 770.

Wi Qtr. 5 cl. Prereq: 770 or equiv with permission of dept.

**772 Abstract Algebra III U G 5**

A continuation of 771.

Sp Qtr. 5 cl. Prereq: 771 or equiv with permission of dept.

**775 Combinatorics and Graph Theory I U G 5**

Transversal theory, network flows, matroids, linear programming, Ramsey theory.

Au Qtr. Prereq: 672.

**776 Combinatorics and Graph Theory II U G 5**

Combinatorial designs and geometries, difference sets, orthogonal latin squares, coding theory, enumeration theory including Möbius inversion, Polya theory, and generating functions.

Wi Qtr. Prereq: 775.

**777 Combinatorics and Graph Theory III U G 5**

Planar graphs and embeddings in surfaces, graph connectivity, algebraic graph theory.

Sp Qtr. Prereq: 776.

**780 Number Theory I U G 3**

Algebraic number theory.

Au Qtr. 3 cl. Prereq: 772.

**781 Number Theory II U G 3**

Diophantine equations.

Wi Qtr. 3 cl. Prereq: 780.

**782 Number Theory III U G 3**

Analytic number theory.

Sp Qtr. 3 cl. Prereq: 781.

**H783 Honors Research U 3-5**

A program of reading and research for each student with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a cumulative pt-hr ratio of 3.50 in math; permission of instructor under whose supervision the work is to be completed and of the ASC Honors Committee. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**787 Graduate Problem Seminars U G 3**

Topics helpful in problem solving in fundamental areas of mathematics practice with problems in a specific area of mathematics.

Su Qtr. 3 cl. Prereq: Permission of Graduate Advising Committee. Each decimal subdivision repeatable to a maximum of 9 cr hrs.

787.01 Problems in Abstract Algebra

787.02 Problems in Complex Analysis

787.03 Problems in Real Analysis

787.04 Problems in Topology

**804 Methods of Applied Mathematics I G 3**

An introduction to functional analysis and boundary value problems.

Au Qtr. 3 cl. Prereq: 552 or 654, 606, and 652; or written permission of Graduate Studies Committee chairperson.

**805 Methods of Applied Mathematics II G 3**

Applied complex variables and asymptotic approximations.

Wi Qtr. 3 cl. Prereq: 804.

**806 Methods of Applied Mathematics III G 3**

Nonlinear oscillations, partial differential equations, and perturbation theory.

Sp Qtr. 3 cl. Prereq: 805.

**846 Topics in Discrete Mathematics G 2-5**

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**851 Differential Geometry I G 3**

Curves, surfaces, fundamental forms, tensors, and connections.

Wi Qtr. 3 cl. Prereq: 655, 751, and 771.

**852 Differential Geometry II G 3**

Continuation of 851.

Sp Qtr. 3 cl. Prereq: 851.

**854 Lie Groups I G 3**

Integration on manifolds, Lie groups, classical groups, homogeneous spaces.

Wi Qtr. 3 cl. Prereq: 651, 751, and 771.

**855 Lie Groups II G 3**

Continuation of 854.

Sp Qtr. 3 cl. Prereq: 854.

**857\* Introduction to Functional Analysis I G 3**

Linear topological spaces, normed spaces, Hilbert spaces, convex sets, integration of vector-valued functions.

Au Qtr. 3 cl. Prereq: 552 and 751.

**858\* Introduction to Functional Analysis II G 3**

Continuation of 857.

Wi Qtr. 3 cl. Prereq: 857.

**859\* Introduction to Functional Analysis III G 3**

Banach Algebras, spectral theory, harmonic analysis, fixed-point theorems; applications to analysis.

Sp Qtr. 3 cl. Prereq: 857 and 858.

**860 Algebraic Topology I G 3**

Singular homology theory.

Au Qtr. 3 cl. Prereq: 657.

**861 Algebraic Topology II G 3**

Continuation of 860; general cohomology theories.

Wi Qtr. 3 cl. Prereq: 860.

**862 Algebraic Topology III G 3**

Continuation of 860 and 861; fibrations and homotopy theory.

Sp Qtr. 3 cl. Prereq: 861.

**865 Topics in Applied Mathematics G 2-5**

Su, Au Qtrs. 2-5 cl. Prereq: Written permission of dept.

Repeatable to a maximum of 20 cr hrs.

**869 Mathematical Theory of Communication and Control G 2-5**

Sp Qtr. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**870 Topics in Graph Theory G 2-5**

Topics of current research interest.

Au, Wi, Sp Qtrs. Prereq: 777 and permission of dept.

Repeatable to a maximum of 15 cr hrs.

**872 Group Theory I G 4**

Properties of groups, extensions, transfer, generators and defining relations, representation theory, permutation groups.

Au Qtr. 4 cl. Prereq: 672 or 772.

**873 Group Theory II G 4**

Continuation of 872.

Wi Qtr. 4 cl. Prereq: 872.

**874 Group Theory III G 4**

Continuation of 873.

Sp Qtr. 4 cl. Prereq: 873.

**875 Combinatorics Seminar G 2-5**

Recent research articles in combinatorics are read and presented by the students.

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs.

**876 Analytic Number Theory G 4**

The distribution of prime numbers; Waring's problems, and selected topics.

Au, Wi Qtrs. 4 cl. Prereq: Permission of dept. Repeatable to a maximum of 8 cr hrs.

**893 Individual Studies G 1-5**

Individual assigned readings and reports on research investigations.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-5**

When need is sufficient, the department will offer under this number a course on some phase of mathematics not covered in its regular offerings.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 30 cr hrs.

**931 Ergodic Theory I G 3**

Measurable transformations, mixing and ergodicity, existence of invariant measures, contraction operations on function spaces, ergodic theorems.

Au Qtr. 3 cl. Prereq: 751.

**932 Ergodic Theory II G 3**

Continuation of 931.

Wi Qtr. 3 cl. Prereq: 931.

**939 Topics in Probability Theory G 2-5**

Various advanced topics in probability theory.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**949 Topics in Logic G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**950 Topics in Real Analysis G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**951 Topics in Complex Analysis G 2-5**

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: 754. Repeatable to a maximum of 20 cr hrs.

**953 Topics in Topology G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**957 Topics in Differential Geometry G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**961 Topics in Functional Analysis G 2-5**

Topics to be chosen from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**970 Topics in Representation Theory G 2-5**

Topics in the representation theory of various algebraic structures.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**974 Topics in Homological Algebra G 2-5**

Topics selected from current research articles.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: 973 or permission of dept. Repeatable to a maximum of 20 cr hrs.

**975 Topics in Geometry G 2-5**

Topics to be chosen from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**978 Topics in Ring Theory G 2-5**

Topics selected from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: 772. Repeatable to a maximum of 20 cr hrs.

**981 Topics in the Theory of Groups G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**982 Topics in Algebra G 2-5**

Topics selected from current research papers.

Su, Au, Wi, Sp Qtrs. 2-5 cl. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**983 Topics in Number Theory G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs.

**985 Seminar in Group Theory G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**986 Seminar on Algebra G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**988 Seminar on Number Theory G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**990 Seminar on Geometry G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**991 Seminar in Probability Theory G 2-5**

Topics selected from current research papers.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**992 Seminar in Applied Mathematics G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs, including cr hrs earned in 998. This course is graded S/U.

**995 Seminar in Ergodic Theory G 2-5**

Topics selected from current research papers.

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**996 Seminar in Analysis G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**997 Seminar in Topology G 2-5**

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Mechanical Engineering

2075 Robinson Laboratory, 206 West 18th Avenue, 292-2289

## 250 Numerical Methods in Mechanical Engineering U 3

Computing methods of nonlinear equations, interpolations, differentiations, integrations, and ordinary differential equations; application to engineering problems. Nakamura.

Au, Sp Qtrs. 3 cl. Prereq: Chem 204 and 205; En Graph 141, 142, and 143 or 110 and 200; Eng Mech 210 and 410; Math 151, 152, 153, 254, and 415; and Physics 131, 132, and 133; and acceptance as a mech eng major or written permission of the instructor.

## 281 System Dynamics U 4

Theoretical and experimental study of the dynamics of linear, lumped-parameter models of mechanical, electrical, fluid, thermal, and mixed systems. Doebelin.

Au, Sp Qtrs. 3 cl. Prereq: Chem 204 and 205; En Graph 141, 142, and 143 or 110 and 200; Eng Mech 210 and 410; Math 151, 152, 153, 254, and 415; and Physics 131, 132, and 133; and acceptance as a mech eng major or written permission of course supervisor.

## 294 Group Studies in Mechanical Engineering U 1-6

Special topics in mechanical engineering; the particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

## 309 Thermodynamics U 3

Study of macroscopic and microscopic thermodynamics. Moran.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Math 415 and Physics 133. Not open to students majoring in mech eng.

## 311 Heat Transfer and Fluid Flow U 3

Study of the fundamental principles of heat transfer and fluid flow with applications to electrical machinery and apparatus. Bridge.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 309. Not open to students majoring in mech eng.

## 350 Machine Design U 5

A study of the application of the general principles and empiricisms of mechanics of solids to the creative design of mechanical equipment. Collins.

Sp Qtr. 5 cl. Prereq: Eng Mech 420. Not open to students majoring in mech eng.

## 382 Mechanical Engineering Analysis U 4

Continuation of 281 with additional analytical techniques of general usefulness in mechanical engineering. Houser.

Au, Wi Qtrs. 3 cl, 1 2-hr lab. Prereq: 281.

## 489 Professional Practice in Industry U 2

Actual employment in a co-op program job in industry and the preparation of a comprehensive report based on a pre-assigned outline. Kennedy.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to Co-op program in mech eng. Repeatable to a maximum of 8 cr hrs. This course is graded S/U, and may only be counted as a free elective.

## 501 Thermodynamics I U G 4

A study of basic engineering thermodynamics. Moran.

Au, Wi Qtrs. Prereq: 250 or 281. Open to eng majors only. Prereq for non-mech eng majors: Chem 204; Eng Mech 410 or 415; and Math 255; or written permission of instructor.

## 502 Thermodynamics II U G 4

Continuation of 501. Moran.

Wi, Sp Qtrs. 4 cl. Prereq: 250, 281, and 501; prereq or concur: Chem 205 or written permission of instructor.

## 503 Fluid Dynamics I U G 4

A study of the basic concepts, fundamental equations, and applications of fluid mechanics to engineering problems. Guezennec.

Wi, Sp Qtrs. 4 cl. Prereq: 501.

## 504 Fluid Dynamics II U G 4

Continuation of 503. Korpela.

Au, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 502 and 503.

## 510 Heat Transfer U G 5

A study of the fundamentals of conduction, convection, and thermal radiation energy transfer with engineering applications. Vafai.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 503, prereq or concur: 504; agri eng majors only: 501 and Civil En 413.

## 527 Energy Conversion in Turbomachinery U G 4

Energy conversion in power-producing, -absorbing, and -transmitting turbomachinery. Subramaniam.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 504; prereq or concur: 510.

## 553 Kinematics and Dynamics of Machinery U G 4

Motion and force analysis in mechanisms such as plane linkages and cams; introduction to the synthesis of plane linkages and simple cam systems. Berme.

Au, Wi Qtrs. 4 cl. Prereq: 250 or 281.

## 560 Principles of Mechanical Design U G 3

An introduction to the principles of mechanical design, with emphasis on the selection of mechanisms, manufacturing processes, engineering materials, and factor of safety. Collins.

Au, Wi Qtrs. 3 cl. Prereq: 250 and 281; Eng Mech 420; and Ind Eng 311.

## 561 Principles of Mechanical Design U G 5

A study of the application of the general principles and empiricisms of mechanics of solids to the creative design of mechanical equipment. Busby.

Wi, Sp Qtrs. 2 1½-hr cl, 1 2-hr lab. Prereq: 560 and prereq or concur: 533. Prereq for non-mech eng majors: Eng Mech 420 and permission of mech eng dept.

## 562 Principles of Mechanical Design U G 3

Continuation of 561. Berme.

Au, Sp Qtrs. 3 cl. Prereq: 561.

## 563 Principles of Mechanical Design U G 3

Continuation of 561. Berme.

Au, Wi Qtrs. 3 cl. Prereq: 561.

## 564 Mechanical Engineering Design I U G 3

The methodology of intermediate design and practice in the design of a specific system which may utilize principles of any mechanical engineering discipline. Bridge and Collins.

Au, Wi, Sp Qtrs. 3 2-hr lab. Prereq: 510, 561 and 562. Offered in cooperation with Nuclear Engineering.

## 570 Mechanical Engineering Measurements U G 3

A theoretical and experimental study of the principles of operation and performance characteristics of measuring instruments used in mechanical engineering. Doebelin.

Au, Wi Qtrs. 1 cl, 1 4-hr lab. Prereq: 382 and Eng Mech 420; and prereq or concur: 510.

## 571 Principles of Automatic Control U G 4

A theoretical and experimental study of the principles of operation of feedback control systems, including servomechanisms and process control. Srinivasan.

Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: 570 or permission of instructor.



**581 Mechanical Engineering Laboratory U G 3**

The study and application of methods of experimental analysis. Bridge and Singh.

Au, Wi, Sp Qtrs. 2 2-hr lab and 5 hrs lab planning and report writing. Prereq: 510 and 570; prereq or concur: 563. Offered in cooperation with Nuclear Engineering.

**582 Computer-Aided Design and Manufacturing U G 3**

Principles of CAD/CAM and design for automatic manufacturing and assembly; integration of design and manufacturing; simulation of manufacturing processes. Kinzel.

Wi Qtr. 3 cl. Prereq: Sr standing in ENG or permission of instructor. Open to students in Manufacturing Systems and ENG program.

**593 Individual Studies in Mechanical Engineering U G 1-5**

Provides the opportunity to pursue special studies in mechanical engineering not otherwise covered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 or hrs. This course is graded S/U.

**601 Gas Dynamics U G 3**

An analytical study of one and two dimensional steady flow and one dimensional unsteady flow. Samimy.

Wi Qtr. 3 cl. Prereq: 504 and Math 415 or equiv or written permission of course supervisor. Not open to students with credit for 801.

**612 Principles of Heat Exchangers U G 3**

A study of principles of heat and mass transfer as applied to the design of heat exchangers. Christensen.

Au Qtr. 3 cl. Prereq: 510.

**618 Environmental Pollution Abatement U G 5**

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to environmental problems in air, water, and land systems. Carey.

Wi Qtr. 5 cl. Prereq: Sr or grad majors in engineer or sciences. Not open to students with credit for Agri Eng 714; Civil En 518, 520, 618, or 714; Chem Eng 714; Mech Eng 714; Metal Eng 714; or Zoology 618 or 714. Cross-listed in Civil Engineering and Zoology.

**625 Central-station Fossil Power Generation U G 3**

An analytical and descriptive study of the vapor power cycles and associated energy transport processes used in the generation of electrical power from fossil fuels. Essenhigh.

Wi Qtr. 3 cl. Prereq: 502 and 510 or permission of instructor.

**630 Energy Conversion in Internal Combustion Engines U G 3**

A study of combustion chambers, valve mechanisms, and the dynamic balance of internal combustion engines. Kennedy.

Au Qtr. 3 cl. Prereq: 502 or permission of instructor.

**631 Mechanical Analysis of Internal Combustion Engines U G 3**

Force analysis as related to the design of engine components such as pistons, bearings, valve springs, and crankshafts. Kennedy.

Wi Qtr. 3 cl. Prereq: 562, 563 or permission of instructor.

**632 Diesel Engines U G 3**

An advanced study of Diesel engine operation, and economics. Kennedy.

Sp Qtr. 3 cl. Prereq: 502 and 561 or permission of instructor.

**634 Gas Turbine Power Plants U G 3**

A study of the principles, performance, and design of gas turbine power plants. Samimy.

Sp Qtr. 3 cl. Prereq: 504 and 510.

**636 Nuclear Power Plants U G 3**

A study of thermal and mechanical design aspects and economics of nuclear power plants and processes. Christensen.

Wi Qtr. 3 cl. Prereq: Nuclr En 505 and 501 or 309 with permission of instructor. Not open to students with credit for Nuclr En 636. Cross-listed in Nuclear Engineering.

**637 Heat Transfer Application in Nuclear Reactor Systems U G 3**

The heat transfer applications in nuclear reactor systems include but are not limited to: heat transfer in PWR and BWR fuel rods, coolant, and reactor internals. Christensen.

Sp Qtr. 3 cl. Prereq: 636 or Nuclr En 636 and Mech Eng 510 or 311 with permission of instructor. Not open to students with credit for Nuclr En 637. Cross-listed in Nuclear Engineering.

**640 Principles of Environmental Control U G 4**

A study of the basic principles for evaluating, specifying, and controlling building environments for human health and comfort. Drake.

Au Qtr. 4 cl. Prereq: 502, prereq or concur: 504 and 510; or permission of instructor.

**641 Heating, Ventilating, and Air Conditioning U G 4**

A study of design techniques, practices, components, and systems for typical environmental control applications such as human comfort. Drake.

Wi Qtr. 4 cl. Prereq: 640 or permission of instructor.

**642 Refrigeration and Air Conditioning U G 3**

A study of fundamental processes and equipment associated with vapor compression refrigeration systems, including a survey of absorption refrigeration, air-cycle refrigeration, and heat pumps. Drake.

Sp Qtr. 2 1½-hr cl. Prereq: 502, 504, and 510 or permission of instructor.

**650 Machinery Dynamics and Vibrations U G 4**

Machinery dynamics, shock and vibration control topics including balancing, rotor dynamics, isolators, damping, impacts, absorbers, frequency analysis, and modal analysis experiments. Houser.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 382, 553, and prereq or concur: 570; or permission of instructor.

**654 Land Vehicle Dynamics U G 3**

Study of the principles and design methodology of automotive vehicles; design and analysis of suspension and braking systems. Guenther.

Sp Qtr. 3 cl. Prereq: 382 and 562, or permission of instructor.

**661 Optimization in Mechanical Design U G 3**

Application of analytical optimization methods to the solution of deterministic and probabilistic mechanical design problems; introduction to interactive optimization using ADML computer graphics facilities. Kinzel.

Sp Qtr. 3 cl. Prereq: 562 or 563 or permission of instructor.

**662 Introduction to Mechanics of Composite Structures U G 4**

An introduction to the macromechanical analysis of anisotropic composite structures including governing constituent equations, strength and stiffness advantages and failure envelopes. Busby.

Au, Sp Qtrs. 4 cl. Prereq: Eng Mech 215 or 420. Not open to students with credit for Civil En 662 or Eng Mech 662. Cross-listed in Civil Engineering and Engineering Mechanics.

**664 Mechanical Engineering Computer-Aided Design I U G 4**

Methodology and practice in computer-aided design of components and systems utilizing principles of several mechanical engineering disciplines. Busby.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 510 and 561; Math 415; and En Graph 200 or written permission of course supervisor.

**665 Hydrodynamic Lubrication U G 3**

Apply the principles of hydrodynamic lubrication to the analysis and design of sliding, squeeze, and hydrostatic journal and thrust bearings. Hamrock.

Au Qtr. 3 cl. Prereq: 504, 563, or equiv.

**666 Acoustic Problems in Engineering U G 3**

A study of the fundamentals of acoustics and noise control including design criteria based on hearing damage and other human responses to sound. Singh.

Wi Qtr. 3 cl. Prereq: 3rd yr standing in science or ENG and written permission of instructor.

**667 Elastohydrodynamic and Boundary Lubrication U G 3**

Applying the principles of elastohydrodynamic and boundary lubrication to the analysis and design of rolling element bearings, gears, and dry rubbing bearings. Hamrock.

Wi Qtr. 3 cl. Prereq: 665 or permission of instructor.

**671 Measurement System Application and Design U G 4**

A theoretical and experimental study of measurement instrumentation; emphasis on both principles of operation and analysis and design techniques for measurement systems of a mechanical and electromechanical nature. Doebelin.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 570 or permission of instructor.

**672 Control Systems Design U G 4**

A study of the theoretical and experimental procedures involved in the design of feedback control systems including servomechanisms and process control. Doebelin.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 571 or permission of instructor.

**673 Applied Digital Control U G 4**

Theory and application of digital control system design techniques to the control of physical systems; lab sessions deal with micro-processor implementation of controllers. Srinivasan.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 571 or equiv.

**675 Design of Fluid Power Systems U G 3**

Study of the principles and design methodology of fluid power transmission and control components and systems; emphasis on dynamic analysis with laboratory and computer simulation demonstrations. Singh.

Au Qtr. 3 cl. Prereq: 382 and 504; prereq or concur: 562, or permission of instructor.

**H680 Digital Data Acquisition and Signal Processing U 3**

Methodology and practice of computer-aided experimentation and signal processing techniques; frequency analysis, diagnostics, system identification, and random data processing. Singh.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 382, jr standing in dept or equiv, 3.40 cumulative pt-hr ratio, and permission of instructor. Not available for audit.

**H681 Undergraduate Honors Program Research U 1-3**

Honors students are offered the opportunity to pursue independent project/research; presentations and thesis writing included. Singh.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Sr standing in dept or equiv, 3.40 cumulative pt-hr ratio, and permission of instructor. Repeatable to a maximum of 6 cr hrs.

**687 Introduction to Design in Biomedical Engineering U G 3**

Introduction of engineering students to design problems in bio-medical engineering; analysis in bio-mechanics, bio-fluid mechanics, diffusion, and elementary physiology. Berme.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**693 Individual Studies in Mechanical Engineering U G 2-10**

Designed to give the advanced student opportunity to pursue special studies not otherwise offered; work undertaken will be selected from automotive and internal combustion machinery, combustion and fuels, heat transfer, heating, ventilating, air conditioning, industrial hydraulics, machine design, refrigeration, steam power plants, and thermodynamics.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 24 cr hrs with a maximum of 10 cr hrs in any one topic. This course is graded S/U.

**694 Group Studies in Mechanical Engineering U G 1-6**

Special topics in mechanical engineering. The particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**700 Transport Processes U G 3**

A parallel, systematic study of the three transport processes of mass, momentum, and energy from the continuum viewpoint. Moran.

Su Qtr. 3 cl. Prereq: 510 and Math 415 or written permission of course supervisor.

**707 Numerical Methods in Particle Diffusion, Heat Transfer, and Radiation Transport U G 3**

Computer solution of neutron diffusion, heat conduction, and radiation transport based on finite difference methods using marching, iterative, and direct-solution schemes. Nakamura.

Wi Qtr. 3 cl. Prereq: 510 or Math 512 or Nucl En 660, Cptr/Inf 541, and En Graph 200. Not open to students with credit for Nucl En 707 or 767. Cross-listed in Nuclear Engineering.

**721†\* Advanced Principles of Energy Conversion in Turbomachinery U G 3**

An advanced study of power-absorbing, generating, and transmitting turbomachinery.

Sp Qtr. 3 cl. Prereq: 527 or equiv. Not open to students with credit for 821.

**725\* Advanced Steam Power Cycle and Turbine Analysis U G 3**

An advanced study of steam power cycles and design of steam turbine nozzles and blading. Christensen.

Sp Qtr. 3 cl. Prereq: 625. Not open to students with credit for 823.

**726 Introduction to Combustion U G 3**

Introduction to thermodynamics and kinetics of combustion and to the role of diffusion in combustion systems; applications to evaporation of fuel droplets, catalytic conversion, and coal combustion. Essenhigh.

Au Qtr. Prereq: 504; prereq or concur: 510.

**740\* Advanced Principles of Refrigeration U G 3**

An advanced study of conventional and specialized refrigeration processes and systems including vapor-compression, absorption, air-cycle, and thermoelectric systems. Drake.

Sp Qtr. 2 1½-hr cl. Prereq: 510 and 642 or permission of instructor. Not open to students with credit for 840.

**741†\* Advanced Environmental Control U G 3**

Advanced study of psychrometrics as well as a study of systems used to control the environment in commercial and industrial applications. Drake.

Sp Qtr. 2 1½-hr cl. Prereq: 640 and 641 or equiv. Not open to students with credit for 841.

**751 Application of Computer Graphics to Kinematic Synthesis and Analysis U G 4**

Application of interactive computer graphics to the kinematic synthesis of linkages; extensive use of the ADML computer graphics facilities. Kinzel.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 553 and En Graph 200 or equiv. Not open to students with credit for 651.

**752 Mechanical Design of Manipulators and Robots U G 3**

Principles of hardware and software design of industrial robots and related devices; includes use of actual industrial robot programming procedures. Waldron.

Wi Qtr. 2 1½-hr cl. Prereq: Eng Mech 410 or 415, Math 568, or permission of instructor.

**762 Structural Composites U G 3**

An introduction to the analysis and design synthesis of beams, columns, rods, plates, and panels made of structural composites. Busby.

Wi Qtr. 3 cl. Prereq: 622, or Civil En 662 or Eng Mech 662 or permission of instructor. Not open to students with credit for Civil En 762 or Eng Mech 762. Cross-listed in Civil Engineering and Engineering Mechanics.

**766 Engineering Acoustics U G 3**

A course in engineering acoustics covering the phenomenon by which acoustic energy is generated and transmitted, with applications to mechanical machinery. Singh.

Sp Qtr. 3 cl. Prereq: 666 or permission of instructor.

**802 Fundamentals of Thermodynamics I G 3**

A study of the fundamentals of thermodynamics from the classical viewpoint with emphasis on the use of the first and second laws for the analysis of thermal systems. Moran.

Au Qtr. 3 cl. Prereq: 502 and Math 415 or written permission of course supervisor.

**803†\* Fundamentals of Thermodynamics II G 3**

Introduction to the fundamentals of thermodynamics from the microscopic viewpoint. Rich.

Wi Qtr. 3 cl. Prereq: 802.

**806 Viscous Flow of Fluids G 3**

Theory of viscous fluids; exact solutions of the Navier Stokes equations, creeping flows, and boundary layers. Vafai.

Au Qtr. 3 cl. Prereq: 504.

**807 Conduction Heat Transfer G 3**

A study of the general heat transfer equations and their application to heat transfer in solids. Korpela.

Au Qtr. 3 cl. Prereq: 510.

**808 Laminar Convection Heat Transfer G 3**

Laminar forced convection in pipes; laminar thermal boundary layers and entrance effects; stagnation point heat transfer; free convection boundary layers and plumes. Korpela.

Wi Qtr. 3 cl. Prereq: 806 and 807.

**809†\* Thermal Radiation Heat Transfer G 3**

Black body radiation, gray body approximation, radiation surface properties, radiation exchange in non-participating media, conduction-radiation interaction, convection-radiation interaction, and introduction to radiation in participating media. Vafai.

Sp Qtr. 3 cl. Prereq: 807.

**810 Inviscid Flows G 3**

Kinematics of inviscid flows; circulation and vorticity; two-dimensional potential flows; complex potential and complex velocity; introduction to free streamline theory and three-dimensional potential flows. Conlisk.

Wi Qtr. 3 cl. Prereq: 504.

**811 Computational Fluid Dynamics G 4**

Advanced numerical methods for solving Navier-Stokes equations as well as equations for inviscid and boundary layer flows. Nakamura.

Sp Qtr. 4 cl. Prereq: 707 or Aero Eng 615. Not open to students with credit for Aero Eng 870. Cross-listed with Aeronautical and Astronautical Engineering 870.

**813 Turbulent Flow and Heat Transfer G 3**

Study of turbulent flows, with emphasis on the calculation of heat transfer in turbulent internal and external flows. Guezennec.

Sp Qtr. 3 cl. Prereq: 806 and 807.

**815 Multiphase Flow, Heat, and Mass Transfer in Porous Media G 3**

Current theories on flow, heat, and mass transfer in porous media and an understanding of the mechanisms involved in multiphase transport in porous media. Vafai.

Sp Qtr. 2 1¼-hr cl. Prereq: 806 or permission of instructor.

**818 Advanced Analytical Methods in Mechanical Engineering G 3**

Transform and Green's function methods for solution of problems arising in heat conduction, vibration of continuous bodies, and mechanics of fluids; asymptotic evaluation of integral representations of these solutions. Korpela.

Au Qtr. 3 cl. Prereq: 807 or 850 or equiv. Not open to students with credit for 881.

**826†\* Combustion G 3**

A study of chemical thermodynamics and kinetics, the basic equations of change, and application of fundamentals to combustion in engineering systems. Essenhigh.

Wi Qtr. 3 cl. Prereq: 700 or permission of instructor.

**837\* Tribology G 3**

Developes an understanding of more advanced and current research topics in lubrication, friction, and wear that are vital to the successful operation of machine elements. Hamrock.

Sp Qtr. 3 cl. Prereq: 665, 806 or equiv.

**850 Dynamics of High Speed Machinery G 3**

An advanced study of the interrelationships among forces, motions, and masses as related to rigid or elastic machine members. Houser.

Wi Qtr. 3 cl. Prereq: 650 and 880; or equiv.

**851\* Kinematic Geometry of Mechanisms G 3**

Kinematics and statics of spatial mechanisms including robotic mechanisms.

Sp Qtr. 2 1½-hr cl. Prereq: 752 or permission of instructor.

**860 Advanced Mechanical Design G 3**

A study of concepts, principles, and phenomenological theories related to the failure-prevention aspect of mechanical design. Collins.

Au Qtr. 3 cl. Prereq: 561 and Math 415.

**861 Stress Analysis of Machinery G 3**

A study of concepts, principles, and procedures related to the analysis of stresses and strains in machine parts. Kinzel.

Sp Qtr. 3 cl. Prereq: 562 and 563, or 350; and 664 or Eng Mech 763 or equiv.

**862 Advanced Mechanics of Structural Composites G 3**

An introduction to current important topic areas in structural composites; among these topics are fracture mechanisms and models, energy method modeling, dynamic structural response, and numerical modeling schemes. Busby.

Sp Qtr. 3 cl. Prereq: 762 or Civil En 762 or Eng Mech 762 or permission of instructor. Not open to students with credit for Civil En 862 or Eng Mech 862. Cross-listed in Civil Engineering and Engineering Mechanics.

**870 Digital Signal Analysis of Mechanical Systems G 3**

Conceptual, measurement, and numerical aspects of digital data acquisition and signal processing, random data analysis, and system identification and diagnostic techniques used for mechanical systems. Singh.

Au Qtr. 3 cl. Prereq: 880 or permission of instructor.

**873 State Space Methods for Dynamic Systems Analysis and Control G 3**

Application of state-space methods to the analysis and synthesis of dynamic systems with emphasis on control applications. Srinivasan.

Wi Qtr. 3 cl. Prereq: Math 568 or equiv and Mech Eng 571 or equiv, or permission of instructor. Not open to students with credit for Elec Eng 750.

**880 Lumped Parameter System Analysis G 3**

Lumped parameter system analysis of mechanical, thermal, hydraulic, pneumatic, and electromechanical systems; system response to periodic, transient, and random excitation; computer and physical system demonstrations. Doeblin.  
Au Qtr. 3 cl. Prereq: Math 415 or permission of instructor.

**882 Modeling of Dynamic Systems G 4**

A study of theoretical, experimental, and computer methods for characterizing the dynamic behavior of complex systems. Doeblin.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 880 or permission of instructor. Not open to students with credit for 870.

**887 Mechanical Engineering Design Seminar G 1**

Graduate students give presentations on their research projects and related topics in the general area of mechanical design and systems.

Sp. Qtr. 1 cl.

**888 Mechanical Engineering Seminar G 1**

Lecture and discussion of current topics related to mechanical engineering presented by graduate students, staff, and guest speakers. Srinivasan.

Au Qtr. 1 cl. Prereq: Mech eng grad standing. Repeatable to a maximum of 3 cr hrs for MS degree and 3 additional cr hrs for PhD degree.

**894 Group Studies in Mechanical Engineering G 1-6**

Special topics in mechanical engineering. The particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**993 Advanced Problems in Mechanical Engineering G 1-5**

Provides the opportunity to pursue special problems in mechanical engineering not otherwise covered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**999 Research in Mechanical Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Medical Communications

School of Allied Medical Professions

206 School of Allied Medical Professions Building, 1583 Perry Street, 292-1044

**200 Introduction to Biomedical Communications U 1**

Introduction to the Biomedical Communications field; provides a survey of its formation, present functional organization, and trends for the future.

Wi, Sp Qtrs. 1 cl.

**400 Introduction to Medical Communications U 4**

Application of communication theory to the health care system and the role of the Medical Communications specialist; survey of communication related areas of the health care system.

Au Qtr. 4 cl. Prereq: Admission to med comm or written permission of the instructor.

**520 Instructional Product Design in Biomedical Communications U 5**

Design and development of instructional products and materials for health related fields. Includes production of student made materials and critical analysis of existing materials.

3 cl, 1 2-hr lab. Prereq: Admission to med comm or written permission of instructor.

**522 Principles of Continuing Health Professional Education U 3**

Nature of continuing education for health professionals; history, learner characteristics, needs assessment, program development, evaluation; comparisons between health professions; role of universities, hospitals, professional associations, and industry.

Au Qtr. 3 cl.

**525 Advanced Production Techniques in Biomedical Communications U 5**

Advanced study of television and related media production including the development and maintenance of production facilities in biomedical settings.

3 cl, 1 2-hr lab. Prereq: Photog 574, Communic 510 or written permission of instructor.

**530 Biomedical Writing and Editing U 3**

Fundamentals of writing and editing health-related articles, abstracts, news releases, and other medical materials; evaluation of health-related journals.

Wi Qtr. 3 cl. Prereq: English 110; English 210 or Journal 201; jr standing in biomed comm.

**535 Health Care Marketing U 3**

Overview of the basic principles of marketing and their relationship to the delivery of health care services.

Sp Qtr. 3 cl. Prereq: Biomed comm major or related major with permission of instructor.

**589 Practicum U 3**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 3rd qtr jr in med comm. Repeatable to a maximum of 9 cr hrs. Travel and subsistence costs for practicum must be borne by student.

**589.01 Medical Illustration and Graphics**

Application of biomedical communications principles and skills to field settings; advanced study of medical graphic arts production; completion of projects.

**589.02 Health Care Media Production**

Application of biomedical communications principles and theory to field settings; investigation of still or electronic media production; completion of projects.

**589.03 Health Care Education and Training**

Application of biomedical communications principles and theory to field settings; investigation of health care staff training and/or patient education problems; completion of projects.

**589.04 Health Care Public Information and Medical Writing**

Application of biomedical communications theory and principles to field settings; investigation of health care public information and medical writing problems; completion of projects.

**589.05 Biomedical Communications Research**

Application of biomedical communications theory and principles to field settings; development and implementation of biomedical communications research projects.

**595 Seminars in Biomedical Communications U 1-3**

Selected studies of theory and practice in biomedical communication with emphasis on the process of development, instruction, evaluation, and change of systems, their objectives and products.

Wi, Sp Qtrs. 1 3-hr cl. Prereq: 400 and sr standing, or permission of instructor. Repeatable to a maximum of 9 cr hrs.

**612 Managing the Health Care Training Function at the Departmental Level U G 3**

The techniques of in-service training programs; discussion and analysis of the role and function of the training manager.

Wi. Qtr. 1 2-hr cl, 1 1½-hr cl. Prereq: Sr or grad standing in alli med or health-related major, jr or sr med comm major. Cross-listed in Allied Medicine.

**627 Management of Patient Education Systems U G 3**

Planning, organizing, and evaluating patient education systems and programs in health care organizations.

Au Qtr. 1 2-hr cl, 1 hr arr. Prereq: Sr. standing in biomed comm or related health professions major or grad standing in health professions. Not open to students with credit for Alli Med 627. Cross-listed in Allied Medicine.

**640 Health Promotion and Disease Prevention in Acute Care Organizations U G 3**

Programs in acute care institutions are examined as a means of marketing services, reducing health care costs, and changing the roles of allied health practitioners.

Sp Qtr. 2 1½-hr cl. Prereq: Sr or grad standing in allied health or a related field. Not open to students with credit for Alli Med 640. Cross-listed in Allied Medicine.

**650 Advanced Field Studies in Medical Communications I U 8**

Study and application of educational uses of communication processes and media in a health setting.

Wi Qtr. 1 2-hr cl, 18 hrs arr. Prereq: Sr standing in med comm and written permission of instructor.

**660 Advanced Field Studies in Medical Communications II U 8**

Diagnosis and planning for communication services in various health environments.

Sp Qtr. 1 2-hr cl, 18 hrs arr. Prereq: 650.

**665 Issues and Trends in Biomedical Communications U 3**

Exploration and analysis of the issues and trends influencing the Biomedical Communications environment.

Au Qtr. 2 1½-hr cl. Prereq: Sr standing in med comm or med illus.

**725 Advanced Production of Instructional Television Packages in a Health Care Environment G 4**

The application of research, production, and evaluation in the design of classroom and individual instructional TV materials.

Wi Qtr. 2 cl, 4-hrs lab. Prereq: 525 or permission of instructor, Ed-T&P 677, and Ed-T&P 680. Ed-T&P 678 recommended.

## Medical Dietetics

School of Allied Medical Professions

516 School of Allied Medical Professions Building, 1583 Perry Street, 292-0635

**201 Careers in Dietetics U 1**

Roles, responsibilities, and educational requirements for a career in dietetics; current employment opportunities.

Wi Qtr. 1 cl.

**420 Management in Medical Dietetics U 5**

Application of management process to nutritional care of patients in the health care institution. Bartlett.

Wi Qtr. 5 cl. Prereq: Humn Ntr 310, 314, 350, and 370; Alli Med 630.

**422 Introductory Dietetic Practice U 6**

Application of food service management theory in the practice setting.

Su Qtr. 32 hrs clinic. Prereq: 420, 520, 530, and 531. Enrollment in med diet.

**520 Nutrition and Human Metabolism I U 4**

Metabolism of essential nutrients at cellular and intact levels of the body: causes, results, and dietary management of alterations in metabolism of these nutrients. Burge.

Wi Qtr. 4 cl. Prereq: 545, 546, or permission of instructor. Not open to students with credit for 410.

**521 Nutrition and Human Metabolism II U 4**

A continuation of 520. Burge.

Sp Qtr. 3 cl, 3-hr lab. Prereq: 520.

**530 Nutritional Care Process I U 2**

Utilizing assessment tools and techniques for gathering subjective and objective dietary and biomedical data for planning nutritional care.

Wi Qtr. 1 cl, 3-hr lab. Prereq: Jr standing in med diet, Concur: 520.

**531 Nutritional Care Process II U 2**

Evaluating assessment data for planning, implementing, evaluating, and documenting nutritional care.

Sp Qtr. 1 cl, 3-hr lab. Prereq: 530.

**536 Nutrition Counseling U 3**

Emphasis on philosophy of client care, counseling vs. instructional techniques, adult education, client resources, and behavior modification; laboratory and simulated experiences.

Su Qtr. 1 2-hr cl, 3-hr lab.

**545 Human Nutrition and Dietetics U 4**

Integration of principles related to foods, nutrients, physiology, and biochemistry as they apply to nutritional care for the promotion of health and prevention of disease. Wardlaw.

Au Qtr. 4 cl. Prereq: Chem 102, Biology 110, and Humn Ntr 310 and 314

**546 Research Applications in Dietetics U 2**

A review of the research process in dietetics with concurrent experience in laboratory assessment of nutritional status.

Au Qtr. 1 hr cl, 3-hr lab. Prereq: Psych 220; Prereq or Concur: 545 or equiv.

**595 Seminar U 1-3**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor.

**601 Professional Practice in Dietetics U 2**

Emphasis on personal and professional development in dietetic practice including current issues facing the practitioner and the profession.

Wi Qtr. 2 cl. Prereq: Sr standing.

**620 Advanced Management in Medical Dietetics U 2**

Emphasis on managerial skills in food service or nutrition care units in health care organizations.

Wi Qtr. 2 cl. Prereq: 422 or sr standing.

**622 Advanced Management Practice in Medical Dietetics U 2**

Supervised dietetic practice in a health care facility with emphasis on performing advanced managerial functions, tasks, and activities.

These courses are graded S/U.

**622.01 Advanced Management Practice I**

Supervised experience in food service operations.

Au, Wi Qtrs. 2 cl, 18 hrs. practice. Prereq: 420, 422, and sr standing in med diet.

**622.02 Advanced Management Practice II**

Supervised experience in management of food service personnel.

Au, Wi, Sp Qtrs. 2 cl, 18 hrs practice. Prereq: 622.01.

**636 Nutrition Education Process U 3**

Educational principles and practices as applied to the teaching responsibilities of the dietitian. Schiller.

Sp Qtr. 2 cl, 3-hr lab. Prereq: Jr standing in med diet.

**637 Health Promotion and Community Nutrition U 4**

Study of nutrition and health risk appraisal, intervention strategies, and cost effectiveness of risk reduction for selected populations in public and private health programming.

Au Qtr. 4 cl. Prereq: Humn Ntr 310, Med Diet 545, or permission of instructor.

**638 Maternal and Pediatric Nutrition U 4**

Physiological basis of nutritional needs for pregnancy, lactation, infancy, and childhood; covers physical, psychological, and social factors related to growth.

Au Qtr. Prereq: Sr standing in med diet and permission of instructor.

**639 Geriatric Nutrition U 2**

Study of nutritional requirements, nutritional status assessment, and other selected issues in delivery of health care to older adults.

Wi Qtr. 2 cl. Prereq: Humn Ntr 310; Humn Ntr 615 or Med Diet 545 or permission of instructor.

**645 Advanced Medical Dietetics U 2**

Advanced study of complex metabolic problems; nutrition support strategies, their indications, and implementation.

Wi, Sp Qtrs. 2 cl. Prereq: 545, sr standing, and permission of instructor.

**646 Advanced Clinical Practice U 2**

Clinical experiences and post-clinical conferences with emphasis on assuming responsibility for patient nutritional care based on standards of practice.

Prereq: Sr standing and permission of instructor. These courses are graded S/U.

**646.01 Advanced Clinical Practice I**

Au, Wi Qtrs. 2 cl, 18 hrs clinic.

**646.02 Advanced Clinical Practice II**

Au, Wi, Sp Qtrs. 2 cl, 18 hrs clinic.

**646.03 Advanced Clinical Practice III**

Au, Wi, Sp Qtrs. 2 cl, 18 hrs clinic.

**646.04 Advanced Clinical Practice IV**

Sp Qtr. 2 cl, 40 hrs clinic.

**689 Supervised Professional Practice U 2**

Clinical experience and post clinical conferences with emphasis on observation and practice in pediatric, geriatric, community, and health promotion sites.

Au, Wi, Sp Qtrs. 2 cl, 18 hrs clinic. Prereq: Sr standing in med diet. These courses are graded S/U.

**689.01 Pediatric Nutrition****689.02 Nutritional Care of Elderly****689.03 Community Nutrition Services****693 Individual Studies in Nutrition or Dietetics U G 1-5**

Problems in various phases of nutrition or medical dietetics not included in current course offerings.

Su, Au, Wi, Sp Qtrs. Prereq: Grad or sr standing in med diet and permission of instructor. This course is graded S/U.

**695 Seminar U G 1-3**

Conferences and group discussions of selected topics.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

**838\* Maternal and Pediatric Nutrition**

Physiology of pregnancy and lactation including women with special needs; physiology of the neonate, normal growth and development 0-12 months, and nutritional disorders of infancy.

Sp Qtr. Prereq: Grad standing, 5 hrs physiology and biochemistry, Humn Ntr 310 or above, permission of instructor.

**838.01 Physiological and Theoretical Bases for Maternal and Pediatric Needs G 3**

Physiology of pregnancy and lactation including special needs; physiological changes in the neonate; normal growth and development during the first year; and nutritional disorders of the pediatric patient. Boune.

3 cl.

**838.02 Clinical Applications in Maternal and Pediatric Nutrition G 2**

Experiences in the perinatal and pediatric setting to enhance the students' clinical assessment and counseling skills in these specialized settings.

6 hrs clinical. This course is graded S/U.

**856 Nutrition in Critical Care**

The pathophysiological background in systemic disease, surgical intervention and nutritional interrelationships among disease, treatments, and nutrition. Burge.

Au Qtr. 2 1½-hr cl. Prereq: Permission of instructor. Not open to students with credit for Prev Med 856.

**856.01 Lecture G 3**

Au Qtr. 2 1½-hr cl.

**856.02 Practicum G 2**

Au Qtr. 1 4-hr clinic. This course is graded S/U.

**857 Nutrition and Metabolic Imbalance G 3**

The pathophysiological background of metabolic imbalances encountered in the clinical setting and the rationale for nutritional therapies.

Wi Qtr. 2 1½-hr cl. Prereq: 856.01, Fd Sc&Nu 761 or permission of instructor.

**858\* Community Nutrition G 3**

Methods of discovering problems in public health nutrition and practical application of nutrition information for improvement of nutritional status at various age levels.

Sp Qtr. 2 1½-hr cl. Prereq: 638 and 856, or permission of instructor. Not open to students with credit for Prev Med 858.

**889 Clinical Practicum G 5**

Advanced, specialized orientation to clinical dietetics including resource and patient management through individual conferences, group conferences, team conferences, and clinical practice.

Su, Au, Wi, Sp Qtrs. 1 cl, 16-hrs clinic. Prereq: Registered or registration eligible dietitian and written permission of instructor. Subdivisions are repeatable to a maximum of 10 cr hrs. These courses are graded S/U.

**889.01 Crisis Care Practicum****889.02 Primary Care Practicum**

## Medical Illustration

School of Allied Medical Professions

206 School of Allied Medical Professions Building, 1583 Perry Street, 292-5517

**545 Biomedical Graphic Arts Production U 4**

Study of graphic arts with emphasis on theory, terminology, and application in biomedical production.

**545.01 Introduction**

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Admission to Biomedical Communications Division and permission of instructor.

**545.02 Intermediate Study**

Wi Qtr. 2 3-hr labs. Prereq: 545.01 and permission of instructor.

**545.03 Advanced Applications**

Sp Qtr. 2 3-hr labs. Prereq: 545.02 and permission of instructor.

**635 Biophotographic Illustration U 3**

Photography as related to medicine for the medical illustrator including macro and gross specimens, clinical, biomedical, graphic, and reproduction.

Su, Au, Wi, Sp Qtrs. 1 cl, 2 2-hr lab. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**640 Techniques U 5**

Advanced study for students in medical illustration including preparation of charts, graphs, medical and surgical illustrations, exhibits, and general work for a medical center.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 45 cr hrs.

**693 Individual Studies U 1-5**

Advanced study in scientific illustration as related to medicine.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs. This course is graded S/U.

# Medical Microbiology and Immunology

5072 Graves Hall, 333 West 10th Avenue, 292-5525

## 625 Medical Microbiology P G 5

Basic principles of Medical Microbiology and Immunology with direct application to infections of man.

Au Qtr. 40-hr lec.

## 626 Medical Microbiology P G 5

A more extensive and intensive application of basic principles of medical microbiology to infectious diseases.

Wi Qtr. 9-hr lec, 25-hr discussion. Prereq: 625 or permission of instructor.

## 701 Fundamentals of Medical Immunology P G 3

Fundamentals of immunologic phenomena in the normal and diseased state, with primary emphasis on application of immunology in medicine. Lafuse.

Au Qtr. 3 cl.

## 754\* Medical Virology P G 5

Primary emphasis on viruses important to man; fundamental properties of viruses, host cell-virus interaction, pathogenesis, and immunity. Hamparian, Hughes.

Sp Qtr. 3 1-hr lec. Prereq: Written permission of instructor.

## 757† Diagnostic and Clinical Virology P G 5

Laboratory procedures used for the diagnosis of human viral infections. Hughes.

Au, Wi Qtrs. 1 cl, 3 3-hr lab. Prereq: Enrollment in College of Medicine or written permission of instructor.

## 764\* Bacterial Viruses P G 4

A molecular biological study of bacteriophages emphasizing virulent and lysogenic phage-host systems; lab will demonstrate these infectious processes. Bowman.

Wi Qtr. 2 1-hr lect, 2 2-hr lab. Prereq: 625 or permission of instructor.

## 793 Individual Studies in Medical Microbiology

Prereq: Enrollment in College of Medicine or permission of instructor. When registration is for 3 professional cr hrs, an additional 3 hr professional course must be taken. These courses are graded S/U.

### 793.06 Problems in Medical Microbiology P 6, 12, or 18 G 3-15

1, 2, 3, or 4 months; offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Repeatable to a maximum of 24 cr hrs for professional credit.

### 793.07 Diagnostic and Clinical Microbiology P G 6-18

Experience in isolation and identification of micro-organisms from clinical specimens.

1, 2, 3, or 4 months (full time—prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: 626 and permission of instructor. Repeatable to a maximum of 24 cr hrs.

## 794 Group Studies P G Arr

One month, offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Written permission of instructor. When registration is for 3 professional cr hrs, an additional 3 cr hr professional course must be taken. This course is graded S/U.

## 801\* Selected Topics in Advanced Immunology G 3

Specific topics will vary from year to year in the general areas of immunochemistry, immune regulation, and cellular immunity. Sheridan.

Wi Qtr. 3 cl. Prereq: 701 or equiv course in basic immunology or permission of instructor. Repeatable to a maximum of 9 cr hrs. Intended for advanced grad students, medical residents, and postdoctoral fellows.

## 804†\* Instrumentation and Techniques in Medical Microbiology G 5

Theory and application of techniques used to purify and characterize nucleic acids, lipids, and proteins; theory and operation of equipment and instruments used. Parris, Pollack, and Williams.

Wi Qtr. 2 2-hr cl, 12 lab hrs. Prereq: 625, 626; and Phys Chem 611, 612, or equiv; and written permission of instructor.

## 814 Current Topics in Medical Microbiology G 1

Au, Wi, Sp Qtrs. Prereq: Med micr grad standing or permission of instructor. Repeatable with permission of instructor to a maximum of 15 cr hrs. This course is no longer graded S/U.

## 824†\* Medical Parasitology G 3

Discussion of structure, growth, development, epidemiology, and pathogenesis of animal parasites infectious for man, together with practical experience in identification. Kapral.

Wi Qtr. 2 1-hr lec, 1 3-hr lab. Prereq: 626 and permission of instructor.

## 833†\* Current Immunological Techniques G 4

Current techniques in cellular and humoral immunology as applicable in research conducted by students. Lafuse.

Wi Qtr. 2 4-hr labs. Prereq: 701 or equiv course in basic immunology. Not open to students with credit for Micrbiol 833. Cross-listed in Microbiology.

## 841†\* Viral Oncology G 3

The immunological, virological, epidemiological, and molecular aspects of DNA and RNA tumor viruses. Shaw.

Sp Qtr. 3 cl. Prereq: Phys Chem 612 or 709; Med Micr 754 or Micrbiol 649. Not open to students with credit for Micrbiol 841, Phys Chem 841, or Vet Path 841. Cross-listed in Microbiology, Physiological Chemistry, and Veterinary Pathobiology.

## 844\* Mollicutes, Rickettsiae, and Chlamydiae G 3

Mycoplasma and L-forms, members of the Bedsoniae group, Rickettsiae and Trachoma agents. Somerson and Pollack.

Au Qtr. 2 1-hr lect, 1-hr conf to be arr. Prereq: 625 or Micrbiol 607.

## 850 Advanced Seminar in Medical Microbiology G 3

An advanced course with topics in different areas of medical microbiology in a seminar setting; students will present papers related to these chosen topics.

Au Qtr. 3 cl.

## 854\* Molecular Basis of Antibiotic and Chemotherapeutic Action G 3

Action of antibiotic and chemotherapeutic agents on specific sites in the metabolism and/or structures of cells stressing the comparative biochemistry of bacterial and animal cells. Ottolenghi.

Wi Qtr. 3 1-hr lec. Prereq: 625; or Biochem 513 or equiv; Micrbiol 761; or permission of instructor.

## 864 Dynamic Aspects of Bacterial Infections G 5

An analysis of the dynamic interrelationships between the host's and parasite's inherent physiological capabilities and how these expressions (other than specific immunity) are mutually modified. Kapral and Ottolenghi.

Sp Qtr. 5 cl. Prereq: 625 or Micrbiol 625 or equiv or permission of instructor.

## 874\* Advanced Topics in Molecular Biology of Eukaryotes G 3

Current information on structure and function of two aspects of molecular biology of eukaryotes; emphasis on experimental rationale and techniques. Williams and Parris.

Wi Qtr. 1 2½-hr cl. Prereq: Biochem/Genetics 611, or Biochem 709, or permission of instructor. Repeatable to a maximum of 6 cr hrs.

## 999 Research in Medical Microbiology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in med micr. This course is graded S/U.

## Medical Record Administration

School of Allied Medical Professions

243 School of Allied Medical Professions Building, 1583 Perry Street, 292-0567

### 500 Medical Terminology U 3

Terminology pertaining to the treatment of disease, including standard abbreviations, anatomic, diagnostic, symptomatic, eponymic, laboratory, pathologic, radiology, anesthetic, operative, and drug terms.

Au Qtr. 3 cl. Not open to student with credit for Alli Med 500.01 and 500.02. Cross-listed in Allied Medicine.

### 520 Health Information Documentation, Analysis, Storage, and Retrieval Systems U 5

Introduction to quantitative and qualitative evaluation of health information records management including methods of information storage and retrieval systems.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: Written permission of instructor.

### 525 Organizational Analysis of Health Care Facilities U 3

Analysis of administration, governing board, medical staff committees, licensing, accrediting and certifying agencies in relation to health care facilities, and health information requirements.

Au Qtr. 3 cl. Prereq: Written permission of instructor.

### 535 Classification, Indexing, and Registry Systems in Health Care U 5

Design, implementation, and evaluation of disease and operation classification systems; use of manual and computerized medical information indexing and registry systems.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 501 or 520 or written permission of instructor.

### 540 Health Data Collection and Analysis U 3

Collection, computation, presentation, and analysis of health and administrative statistics which include definitions, sources, and types of reporting systems.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 520 or written permission of instructor.

### 545 Legal Aspects of Hospital and Medical Record Services U 3

Legal system, hospital and staff liability, privacy, confidentiality, and legal requirements affecting the control and release of health information and medical records.

Sp Qtr. 3 cl. Prereq: 501 or 520 or written permission of instructor.

### 589 Clinical Technical Affiliation U 3

Practical applications in medical record services.

Su, Au, Wi, Sp Qtrs. 1 cl, 1 8-hr clinical study. Prereq: 520 or written permission of instructor. This course is graded S/U.

### 620 Management of Case Mix and Utilization Review Systems U G 3

Introduction to hospital case-mix measurement systems with emphasis on DRG-based reimbursement and government review processes.

Au, Wi Qtrs. 3 cl. Prereq: Enrollment in med rec or written permission of instructor.

### 635 Quality Assurance of Health Care Services U 4

Analysis of federal, state, and accrediting agency standards and regulations for quality assurance and utilization, review of health care services with emphasis on review procedures and audit methodologies.

Su, Au Qtrs. 2 1½-hr cl, 1 2-hr lab. Prereq: 520 or written permission of instructor.

### 640 Planning and Staffing of Medical Record Services U 3

Application of human resource management to medical record services.

Su, Au Qtrs. 2 cl, 1 3-hr lab. Prereq: 520 or written permission of instructor.

### 645 Management Control Systems for Medical Record Services U 3

Application of work measurement, work standards, physical, and financial resource management for a medical record service.

Su, Wi Qtrs. 2 cl, 1 3-hr lab. Prereq: 520 or written permission of instructor.

### 648 Microcomputer Applications in Health Science U G 3

Overview of microcomputer applications in health sciences with practical applications related to discipline specific needs.

Su, Au Qtrs. 2 2-hr cl. Prereq: Cptr/Inf 201 or 211, or permission of instructor. Cross-listed in Allied Medicine.

### 650 Applications of Computers in Health Care U G 3

Basic concepts related to the application, analysis, planning, and use of computers in health care, education, and research.

Su, Au, Sp Qtrs. 2 2-hr cl. Cross-listed in Allied Medicine.

### 654 Computer Applications in Managing Health Information Systems U G 3

Information resource management in health care, health information databases, software applications, and systems selection.

Su, Au, Wi Qtrs. 3 cl. Prereq: 648, Alli Med 650, or written permission of instructor. Cross-listed in Allied Medicine.

### 667 Information Services in Special Care Facilities U 3

Discussion of record systems in special care facilities with emphasis on health information services.

Su, Wi Qtrs. 2 cl, 1 6-hr clinical study. Prereq: 520 or written permission of instructor.

### 689 Clinical Management Affiliation U 1-10

Application of managerial techniques in the organization and administration of health information and record services.

Su, Au, Wi, Sp Qtrs. 32-40 hrs clinical study wks. Prereq: 589. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

### 693 Individual Studies U 1-5

Problems in various phases of medical record administration not included in the regular course offerings.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

### 695 Seminar U 1-4

A discussion of current trends, topics, procedures, and constraints affecting the medical record profession.

Su, Au, Wi, Sp Qtrs. 1-4 cl. Prereq: Admission to med rec. Repeatable to a maximum of 12 or hrs.

## Medical Technology

School of Allied Medical Professions

535 School of Allied Medical Professions Building, 1583 Perry Street, 292-7303

For related courses see Pathology.

### 201 Introduction to the Clinical Laboratory Sciences U 2

An introduction to the profession and practice of medical technology in clinical laboratories.

Wi, Sp Qtrs. 1 cl, 1 3-hr lab. Prereq: Premed tech majors or permission of instructor.



**480 Fundamental Techniques in Medical Technology U 2**

Theory and application of fundamental clinical laboratory techniques, calculations, and instrumentation in the practice of medical technology.

Au Qtr. 1 cl, 1 3-hr lab. Prereq: Admission to med tech or permission of instructor.

**485 Introduction to Medical Technology Practice U 1**

An introduction to interpersonal relations and problem solving in the professional practice of medical technology.

Au, Sp Qtrs. 1 cl. Prereq: Admission to med tech and concur: 480. This course is graded S/U.

**505 Clinical Laboratory Microscopy and Body Fluid Analysis U 3**

Theory and application of chemical analysis and microscopic evaluation of urine and other body fluids.

Wi Qtr. 1 cl, 2 3-hr labs. Prereq: Admission to med tech or permission of instructor.

**506 Clinical Laboratory Hemostasis U 2**

Theory and application of clinical laboratory techniques used to evaluate the hemostatic mechanism.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq: Admission to med tech or permission of instructor.

**508 Clinical Laboratory, Parasitology, and Mycology U 4**

Theory and application of clinical laboratory techniques used to identify parasites and fungi infectious to man.

Au, Sp Qtrs. 1 cl, 3 3-hr labs. Prereq: Admission to med tech or permission of instructor.

**510 Clinical Laboratory Hematology**

Theory and application of clinical laboratory techniques used to evaluate the formed elements in blood.

Au Qtr. 27 lab hrs. Prereq: 480 and permission of instructor. Not open to students with credit for 511. This course is graded S/U.

**510.01 Lecture U 3**

Au Qtr. 3 cl. Concur: 510.02.

**510.02 Laboratory U 3**

Au Qtr. 3 3-hr labs. Concur: 510.01. This course is graded S/U.

**520 Clinical Laboratory Microbiology**

Theory and application of clinical laboratory techniques used to identify bacteria, fungi, and viruses pathogenic to man.

Wi Qtr. Prereq: 508 and Botany 662.01 and permission of instructor. Not open to students with credit for 512.

**520.01 Lecture U 5**

5 cl. Concur: 520.02.

**520.02 Laboratory U 5**

5 3-hr labs. Concur: 520.01. This course is graded S/U.

**530 Clinical Laboratory Immunology**

Theory and application of clinical laboratory techniques employing antigen-antibody reactions in the study of disease.

Sp Qtr. Prereq: 480 and permission of instructor. Not open to students with credit for 513.

**530.01 Lecture U 2**

2 cl. Concur: 530.02.

**530.02 Laboratory U 2**

2 3-hr labs. Concur: 530.01. This course is graded S/U.

**535 Clinical Laboratory Immunohematology**

Theory and application of clinical laboratory immunologic techniques for blood grouping, antibody identification, and preparation of blood components for transfusion therapy.

Prereq: 480 and permission of instructor.

**535.01 Lecture U 3**

Au Qtr. 3 cl. Prereq: Admission to med tech or permission of instructor.

**535.02 Laboratory U 3**

Au Qtr. 3 3-hr labs. Prereq: Admission to med tech or permission of instructor. This course is graded S/U.

**540 Clinical Laboratory Chemistry U 2**

Su Qtr. Prereq: 480, and permission of instructor. Not open to students with credit for 514.

**540.01 Lecture**

Theory of clinical laboratory techniques to identify and quantitate chemical analytes in body fluids; instrumentation, method evaluation, and quality control are stressed.

Wi Qtr. 2 cl. Prereq: Admission to med tech or permission of instructor.

**540.02 Laboratory**

Application of clinical laboratory techniques to identify and quantitate chemical analytes in body fluids; instrumentation, method evaluation, and quality control are stressed.

Wi Qtr. 2 3-hr labs. Concur: 540.01. This course is graded S/U.

**545 Advanced Clinical Laboratory in Chemistry U 3**

Sp Qtr. Prereq: Admission to med tech or permission of instructor.

**545.01 Advanced Clinical Laboratory in Chemistry: Principles**

Principles of clinical chemistry methods; emphasis on reference range and principles associated with quantitation for each analyte.

3 cl.

**545.02 Advanced Clinical Laboratory in Chemistry: Laboratory**

Laboratory application of clinical chemistry principles. 3 3-hr labs. This course is graded S/U.

**560 Clinical Laboratory Data Correlations U 2**

A case study approach for integrating medical laboratory results contributing to a laboratory diagnosis and understanding of pathophysiology.

Au, Sp Qtrs. 2 cl.

**570 Principles of Clinical Laboratory Instruction U 3**

Principles and practice in the instruction of medical technology, program accreditation, and provision of professional continuing education in the clinical laboratory sciences.

Su, Wi Qtrs. 3 cl.

**580 Supervision of Clinical Laboratories U 2**

Application of human, physical, and financial resource management principles to the supervision of clinical laboratories.

Au, Sp Qtrs. 2 cl.

**589 Clinical Practice****589.01 Clinical Practice in Hematology U 2-4**

Application of medical laboratory techniques under supervision in hematology, hemostasis, and body fluid analysis.

Su, Au, Wi, Sp Qtrs. 50-100 hrs clinical. Prereq: 480, 485, 505, 506, 508, 510.01, 510.02 and Pathol 501, and permission of instructor. Repeatable to a maximum of 4 cr hrs. Not open to students with credit for 515. This course is graded S/U.

**589.02 Clinical Practice in Microbiology U 2-4**

Application of medical laboratory techniques under supervision in bacteriology, parasitology, mycology, and virology.

Su, Au, Wi, Sp Qtrs. 50-100-hrs clinical labs. Prereq: 480, 485, 508, 520.01, 520.02 and Pathol 502. Repeatable to a maximum of 4 cr hrs. Not open to students with credit for 515. This course is graded S/U.

**589.03 Clinical Practice in Transfusion Service U 2-4**

Application of medical laboratory techniques under supervision in immunohematology and transfusion services.

Su, Au, Wi, Sp Qtrs. 50-100 hrs clinical. Prereq: 480, 485, 508, 530.01, 530.02, 535.01, 535.02 and Pathol 503. Repeatable to a maximum of 4 cr hrs. This course is graded S/U.

**589.04 Clinical Practice in Clinical Chemistry U 2-4**

Application of medical laboratory techniques under supervision in clinical chemistry laboratory.

Su, Au, Wi, Sp Qtrs. 50-100 hrs clinical. Prereq: 480, 485, 508, 540.01, 540.02 and Pathol 504. Repeatable to a maximum of 4 cr hrs. This course is graded S/U.

**589.05 Clinical Practice in Immunology U 2**

Application of medical laboratory techniques under supervision in immunology laboratory.

Su, Au, Wi, Sp Qtrs. 50 hrs clinical. Prereq: 480, 485, 508, 530.01, 530.02, and Pathol 503. This course is graded S/U.

**589.06 Clinical Practice in Laboratory Science U 1**

Application of medical laboratory techniques under supervision in clinic laboratories and other non-hospital laboratory settings.

Su, Au, Wi, Sp Qtrs. 25 hrs clinical. Prereq: 480, 485, 508, and permission of instructor. This course is graded S/U.

**595 Seminar U 1-3**

Discussion of issues and trends in laboratory medicine; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to med tech and permission of instructor. This course is graded S/U.

**610 Administration in Laboratory Medicine G 3**

Principles of administration applied to the management of health care services in laboratory medicine. Snyder.

Wi Qtr. 3 cl. Prereq: Grad standing in pathol or alli med, pathol resident or permission of instructor. Cross-listed in Pathology.

## Medicine, College of

209 Meiling Hall, 370 West 9th Avenue, 292-5674

**661 MED I: Medical Humanities and Behavioral Sciences P 4 or 8**

A multidisciplinary study of human behavior, the art of medicine, ethics, and the relationships of the physician with patient, self, family, and society.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in College of Medicine. Repeatable to a maximum of 24 cr hrs. Registered medical students only. This course is graded S/U.

**662 MED I: Basic Medical Sciences P 4, 5, 6, 8, 16, 20, or 24**

Study of the whole man in an unified, patient-oriented interdisciplinary manner; study of various aspects of normal life processes by means of history taking, physical examinations, and diagnostic techniques in preparation for subsequent study of the ill patient, disease entities, and methods of treatment.

Su, Au, Wi, Sp Qtrs. Concur: 661. Repeatable to a maximum of 180 cr hrs. This course is graded S/U.

**663 MED II: Pathophysiology and Manifestation of Disease P 4, 5, 6, 8, 16, or 24**

A multidisciplinary presentation of disease mechanisms, correlation of abnormalities of structure and function with cardinal symptoms and manifestations of disease; discussion of differential diagnosis of the most common patient complaints to reinforce the concepts and mechanisms of disease processes.

Su, Au, Wi, Sp Qtrs. Prereq: 662. Repeatable to a maximum of 216 cr hrs. This course is graded S/U.

**664 MED III and IV: Clinical Medicine P 4, 5, 6, 8, 16, or 24**

Didactic and clinical instruction in family medicine, internal medicine, obstetrics and gynecology, pediatrics, psychiatry, and surgery; experience in outpatient, community, and inpatient services.

Su, Au, Wi, Sp Qtrs. Prereq: 663. Repeatable to a maximum of 248 cr hrs. Must repeat 152 cr hrs. This course is graded S/U.

**689 Practicum in Medicine P 0**

Applied experiences in medicine for 3rd and 4th year medical students rotating through clinical experiences in pediatrics, surgery, internal medicine, psychiatry, obstetrics and gynecology, and family medicine.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Med III or Med IV student in College of Medicine. This course is graded S/U.

**693 Individual Studies P 4, 8, 16 or 24**

Special studies in introduction to medicine; nature of life processes; the pathophysiology and manifestation of disease; and supervised individualized program.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Limited to students working toward the MD degree. Repeatable to a maximum of 96 cr hrs. This course is graded S/U.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 cr hrs. These courses are graded S/U. Limited to students in allied medical professions, education, law, medicine, nursing, social work, and theology.

**700.01 Interprofessional Care U P G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

Wi Qtr.

**700.02 Changing Societal Values U P G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Sp Qtr.

**700.03 Ethical Issues U P G 3**

Ethical issues of concern to the professions and arising out of advanced technology: euthanasia, mind control, malpractice, and social responsibility of the professions.

Au Qtr.

**700.04 Interprofessional Practicum in Clinical Settings P 3, 5**

Interprofessional teamwork in clinical settings.

Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**797 Interdepartmental Seminar P G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced. Repeatable by permission.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. This course is graded S/U.

## Medieval and Renaissance Studies

322 Dulles Hall, 230 West 17th Avenue, 292-7495

**210 Court of Charlemagne U 5**

The Carolingian Renaissance: a unified interpretation of a crucial period in the transition of Europe from the classical age to the early Middle Ages.

Au Qtr. 3 cl, 2 hr arr. BER/LAC/LAR course.

**212 Culture of a City-State in the Renaissance U 5**

Florence, 1200-1550; the study of an Italian Renaissance city-state with attention to its political, social, and economic structure; its religious, intellectual, and artistic activity.

Sp Qtr. 3 cl, 2 hr arr. BER/LAC/LAR course.

**213†\* Medieval Moscow U 5**

The diversity of medieval Russian culture as represented by Moscow: religion, society, politics, art, and architecture.

Wi Qtr. 4 cl, 1 hr arr. BER/LAC course.

**214†\* Golden Age of Islamic Civilization U 5**

The Baghdad Caliphate of Harun ar-Rashid from 786 to 861 A.D.

Sp Qtr. 4 cl, 1 hr arr. BER/LAC course.

**215 Gothic Paris: 1100-1300 U 5**

Medieval Paris, its art, music, history, theatre, literature, and important individuals.

Wi Qtr. 3 cl, 2 hrs arr. BER/LAC/LAR course.

**294 Group Studies U 3-5**

Topic varies; special subjects not covered by regular courses.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 20 or hrs or four offerings.

**693 Individual Studies U 1-5**

Students may register for individual directed study under this number for work not normally offered in courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Open only to majors in medieval. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Interdisciplinary group studies of selected topics in medieval and Renaissance culture and civilization.

Su, Au, Wi, Sp Qtrs. Prereq: 10 or hrs in medieval at the 200 level. Repeatable to a maximum of 15 or hrs.

**H783 Honors Research U 3-5**

A program of study will be arranged for each student, with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in the student's major area of study and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the BA degree with distinction in medieval. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**792 Interdepartmental Studies in the Humanities U G 5**

Two or more departments may collaborate in presenting colloquia on studies of mutual interest; topics to be announced.

Au, Wi, Sp Qtrs. 1 or 2 2-hr cl. Repeatable to a maximum of 15 or hrs.

**888 Medieval and Renaissance Culture G 5**

Selected topics in medieval culture and civilization, offered cooperatively by two or more departments in the Colleges of the Arts and Sciences.

Au, Wi, Sp Qtrs. 4 cl. Prereq: One or more 600-level courses or equiv in subject offered, appropriate to student's field of specialization, or permission of instructor. Repeatable to a maximum of 15 or hrs.

**899 Interdepartmental Seminar in the Humanities G 5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Au, Wi, Sp Qtrs. 1 or 2 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 or hrs.

## Microbiology

376 Biological Sciences Building, 484 West 12th Avenue, 292-2301

**294 Group Studies U 1-5**

Study of selected topics in microbial and cellular biology.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 or hrs.

**301† The Biology of Pollution U 2**

A general consideration of the interactions of environmental pollutants and biological systems. Tuovinen.

Au Qtr. 2 cl. Credit does not count toward a major in micrbiol. BER/LAC/LAR course. NS Admis Cond course.

**509 Microbiology in Relation to Man U G 5**

Designed to give the student an understanding of microorganisms which have a bearing on the physical and economic well-being of man. Ackermann-Brown and Kolodziej.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Biology 110, or 113 and 114, or H115 and H116. BER/LAC/LAR course. NS Admis Cond course.

**520 General Microbiology I U G 5**

Fundamental principles of microbiology and the characteristics of microorganisms with an emphasis on their structure, metabolism, growth, and classification. Krzycki and Pfister.

Au, Sp Qtrs. 3 cl, 2 3-hr labs. H520 (honors) may be available to students enrolled in an honors program or by permission of the honors committee chairperson. Prereq: Biology 114 or H116 and Chem 251. Prereq for H520: Biology 114 or H116, Chem 251 and permission of instructor. May not be taken concur with 509.

**521 General Microbiology II U G 5**

Continuation of 520; basic principles of microbiology with an emphasis on bacterial genetics, ecology, and applied and pathogenic microbiology. Darzins.

Au, Wi Qtrs. 3 cl, 2 3-hr labs. Prereq: 520 and Chem 252. May not be taken concur with 520.

**522 Principles of Infection and Resistance U G 5**

A study of host-parasite relationships, with emphasis on pathogenicity and immunity. Baldwin and Mortensen.

Wi, Sp Qtrs. 3 cl, 2 2-hr labs, 1 rec. Prereq: 521 for micrbiol majors; 509 for nonmajors. Not open to students with credit for 622.

**562† Aquatic and Sediment Microbiology U G 5**

Activities and significance of microorganisms in aquatic and sediment environments, with emphasis on field-laboratory methodology and techniques of study. Tuovinen.

Su Qtr, Franz Theodore Stone Lab. 3 all-day cl per wk. Prereq: Biology 110 or equiv, Chem 123 or equiv, and an introductory micrbiol course. Not open to students with credit for 662. Not available for audit.

**581 Microbial Genetics U G 5**

Integrated lecture and laboratory study of the structure, maintenance, expression, and exchange of genetic materials in microbial cells. Daniels.

Au, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 521 or Mol Gen 500. Not open to students with credit for 680.

**592 Independent Study of Practical Microbiology U 2**

Students will work with course instructor, teaching assistants and associates to examine preparation and presentation of material, and gain experience working with students and faculty. Baker.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr micrbiol major and permission of coordinating adviser. This course is graded S/U.

### General Prerequisites for Courses Numbered 600 and 700

Unless otherwise indicated the prerequisites for 600- and 700-level courses are courses in organic chemistry and 10 hours of biological sciences.

**603\* Introduction to Biophysics U G 5**

Introductory course in the approach to biological phenomena from conceptual viewpoint of physical sciences; molecular to organismic levels of biological hierarchical structure. Cassim.

Sp Qtr. 5 cl. Prereq: Math 152, Chem 252, 10 or hrs in biological sciences, Physics 113, or equiv with permission of instructor.

**624 Microbial Parasitism U G 5**

Overview of parasitic relationships with emphasis on host response as influenced by route of contact, nature of etiologic agent(s), host species, and environmental influences. Baker and Galloway.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 522.

**629 Pathogenic Protozoology U G 4**

Pathogenic protozoa of animals; emphasis on host-parasite relationships, pathogenesis of diseases, structural characteristics of parasites; lab, fresh, and preserved material. Black.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Biology 113 and 114, or equivs.

**632 Cellular Aspects of the Immune Response****632.01 Lecture U G 3**

Cellular and molecular mechanisms of the immune response; characterization of cell products elaborated subsequent to antigenic stimulation; significance of these products in immunologic response. Zwilling.

Au Qtr. 3 cl. Prereq: 522 or equiv with permission of instructor. Not open to students with credit for 632.

**632.02 Laboratory U G 3**

Laboratory techniques in cellular immunology, including an assessment of lymphocyte and macrophage function flow cytometry, production of monoclonal antibody, and biological response modifiers. Zwilling.

Au Qtr. 2 3-hr labs, 1-hr recit. Prereq or concur: 632.01 or equiv, and permission of instructor.

**634 Water Microbiology U G 5**

A basic study of the relationships and influence of aquatic environments on microorganisms and the effect of microbial metabolic processes on the quality of water. Tuovinen.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 521.

**636 Food Microbiology U G 5**

The role of microorganisms in food preservation and processing with related sanitation and public health problems. Krueger.

Au Qtr. 3 cl, 3 2-hr labs. Prereq: 509 or 521.

**641†\* Introduction to Quantum Biology U G 5**

An introduction to applications of elementary quantum mechanics to problems in biology; stress on conceptual rather than mathematic aspects. Cassim.

Sp Qtr. 5 cl. Prereq: Chem 123, Math 152, Physics 113, and 10 or hrs in biological sciences.

**649 Introductory Virology U P G 5**

Basic principles of virology with discussion of structures; virus-host cell interactions, detection, production and control; animal bacterial, insect and plant viruses used as examples. Darzins.

Sp Qtr. 5 cl. Prereq: 509 or 521.

**652 General and Pathogenic Microbiology for Dental Students P G 4**

A survey of microbiology emphasizing infectious processes, basic principles, and immunology. Baker and Rosen.

Sp Qtr. 2 2-hr cl, 1 1-hr lab. Prereq: Dent 2nd yr standing.

**653 Oral Microbiology P G 4**

A study of the oral flora and the oral diseases having a microbial etiology. Rosen.

Sp Qtr. 3 cl, 1 1-hr lab. Prereq: 652 or equiv with written permission of instructor.

**Soil Microbiology**

See Agronomy 660.

**655† Animal Cell Culture Techniques U G 5**

Basic principles of tissue culture and organ culture; application of these procedures to basic and applied research in immunology and virology. Baldwin and Black.

Au Qtr. 2 3-hr labs, 1 2-hr rec. Prereq: 509 or 522 or equiv; 632 and 649 recommended, but not required.

**661 General Microbial Physiology U G 5**

Principles of microbial growth and metabolism with emphasis on nutrition, carbon flow, electron flow, macromolecule synthesis, metabolic control mechanisms, and relationship of structure and function. Kendrick and Strohl.

Au, Wi Qtrs. 4 cl, 1 rec. Prereq: 521 and Biochem 511, or equivs.

**665 Environmental Microbiology U G 3**

The role of microorganisms and underlying biological principles in elemental cycles and degradation of natural and man-made compounds.

Sp Qtr. 3 cl. Prereq: 509 or 520 or equiv, and Chem 251. Not open to students with credit for Agronomy 665. Not available for audit. Cross-listed in Agronomy.

**670 Cytologic Preparations in Electron Microscopy U G 5**

Basic principles of electron microscopy, preparation, examination, and interpretation of biological specimens. Pfister.

Au Qtr. 2 1½-hr cl, 2 3-hr labs. Prereq: 10 or hrs in biological sciences and Chem 246 or equiv and permission of instructor.

**680 Mechanisms of Gene Transfer in Microorganisms U G 3**

Molecular basis of transformation, conjugation and transduction in bacteria; biology and environmental significance of plasmids; techniques and results of *in vitro* gene cloning. Reeve.

Wi Qtr. 3 cl. Prereq: 521 or Mol Gen 500 or equiv with permission of instructor.

**692 Workshop U G 1-6**

Intensive study of a topic in microbiology; the format will depend upon the topic.

Arr. Prereq: Written permission of workshop director. Repeatable to a maximum of 6 or hrs.

**693 Individual Studies U G 1-5**

Outlined by instructor to meet individual student's needs.

Su, Au, Wi, Sp Qtrs. Prereq: Micrbiol 4th yr major or grad standing and permission of instructor. No more than 5 or hrs can be counted toward an undergrad micrbiol major. Not open to Plan B MS students. Repeatable only by undergrads to a maximum of 15 or hrs. Not repeatable by grads. This course is graded S/U.

**694 Group Studies U G 2-5**

Group work on special topics in microbial or cellular biology.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 or hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****723 Immunology and Immunochemistry U G 3**

A thorough treatment of the basic phenomena involving antigens and antibodies, their physiochemical natures, and immunological reactions. Mortensen.

**723.01 Lecture**

Wi Qtr. 3 cl. Prereq: 522 or equiv with written permission of instructor.

**723.02 Laboratory**

Wi Qtr. 2 4-hr labs. Prereq or concur: 723.01.

**730 Immunology of Parasitic Infections U G 2**

A discussion of the role of immunity in the production, course, pathogenicity, diagnosis, and control of parasitic infections of man and/or domestic animals. Barriga and staff.

Wi Qtr. 2 cl. Prereq: Basic courses in parasitology and immunology; permission of instructor. Repeatable to a maximum of 4 cr hrs. Content varies according to major interests of class. Protozoa-arthropods taught in odd yrs; helminths in even yrs. Not open to students with credit for Vet Path 730. Cross-listed in Veterinary Pathobiology.

**736† Advanced Food Microbiology U G 5**

Advanced studies of the microorganisms involved in the preservation and processing of food products using rapid analytical procedures.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 636.

**747† Molecular Genetics of Bacterial Viruses****747.01† Lecture U G 3**

A molecular biology and genetic approach to bacterial virology, emphasizing replication, gene regulation, and genetics of bacteriophage.

Sp Qtr. 3 cl. Prereq: 521 or Mol Gen 500 or equiv with written permission of instructor.

**747.02† Laboratory U G 2**

Genetics experiments of the classical T phages and temperate phages; independent project isolating new mutants and mapping temperate phages.

Sp Qtr. 2 3-hr labs. Prereq or concur: 747.01.

**750\* Fermentation Biotechnology U G 5**

Fundamentals of modern fermentation technology and industrial microbiology; with emphasis on product formation, culturing techniques and computer-controlled fermentation. Strohl.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 521; or 509 and Biochem 511; or equivs.

**770 Microbial Cytology U G 5**

A thorough study of morphology, fine structure and composition of microorganisms, and the relation of these to cell function. Pfister.

Wi Qtr. 2 1½-hr cl, 2 3-hr labs. Prereq: 521 and permission of instructor.

**777† Small Animal Preparation and Use in Biological Research U G 3**

Teaching the principles of and providing practical experience in animal handling, in anesthesia and surgery of small rodents under routine laboratory conditions.

Au Qtr. 1 4-hr lec/lab. Prereq: Advanced undergrad or grad standing in biological sciences and permission of instructor. This course is graded S/U.

**H783 Honors Research U 3-5**

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in micrbiol and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BS or BA *with distinction* in micrbiol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**799 Microbiology Colloquium U G 1**

Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**832 Advanced Cellular Immunology G 3**

Studies of immunity at the cellular level with emphasis on the induction and effector roles of macrophages and lymphocytes. Zwilling.

Sp Qtr. 3 cl. Prereq: 632 or equiv with permission of instructor.

**833\* Current Immunological Techniques G 4**

Current techniques in cellular and humoral immunology as applicable in research conducted by students.

Wi Qtr. 2 4-hr lab. Prereq: Med Micr 701 or equiv course in basic immunology. Not open to students with credit for Med Micr 833. Cross-listed in Medical Microbiology and Immunology.

**880 Seminar in Microbiology G 1-3**

Su, Au, Wi, Sp Qtrs. Repeatable. This course is graded S/U.

**890 Interdepartmental Seminar in Molecular, Cellular, and Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology. This course is graded S/U.

**893 Individual Studies G 3-5**

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in Plan B master's program and written permission of instructor. Not open to Plan A MS candidates or PhD candidates. Repeatable to a maximum of 10 cr hrs. Outlined by instructor to meet individual student's needs for Plan B library research. This course is graded S/U.

**894 Group Studies G 2-5**

Group work on special topics in microbial or cellular biology.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**999 Research in Microbiology G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Military Science

### Army ROTC

253 Converse Hall, 2121 Tuttle Park Place, 292-6075

The Army ROTC Program provides a flexible program compatible with the constantly evolving environment of the academic community. Mutual institutional and military objectives may be effectively accomplished by one of several programs of study.

The Basic Course Program (100- and 200-level courses) is designed to provide the student an introduction to the Army and a solid foundation in basic military knowledge. The Advanced Course Program (300- and 400-level courses) is designed to prepare the student for summer camp and a commission as a second lieutenant in the United States Army.

Additional information relative to course prerequisites and criteria not found in the course descriptions below may be obtained from the Army ROTC Department office.

**101 Introduction to U.S. Army and Officer Leadership U 2**

An introduction to contemporary officer service with emphasis on role and activities of the junior leader; guest speakers and field trips with a special block on financial aid and ROTC related scholarships; optional rappelling.

Au Qtr. 2 1-hr cl, leadership lab, 1 optional 2-day field training exercise. Not open to students with credit for 111.01, 111.02, or 111.03 prior to Summer Quarter 1985, 111 prior to Summer Quarter 1986.

**102 Military Survival Skills for the Small Unit Leader U 2**

An introduction to combat zone survival techniques; use of military survival kits as well as survival under varying climatic and battlefield conditions; includes a one day field trip.

Wi Qtr. 2 cl, 1-hr lab.

**103 Land Navigation and Map Reading U 2**

An introduction to basic military map reading and land navigation skills; conventional map reading skills as well as survival navigation skills for the hiker will be examined; optional one day canoe trip.

Sp Qtr. 2 1-hr cl, leadership lab.

**112 Analysis of Conflict, Basic U 2**

American military experience prior to World War II in terms of the principles of war; emphasizes Army structure and evolution of tactical doctrine.

Su, Au, Wi, Sp Qtrs. 2 1-hr cl, 1 2-day field training exercise. Prereq: Permission of instructor. Open only to AROTC students who must meet military history professional education requirement.

**189 Army Specialty Training**

Intensive specialty field training from two to three weeks in duration at an Army Installation Specialty School.

Prereq: Contract cadet standing, successful completion of the physical fitness test, medical examination, and selection by the professor of military science. Repeatable to a maximum of 6 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

**189.01 Airborne Operations U 3**

Three weeks of intensive field training including the study of airborne operating, physical conditioning, and military parachute techniques, and culminating with the awarding of the Airborne Qualification Badge.

Su Qtr. 3 wks. Taught at Ft Benning, GA.

**189.02 Airborne Operations U 2**

Two weeks of intensive field training including the study of heliborne operations, physical conditioning, and rappelling; culminating with the awarding of the Air Assault Badge.

Su Qtr. 2 wks. Taught at Ft Campbell, KY.

**189.03 Winter Warfare Operations U 3**

Three weeks of intensive field training including the study of operations under winter conditions, physical conditioning, mountaineering, and leadership in a hostile environment.

Su Qtr. 3 wks. Taught at Ft Richardson, Alaska.

**211 Analysis of Conflict U 2**

American military experience from the American Revolution to the present with emphasis on the Army Order of Battle and Tactical Doctrine.

Au Qtr. 2 1-hr cl, lab arr, 1 optional 2 day field training. Not open to students with credit for 212 prior to Su Qtr 1987.

**212 Small Unit Actions U 2**

Study of selected small unit actions to define leadership in high stress environment and effects of battlefield dynamics. Small unit tactics reinforced with battle simulation games.

Wi Qtr. 2 1-hr cl, leadership lab, 1 optional range exercise. Not open to students with credit for 111 or 212 prior to Summer Quarter 1982 or 201 prior to Summer Quarter 1987.

**213 Small Unit Leader U 2**

Instruction on advanced land navigation techniques, and tactics at the individual, squad, and platoon level; designed to prepare the student for the AROTC Advanced Program.

Sp Qtr. 2 1-hr cl, leadership lab, 1-2 day field training.

**289 Army ROTC Basic Camp U 6**

Six weeks of highly intensive training encompassing basic infantry soldiering and leadership skills designed to prepare the student for the Army ROTC Advanced Program.

Su Qtr. 6 wks. Prereq: Successful completion of medical examination. Taught at Ft Knox, KY. This course is graded S/U.

**301 Contemporary Military Subjects U 4**

An overview of national defense policy, military history, organization, roles, missions, and branches of the U.S. Army, basic weaponry, and land navigation; designed as an orientation to the AROTC Advanced Program.

Au Qtr. 3 cl, 2 1-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 2-day field training exercise. Prereq: Basic AROTC Program or equiv.

**302 Military Leadership and Skills U 4**

A study of leadership to include trait theory, motivation theory, and contemporary leadership models; instruction on oral and written communication techniques, and basic military skill qualification subjects.

Wi Qtr. 2 1-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 2-day field training exercise. Prereq: 301 or permission of professor of military science.

**303 Small Unit Tactics U 4**

Study of the organization, mission, characteristics, capabilities and tactics of the infantry squad, platoon, company, and battalion; troop leading procedures, operations orders, offensive, defense, retrograde operations, and patrolling.

Sp Qtr. 1 2-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 4-day field training exercise. Prereq: 302 or permission of professor of military science.

**389 Army ROTC Advanced Camp U 6**

Six weeks of intensive education in basic military and leadership subjects; life in a military environment in preparation for a commission.

Su Qtr. 6 wks (June and July). Prereq: 301, 302, 303, or permission of professor of military science. Taught at Ft Lewis, WA.

**401 Military Operations Management U 4**

The study of Army organizations and operations to include command/staff relationships, counseling, principles of war, laws of war, training management, and a study of managerial methods.

Au Qtr. 2 1-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 2-day field training exercise. Prereq: 301 or permission of professor of military science.

**402 Administration and Logistics U 4**

Study of logistics to include management of combat and garrison supply; equipment maintenance, property accountability, and transportation and troop movement; Army administration to include military publications, personnel actions, and the supervision of administrative requirements.

Wi Qtr. 2 1-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 2-day field training exercise. Prereq: 401 or permission of professor of military science.

**403 Military Justice and Ethics/Professionalism U 4**

Study of military justice, and a military service orientation to include military professionalism and ethics.

Sp Qtr. 2 1-hr cl, 1 2-hr leadership lab, 3 1-hr physical training lab, 1 4-day field training exercise. Prereq: 402 or written permission of professor of military science.

## Mining Engineering

148 Fontana Laboratories, 116 West 19th Avenue, 292-3837

**200 Introduction to the Mineral Industry U 3**

A basic introduction to mineral resources and the mineral resource extractive industries; mineral resource occurrence in nature, extraction technology, industry organization, and economics.

Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 400.

**400 Introduction to Mining Methods U 4**

Introduction to the field of mining engineering; engineering aspects of exploration, evaluation, development, extraction, beneficiation, and reclamation phases with special emphasis on modern mining methods.

Wi Qtr. 4 cl. Prereq: 2nd yr standing in ENG or permission of instructor.

**489 Professional Practice in Mining U 1 or 2**

Work experience in the mineral industry through the co-op program and preparation of a suitable report for each work period.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**551 Mine Bulk Materials Handling Systems U G 4**

Principles and techniques of mine bulk materials handling; includes track haulage, conveying, and hoisting design.

Au Qtr. 3 cl, 1 3-4 hr computational lab. Prereq: 400 and En Graph 200.

**552 Mine Energy Distribution Systems U G 4**

Principles and techniques of mine energy distribution; includes compressed air and AC and DC power transmission design.

Sp Qtr. 3 cl, 1 3-hr computational lab. Prereq: 400, Elec Eng 500, and Mech Eng 501.

**553 Mine Environmental Control Systems U G 4**

Principles and techniques of mine environmental control; includes ventilation, air conditioning, and water supply and disposal design.

Wi Qtr. 3 cl, 1 3-hr computational lab. Prereq: 400, Civil En 413, and Mech Eng 501.

**653 Mining Rock Mechanics U G 4**

Elasticity, inelasticity, and failure of rock; rock properties; design of underground openings in massive and bedded rock.

Wi Qtr. 4 cl. Prereq: 400, Civil En 554, and Geol&Min 530. Not open to students with credit for Civil En 653.

**654 Rock Mechanics Laboratory U G 1**

Laboratory and field testing techniques for rock materials; instrumentation; correlation between laboratory and in situ results.

Wi Qtr. 1 3-hr lab. Prereq or concur: 653.

**660 Explosives Engineering U G 4**

Principal types of commercial high explosives and explosive devices; chemical and physical characteristics of explosives; rock breakage mechanisms; design of blasting systems.

Wi Qtr. 4 cl. Prereq: 3rd yr standing in College of Engineering.

**671 Surface Mine Design U G 4**

Comprehensive engineering design of a modern surface mining operation.

Au Qtr. 3 cl, 1 3-hr computation lab. Prereq: 551, 660, prereq or concur 691.

**672 Underground Coal Mine Design U G 4**

Comprehensive engineering and economic design of continuous, longwall, and shortwall coal mining operations.

Wi Qtr. 3 cl, 1 3-hr computational lab. Prereq: 551, 552, 553, 653, and 691.

**681 Underground Metal Mine Design U G 4**

Application of advanced mining principles and techniques toward the solution of complex designs associated with massive and vein deposits; emphasis on methods and systems.

Sp Qtr. 4 cl. Prereq or concur: 672.

**691 Mine Valuation and Finance U G 4**

Modern principles and techniques of mine valuation; financing mines and mineral properties.

Sp Qtr. 4 cl. Prereq: 400, Econ 200, and Stat 525 or equiv.

**693 Individual Studies in Mining Engineering U G 2-5**

Individual research, analysis, investigations, assigned readings, and reports in specialized areas of mining engineering.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 or hrs. 6 hr maximum toward the MSc. This course is graded S/U.

**694 Group Studies in Mining Engineering U G 3-5**

Special topics in mining engineering; the particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course will be offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**750†\* Advanced Mine Ventilation U G 4**

Principles of ventilation, including thermodynamics of air flow, flow conditions, mine climate, air conditioning, and cost analysis.

Sp Qtr. 4 cl. Prereq: 553, Mech Eng 501, and Math 255; or permission of instructor.

**753†\* Strata Control U G 4**

Theory and practice of strata control in underground mining operations; stresses around underground openings; pillar bursts; creep; and subsidence.

Au Qtr. 4 cl. Prereq: 653.

**760 Advanced Explosives Engineering U G 4**

Chemistry of explosive reactions; thermodynamic and hydrodynamic theory; kinetics; equations of state; modeling and design of explosives and blasts; control of fragmentation.

Au Qtr. 4 cl. Prereq: 660 and 4th yr standing in mng engr.

**770\* Drilling and Mechanical Excavation of Coal and Rock U G 4**

One-dimensional elastic wave mechanics; percussive and rotary drilling theory; drill bit design; kinematics and energetics of mechanical excavation tools.

Au Qtr. 4 cl. Prereq: 653 or permission of instructor.

**771\* Mine Reclamation and Environmental Control U G 4**

Federal, state, and local environmental and reclamation regulations; effects on present and future extraction practices; design of operations to comply with laws.

Sp Qtr. 4 cl. Prereq: 4th year standing in ENG and written permission of instructor.

**791†\* Transportation and Marketing of Coal U G 4**

Markets, grade specifications, reserve requirements, contracts, and schedules; transportation of coal and other bulk minerals to market.

Au Qtr. 4 cl. Prereq: Written permission of instructor.

**795 Seminar in Mining Engineering U G 1**

Lectures and discussions of current topics related to mining engineering presented by faculty, students, and guest speaker; term paper required.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 9 or hrs.

**864\* Advanced Coal Preparation G 4**

Application of physical, electrical, and chemical methods to separate coal from impurities; quality control in rendering coal resources suitable for utilization and related problems.

Sp Qtr. 4 cl. Prereq: Chem Eng 663 and 767 or equivalent with permission of instructor.

**865 Advanced Mineral Preparation G 4**

Selection and utilization of physical, electrical, and chemical separation processes for non-coal minerals; technical and economic optimization; design of pilot plants.

Sp Qtr. 4 cl. Prereq: Chem Eng 663 and permission of instructor.

**873† Surface Mine Equipment Optimization G 4**

Optimization of modern, complex surface mining systems; evaluation and selection of high capacity intermittent and continuous mining equipment; computer simulation.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 671.

**874 Underground Mine Equipment Optimization G 4**

Theoretical and practical methods of interpreting, analyzing, and using data to best select equipment for various mining systems.

Wi Qtr. 4 cl. Prereq: 672, 681, and Cprr/Inf 541, or equivs.

**999 Research in Mining Engineering G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Modern Greek

256 Cunz Hall, 1841 Millikin Road, 292-9255

### 101 Elementary Modern Greek I U 5

Elements of modern Greek: sound and writing systems; phonology; morphology of noun and verb; written and oral practice.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

### 102 Elementary Modern Greek II U 5

Further study of morphology and syntax with reading of longer texts; extensive written and oral practice.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

### 103 Intermediate Modern Greek I U 5

Grammatical review, with attention to variations of morphology and syntax between Demotic and Katharevousa styles; prose reading assignments and written and oral practice.

Sp Qtr. 5 cl. Prereq: 102. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

### 104 Intermediate Modern Greek II U 5

Assigned reading from Demotic and Katharevousa sources, including newspaper and periodical articles.

Au Qtr. 5 cl. Prereq: 103. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

### Masterpieces of Near Eastern Literatures in Translation

See JANELL 272.

### 293 Individual Studies U 1-3

Su, Au, Wi, Sp Qtrs. Prereq: 104 or equiv or permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

### 294 Group Studies U 1-5

Topics in modern Greek studies.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

### 341 Culture of Contemporary Greece U 5

A general survey and analysis of social, political, and cultural trends and problems in modern Greece.

Wi, Sp Qtrs. 5 cl.

### 401 Advanced Modern Greek I U 5

Extensive reading from literary prose, with practice in conversation and composition.

Wi Qtr. 5 cl. Prereq: 104.

### 402 Advanced Modern Greek II U 5

Reading from prose and poetry, with advanced practice in conversation and composition.

Sp Qtr. 5 cl. Prereq: 401.

### 628 Byzantine Greek Prose U G 5

Reading and analysis of prose texts representative of major developments and trends in Byzantine Greek writing from the 4th to the 15th century.

Au Qtr. 5 cl. Prereq: 402 or permission of instructor. Repeatable to a maximum of 10 cr hrs.

### 651 Contemporary Greek Prose U G 5

Reading and analysis of short stories and novels representative of major developments and trends in Greek prose of the 19th and 20th centuries.

Wi Qtr. 5 cl. Prereq: 402.

### 652 Contemporary Greek Poetry U G 5

Reading and analysis of short and longer poems representative of major developments and trends in Greek poetry of the 19th and 20th centuries.

Sp Qtr. 5 cl. Prereq: 402.

### 693 Individual Studies U G 1-6

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

### 694 Group Studies U G 1-6

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

### 721 Studies in Modern Greek Literature U G 5

Advanced study of specific literary periods, figures, and/or topics, involving extensive reading and discussion of appropriate primary and secondary source materials.

Wi, Sp Qtrs. 4-5 cl. Prereq: 5 cr hrs of modern Greek literature at the 600 level or equiv. Repeatable to a maximum of 15 cr hrs.

### H783 Honors Research U 3-5

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 811 Seminar in Modern Greek Studies G 5

Intensive, in-depth exploration of a selected topic or issue in modern Greek literature, criticism, or intellectual culture.

Wi, Sp Qtr. 3-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

## Molecular, Cellular, and Developmental Biology

984 Biological Sciences Building, 484 West 12th Avenue, 292-8084

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

### 890 Interdepartmental Seminar in Molecular, Cellular, and Developmental Biology G 2

Students will present oral reports and lead discussion on research progress in specific areas of molecular, cellular, and developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Molecular Genetics, Microbiology, and Zoology.

### 999 Research in Molecular, Cellular, and Developmental Biology G Arr

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.



# Molecular Genetics

984 Biological Sciences Building, 484 West 12th Avenue,  
292-8084

## 140 Introduction to Genetics U 5

An introductory course emphasizing applied aspects of genetics, primarily for students outside the College of Biological Sciences.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Biology 110 or 113 or H115. Not open to students with credit for 170 or 201. NS Admis Cond course.

## 201 Perspectives in Human Heredity U 5

An introduction to the principles of genetics as they apply to humans; emphasis on topics of concern to individuals and society.

Au Qtr. 5 cl. Prereq: Biology 110 or 113 or H115. Not open to students with credit for 140 or 170. BER course. NS Admis Cond course.

## 294 Group Studies U 2-5

Group work in the field of the chosen program.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

## 360† Introductory Computer Competency for Biologist U 5

Overview of the extensive application of the computer in genetics and other biological sciences and formal training in the language of the microcomputer, Basic. Skavaril.

Sp Qtr. 1st 4 wks of qtr: 5 cl; last 6 wks of qtr: 3 cl; 2nd—10th wk of qtr: 4-6 hrs arr on cptr. Prereq: Biology 110 or 113 or H115, or permission of instructor.

## 433† Comparative Embryology and Development U 5

A basic course considering descriptive and experimental work pertaining to developmental processes in unicellular and multicellular animals with emphasis on the vertebrate embryo. Tassava.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Zoology 201 or equiv, or written permission of instructor. Not open to students with credit for Zoology 433.

## 500 General Genetics U G 5

The principles of genetics, including molecular genetics, transmission genetics of prokaryotes and eukaryotes, developmental and non-chromosomal genetics, and the genetics and evolution of populations.

Su, Au, Sp Qtrs. 5 cl. Prereq: Biology 110 or 113 or H115, plus 5 additional cr hrs in biological sciences, and Chem 232 or 252.

## 501 Genetics and Molecular Biology U G 5

An introduction to the phenomena, concepts, and methods of molecular biology and of genetics at the molecular, cell, organismal, and population levels; for students majoring in biological sciences.

Wi Qtr. 5 cl. Prereq: Biochem 511 and Math 150. Not open to students with credit for 500.

## 502 Cell and Developmental Biology U G 5

A basic study of eukaryotic cell biology and of developmental processes, especially in animal embryos; for students majoring in biological sciences. Byers and Tassava.

Sp Qtr. 5 cl. Prereq: 501. Not open to students with credit for 433 or Micrbiol 640 or Zoology 433.

## 540 General Cell Biology

Survey of cell structure and function with emphasis on integration of cytological, biochemical, genetical, and developmental perspectives.

### 540.01† Lecture U G 4

Wi Qtr. 4 cl. Prereq: Biology 114 and Chem 252 and 246, or equivalents. Not open to students with credit for Micrbiol 640; or to mol gen majors.

### 540.02† Laboratory U G 2

Wi Qtr. 1 4-hr lab. Prereq or concur: 540.01. Not open to students with credit for Micrbiol 640; or to mol gen majors.

## 601† Eukaryotic Molecular Genetics Laboratory U G 5

Current laboratory techniques used in the genetic and molecular analyses of *Saccharomyces cerevisiae* and *Drosophila*.

Sp Qtr. 1 cl, 3 3-hr labs. Prereq: 501 or Biochem 511, or permission of instructor.

## History of Biology

See Botany 601.

## 602 Eukaryotic Cell and Developmental Biology Laboratory U G 5

Laboratory course emphasizing recent advances in techniques and methods central to cell biology and developmental biology of eukaryotes.

Sp Qtr. 2 cl, 2 4-hr labs. Prereq: 502 or equiv with permission of instructor.

## 622 Plant Genetics and Molecular Biology U G 5

An in-depth survey of classical and molecular genetic systems in plants with emphasis on current research topics.

Wi Qtr. 3 cl, 1 2-hr cl. Prereq: 500 or 501, and Biochem 511. Not open to students with credit for 632 or Botany 622.

Cross-listed in Botany.

## 640 The Genetical Basis of Evolution U G 5

The modern theory of evolution and its underlying genetic basis. Fuerst.

Au Qtr. 5 cl. Prereq: 500.

## 650 Analysis and Interpretation of Biological Data I U G 5

Methods of analyzing biological data including: sampling, descriptive statistics, distributions, group comparisons, statistical inference, one-way and nested analysis of variance and linear regression and correlation. Kornacker.

Au, Sp Qtrs. 1 2-hr lab, 4 cl (optional after 1st wk), 3-5 hrs cptr-assisted instruction. Prereq: Math 150 or equiv, and 15 cr hrs of courses at the 300 level or higher in a dept of agriculture or in biological sciences. Not open to students with credit for Biology 650.

## 675 Cell Differentiation in Eukaryotic Microbes U G 3

Molecular biology of cell differentiation in protozoans and selected algae and fungi. Byers.

Au Qtr. 3 cl. Prereq: 502 or equiv background in cell biology, genetics, and biochem. Not open to students with credit for Micrbiol 675.

## 693 Individual Studies U 2-5 G 2-10

Individual work in the field of the chosen problems.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and to a maximum of 35 cr hrs for grad credit. This course is graded S/U.

## 694 Group Studies U 2-5 G 2-10

Group work in the field of the chosen program; see areas in 693.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrad credit and to a maximum of 35 cr hrs for grad credit.

## 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

## 698 Study Tour U G 1-15

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

### 698.01 Domestic

### 698.02 Foreign

**700 Systems of Genetic Analysis U G 3**

Analysis of several major systems used in modern experimental genetics including *Drosophila*, yeast, plants, human, and cell culture systems.

Au Qtr. 3 cl. Prereq: 501 or equiv. Not open to students with credit for this topic under 694.

**701 Molecular Genetics: DNA Transactions U G 3**

Survey of experimental methods of molecular genetics and their application to the elucidation of pathways of DNA replication, mutation, repair, and recombination. Perlman.

Au Qtr. 3 cl. Prereq: 500 and Biochem 511 or Mol Gen 501 or equiv, and 10 additional cr hrs in the biological sciences above the 300 level. Not open to students with credit for 611 or Biochem 611.

**705 Advances in Cell Biology U G 4**

An advanced study of selected key areas of research in eukaryotic cell biology. Anderson, Johnson, Muller, and Oakley.

Wi Qtr. 4 cl. Prereq: 701 or equiv.

**711† Molecular Evolution in Populations U G 5**

Characteristics of protein and nucleic acid change during the evolutionary process; consideration of population genetic theory and molecular data; use of molecular data for phylogenetic inference. Birky and Fuerst.

Wi Qtr. 3 1½-hr cl. Prereq: 611 or 640 or 701; or 500, Biochem 511, and Botany 613 or Zoology 420.

**715 Developmental Genetics U G 4**

A study of the regulation of developmentally significant genes and cellular interactions involved in differentiation and pattern formation in *Drosophila* and metazoans. Falkenthal and Tassava.

Sp Qtr. 4 cl. Prereq: 700 and 701.

**720† Genetics and Biogenesis of Cell Organelles U G 5**

Basic concepts and current literature on the biogenesis of prokaryotic and eukaryotic organelles and the role of nonchromosomal information in organellar, cellular, and organismal heredity. Birky and Perlman.

Wi Qtr. 5 cl. Prereq: Background in genetics, cell biol, and biochem; or permission of instructor.

**Genetics of Animal Populations**

See Animl Sc/Dairy Sc/Pltry Sc 721 and 722.

**770† Molecular Biology of Animal and Plant Viruses U G 3**

An advanced virology course using selected animal and plant viruses as models of eukaryotic gene regulation.

Sp Qtr. 3 cl. Prereq: Biochem 702 or equiv with permission of instructor.

**H783 Honors Research U 3-5**

A program of reading and research for each student with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA or BS *with distinction* in genetics. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**800 Genetic Seminar G 1-3**

Faculty, graduate students, and outside speakers will participate. Fuerst.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**811 Advanced Topics in Molecular Genetics G 3**

An examination of the current research in molecular genetics by selective reading assignments and critical analysis during class discussion periods. Lambowitz, Marzluf, and Perlman.

Wi Qtr. 3 cl. Prereq: 611 or 701, or Biochem 611 or 702. Repeatable to a maximum of 6 cr hrs, including cr hrs earned in Biochem 811. Cross-listed in Biochemistry.

**Current Topics in Animal Genetics**

See Animl Sc/Dairy Sc/Pltry Sc 820.

**Behavior Genetics**

See Zoology 840.

**890 Interdepartmental Seminar in Molecular, Cellular, and Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology. This course is graded S/U.

**999 Research in Genetics G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**Music**

110 Weigel Hall, 1866 College Road, 292-6571

Preceding the class sessions of Music 221 and Music 201, placement tests will be given to determine the ability of students in these subjects. See School of Music for details of time and place.

**101 Applied Music for Nonmajors Group Instruction I U 2**

Au, Wi, Sp Qtrs. 2 cl. Open only to nonmusic majors. VPA Admis Cond courses.

101.01 Piano

101.02 Voice

**102 Applied Music for Nonmajors Group Instruction II U 2**

Au, Wi, Sp Qtrs. 2 cl. Open only to nonmusic majors. VPA Admis Cond courses.

102.01 Piano

102.02 Voice

**110 Introduction to Applied Music U 1**

An elementary applied music course for prospective music majors whose audition scores indicate the need for systematic instruction to prepare for 201.

Au, Wi, Sp Qtrs. 1 ½-hr cl, studio cl and recital attendance arr. Prereq: Audition and approval of the director of the School of Music. Repeatable to a maximum of 2 cr hrs in each decimal subdivision. Does not count toward a music major.

110.11 Piano

110.21 Voice

110.31 Violin

110.32 Viola

110.33 Cello

110.34 Double Bass

110.35 Guitar

110.36 Jazz Bass

110.41 Flute

110.42 Oboe

110.43 Clarinet

110.44 Bass Clarinet

110.45 Saxophone

110.46 Bassoon

110.51 Horn

110.52 Trumpet

110.53 Trombone

110.54 Euphonium

110.55 Tuba

110.71 Percussion

110.91 Harp

**121 Elementary Music Theory and Aural Training U 5**

An introduction to the fundamentals of music, music reading, and aural musicianship.

Au Qtr. 5 cl. Not open for credit to music majors. May not be substituted for 270. VPA Admis Cond course.

**140 Music Cultures of the World U 5**

A survey of musical cultures outside the Western European tradition of the fine arts. Mazo.

Wi Qtr. 3 cl, 2 1-hr lab. VPA Admis Cond course.

**141 Introduction to Music U 5**

A consideration of the materials of music and important styles, forms, and composers from the Baroque to the present.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open for credit to music majors. A musical background is not required. This course is available for EM credit. BER/LAC/LAR course. VPA Admis Cond course.

**150† Introduction to Jazz U 5**

A study of the characteristics, styles, and structure of jazz; jazz performers.

Wi, Sp Qtrs. 5 cl. Not open for credit to music majors. VPA Admis Cond course.

**Campus Music Organizations**

*University campus music organizations are open to all students in the University who may receive full credit according to regulations of the college in which they are enrolled.*

**180 University Chorus U 1**

Oratorio and large choral works are studied and performed. Major.

Su (1st term), Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition only. Repeatable to a maximum of 12 cr hrs. VPA Admis Cond course.

**181 Symphonic Choir U 1**

Symphonic Choir is a concert organization singing a variety of literature. Gallagher.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition only. Repeatable to a maximum of 12 cr hrs. VPA Admis Cond course.

**182 Women's Glee Club U 1**

Study and performance of choral literature for women's voices. Casey.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Auditions are held at stated periods, and vacancies in the club are filled with the best available voices. Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs. Membership in this concert group is open to all women students in the University by audition. VPA Admis Cond course.

**183 Men's Glee Club U 1**

Study and performance of choral literature for men's voices. Gallagher.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Auditions are held at stated periods, and vacancies in the club are filled with the best available voices. Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs. Membership in this concert group is open to all men students in the University by audition only.

**184 University Symphony Orchestra U 1**

The University Orchestra is an 85-piece orchestra of full instrumentation devoted to the preparation of standard and modern literature; the group gives at least three concerts each year. Haddock.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 12 cr hrs. Membership is open to all University students by audition. VPA Admis Cond course.

**186 University Football Marching Band U 2**

The University Marching Band is a selected group of brass and percussion players which performs at football games and rallies during Autumn Quarter. Woods.

Au Qtr. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of director. Repeatable to a maximum of 10 cr hrs. No audit. VPA Admis Cond course.

**188 University Bands U 1**

VPA Admis Cond courses.

**188.01 University Wind Ensemble**

A select group of wind and percussion performers who prepare and perform wind literature from the 18th through the 20th century. Kirchhoff.

Prereq: Admission by audition and permission of conductor. Repeatable to a maximum of 12 cr hrs.

**188.02 University Concert Band**

Preparation and performance of traditional and contemporary literature for symphonic band. Kirchhoff.

Open to all students by audition and permission of conductor. Repeatable to a maximum of 12 cr hrs.

**188.03 University Symphonic Band**

Preparation and performance of traditional and contemporary literature for symphonic band. Blatti.

Open to all students by audition and permission of conductor. Repeatable to a maximum of 12 cr hrs.

**188.04 University Band**

Offers the nonmusic major an opportunity to enjoy creating music with limited performance demands.

Open to all students with prior high school instrumental experience; no formal audition required. Repeatable to a maximum of 12 cr hrs. Instruments are available if needed.

**191 Chorale U 1**

A selected group of mixed voices which performs an extensive repertoire in concerts both on and off campus. Casey.

Au, Wi, Sp Qtrs. 6 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Repeatable to a maximum of 12 cr hrs. VPA Admis Cond course.

**195 University Percussion Ensemble U 1**

A laboratory and performance musical ensemble whose literature consists of original and transcribed works for percussion instruments alone or with percussion as a dominant feature. Moore.

Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. VPA Admis Cond course.

**196 Jazz Ensembles U 1**

VPA Admis Cond courses.

**196.01 University**

A selected group devoted to playing, arranging, and rehearsing with emphasis on contemporary jazz literature. Battenberg.

Au, Wi, Sp Qtrs. 4 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**196.02 Laboratory**

A selected group devoted to the study and performance of music in various styles of jazz. McDaniel.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**196.04 Combos**

Small groups devoted to the study and performance of music in the various jazz combo styles. Marr.

Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**197 Music Education Laboratory Ensemble U 1**

Laboratory ensembles which provide performance experience on secondary instruments. Gillespie.

Sp Qtr. 2 or more hrs rehearsal each wk. Prereq: Permission of instructor. Repeatable to a maximum of 3 cr hrs. VPA Admis Cond course.

**199 Small Ensembles U 1**

Su, Au, Wi, Sp Qtrs. 2 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Each decimal subdivision repeatable to a maximum of 12 cr hrs. VPA Admis Cond courses.

**199.01 Piano****199.02 Voice****199.03 Strings****199.04 Woodwinds**

- 199.05 Brass  
 199.07 Percussion  
 199.10 Miscellaneous  
 199.11 Piano Accompanying Practicum

Practical experience on piano accompanying applied to music performance and literature.

## 200 Applied Music (Secondary) U 1 or 2

Fundamental applied music instruction in areas other than a student's major or principal area.

Au, Wi, Sp Qtrs. 1 ½-hr lesson, studio cl and recital attendance arr. Prereq: Music major; open to other qualified students within the limits of instructional facilities by permission of the director of the School of Music. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

- 200.11 Piano  
 200.12 Jazz Piano  
 200.14 Harpsichord  
 200.21 Voice  
 200.31 Violin  
 200.32 Viola  
 200.33 Cello  
 200.34 Double Bass  
 200.36 Jazz Bass  
 200.37 Jazz Guitar  
 200.41 Flute  
 200.42 Oboe  
 200.43 Clarinet  
 200.44 Bass Clarinet  
 200.45 Saxophone  
 200.46 Bassoon  
 200.51 Horn  
 200.52 Trumpet  
 200.53 Trombone  
 200.54 Euphonium  
 200.55 Tuba  
 200.71 Percussion  
 200.72 Jazz Percussion  
 200.91 Harp

## 201 Applied Music (Principal) U 1 or 2

Instruction in applied music to develop musicianship, performance, and a wide reading knowledge of music literature.

Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl and recital attendance arr. Prereq: Passing of School of Music entrance audition and test. Required of students in all music curricula, except BA, to a minimum of 6 qtr hrs. Open only to music majors. Each decimal subdivision repeatable to a maximum of 10 cr hrs. These courses are available for EM credit.

- 201.11 Piano  
 201.12 Jazz Piano  
 201.13 Organ  
 201.14 Harpsichord  
 201.21 Voice  
 201.31 Violin  
 201.32 Viola  
 201.33 Cello  
 201.34 Double Bass  
 201.36 Jazz Bass  
 201.37 Jazz Guitar  
 201.41 Flute  
 201.42 Oboe  
 201.43 Clarinet  
 201.44 Bass Clarinet  
 201.45 Saxophone  
 201.46 Bassoon  
 201.51 Horn  
 201.52 Trumpet

- 201.53 Trombone  
 201.54 Euphonium  
 201.55 Tuba  
 201.71 Percussion  
 201.72 Jazz Percussion  
 201.91 Harp

## 209 Jazz Improvisation I U 3

Fundamentals of jazz improvisation; seventh chord structures major, minor, pentatonic and blues scales; jazz patterns and phrasing; analysis and improvisation of blues and II-V progressions.

Wi Qtr. 3 cl. Prereq: 221 and 224. This course is available for EM credit.

## 210 Jazz Improvisation II U 3

Improvisation techniques utilizing blues and pentatonic scales, elaboration of seventh chord structures; analysis of transcribed solos; improvisation of vertical, horizontal, and combination tunes; exploration of Bebop and post-bop literature.

Sp Qtr. 3 cl. Prereq: 209. This course is available for EM credit.

## 211 Jazz Improvisation III U 3

Continuation of 210; technique development utilizing fourth patterns; concepts in modal and linear improvisations; increasing emphasis on post-bop literature; extensive practice in playing changes of bebop tunes.

Au Qtr. 3 cl. Prereq: 210.

## 212 Diction for Singers I (Italian) U 2

Fundamentals of phonetics and sound production as applied to singing in Italian.

Wi Qtr. 3 cl. Prereq: Minimum of 2 cr hrs of applied study in voice or written permission of instructor.

## 213 Diction for Singers I (German) U 2

Fundamentals of phonetics and sound production as applied to singing in German.

Au Qtr. 3 cl. Prereq: Minimum of 6 cr hrs of applied study in voice or written permission of instructor, and 212.

## 214 Diction for Singers I (French) U 2

Fundamentals of phonetics and sound production as applied to singing in French.

Au Qtr. 3 cl. Prereq: Minimum of 6 cr hrs of applied voice or written permission of instructor, and 212.

## 221 Music Theory I U 3

Elements of music and musical notation; analytical concepts and terminology; fundamentals of harmony, part-writing, and melody; extensive practice through written drill and creative projects.

Au, Wi Qtrs. 3 cl. Prereq: Passing of placement tests. This course is available for EM credit.

## 222 Music Theory II U 3

Principles of diatonic harmony, nonchordal melodic elements, and homophonic phrase structures; extensive practice in part-writing, analysis, and creative application.

Wi, Sp Qtrs. 3 cl. Prereq: 221. This course is available for EM credit.

## 223 Music Theory III U 3

Continuation of 222, including diatonic modulation and secondary dominant functions (emphasis on creative projects).

Su, Sp Qtrs. 3 cl. Prereq: 222. This course is available for EM credit.

## 224 Aural Training I U 1

Training in aural musicianship and music reading; practical application through solfege, dictation, and keyboard drill.

Au, Wi Qtrs. 3 lab hrs. This course is available for EM credit.

## 225 Aural Training II U 1

Continued aural training; practical application through solfege, dictation, and keyboard drill.

Wi, Sp Qtrs. 3 lab hrs. Prereq: 224. This course is available for EM credit.

**226 Aural Training III U 1**

A continuation of 225, with attention to harmonic, contrapuntal, and rhythmic problems.

Su, Sp Qtrs. 3 lab hrs. Prereq: 225. This course is available for EM credit.

**231 Jazz Theory U 2**

The forms and compositional techniques of jazz, including chord progression formulas, chord alteration, lead-sheet paraphrasing, countermelody and bass-line construction, and creative application.

Au Qtr. 2 cl. Prereq: 222 and 225.

**241 Music History I U 3**

The development of music from the earliest times through the 16th century.

Au Qtr. 5 cl. Prereq: 223. BER/LAC course.

**242 Music History II U 3**

The development of music in the 17th and 18th centuries.

Wi Qtr. 5 cl. Prereq: 241. BER/LAC course.

**243 Music History III U 3**

The development of music in the 19th and 20th centuries.

Sp Qtr. 5 cl. Prereq: 242. BER/LAC course.

**244 Survey of African and African-Derived Music in the Western World U 3**

An introduction to traditional African music and its role in the history and development of Afro-American music with its concomitant sociopolitical milieu. McDaniel.

Au Qtr. 3 cl. Not open to students with credit for Black St 244. Cross-listed in Black Studies. BER/LAC course. VPA Admis Cond course.

**261 Applied Music Methods and Materials I U 2**

These courses are available for EM credit.

**261.01 Piano**

Lowder.

Au, Wi, Sp Qtrs. 4 cl. Not open to keyboard majors.

**261.02 Voice**

Gallagher and Swank.

Au, Wi, Sp Qtrs. 4 cl. Not open to voice majors.

**261.03 Strings**

Gillespie.

Au Qtr. 4 cl.

**261.04 Woodwinds**

Delzell.

Wi Qtr. 4 cl.

**261.05 Brass**

Droste.

Wi Qtr. 4 cl. Not open to brass majors.

**261.07 Percussion**

Moore.

Wi, Sp Qtrs. 4 cl.

**261.11 Basic Conducting Laboratory U 2**

Basic conducting skill development emphasizing pulse, rhythm and physical coordination.

Au, Wi, Sp Qtrs. 4 cl.

**262 Applied Music Methods and Materials II U 2**

Prereq: 261 or equiv. These courses are available for EM credit.

**262.01 Piano**

Au, Wi, Sp Qtrs. 4 cl. Not open to keyboard majors.

**262.02 Voice**

Wi, Sp Qtrs. 4 cl. Not open to voice majors.

**262.03 Strings**

Wi Qtr. 4 cl.

**262.04 Woodwinds**

Sp Qtr. 4 cl.

**262.05 Brass**

Sp Qtr. 4 cl.

**262.11 Conducting (Instrumental)**

Conducting instruction applied to band, orchestra and ensemble literature and performance.

Au, Wi, Sp Qtrs. 4 cl.

**262.12 Conducting (Choral)**

Conducting instruction applied to choral literature and performance problems.

Wi Qtr. 4 cl. Prereq: 261.11.

**263 Applied Music Methods and Materials III U 2**

Prereq: 262 or equiv. These courses are available for EM credit.

**263.01 Piano**

Wi, Sp Qtrs. 4 cl.

**263.02 Voice**

Sp Qtr. 4 cl.

**264 Applied Music Methods and Materials IV U 2**

Prereq: 263 or equiv. These courses are available for EM credit.

**264.01 Piano**

Sp Qtr. 4 cl.

**264.02 Voice**

Au Qtr. 4 cl.

**266 Introduction to Piano Accompanying U 2**

Piano accompanying applied to music performance and literature. Gren.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Audition or permission of instructor.

**268 Instrument Repair U 1**

Development of practical skills in identifying and correcting minor repair problems on band and orchestral instruments and their accessories. Spillman.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 262.04, 262.05, and permission of instructor. Repeatable to a maximum of 2 cr hrs.

**270 Basic Experiences in Music U 4**

Basic and extended experiences in elements of music through singing, listening to music, playing instruments, and reading and creating music.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Soph standing. This course is available for EM credit.

**293 Individual Studies U 1-3****293.01 Composition**

Au, Wi, Sp Qtrs. Prereq: Written permission of division chairperson. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Supervised group studies of special problems.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 6 cr hrs.

**312 Opera Performance U 2**

Instruction and experience in preparation for opera performance, including study of operatic literature and coaching of operatic roles. Stephens.

Su, Au, Wi, Sp Qtrs. 4 lab hrs. Prereq: Jr or sr standing and permission of instructor. Repeatable to a maximum of 10 cr hrs.

**341†\* Music in the United States U 5**

Music by American composers and the place of music in American life from colonial times to the present.

Sp Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit to music majors. Not open to students with credit for 144. Fulfills in part the ASC advanced English composition requirement. BER course.

**342\* Introduction to Opera U 5**

A survey of opera from its beginnings to the present.

Au Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit to music majors. Not open to students with credit for 145. Fulfills in part the ASC advanced English composition requirement. BER course.

**343\* Symphonic Music U 5**

The development of the symphony and other types of orchestral music.

Wi Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit to music majors. Not open to students with credit for 146. Fulfills in part the ASC advanced English composition requirement. BER course.

**346\* Music of Bach and Handel U 5**

The works and styles of the two most eminent composers of the late Baroque period.

Wi Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit to music majors; or to students with credit for 147. Fulfills in part the ASC advanced English composition requirement. BER course.

**347†\* Mozart, Haydn, and Beethoven U 5**

The works and styles of the three most eminent composers of the Classic period.

Au Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit to music majors or to students with credit for 148. Fulfills in part the ASC advanced English composition requirement. BER course.

**349†\* 20th-Century Music U 5**

The main trends in music from Debussy to the avant garde.

Au Qtr. 4 cl, 1 lab hr. Prereq: English 110 or 111 or equiv, and 141 or permission of instructor. Not open for credit for music majors. Not open to students with credit for 149. Fulfills in part the ASC advanced English composition requirement. BER course.

**370 Music for Elementary Teachers U 3**

Music literature and teaching aids for children, including singing, rhythmic, creative, and listening experiences, and their presentation. Flowers and Lehr.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 270, 271, and professional standing.

**372 Music for Teachers of Young Children U 3**

Instructional materials, methods, and musical skills needed for guiding young children's music and movement learning experiences applied to preschools and kindergarten. Flowers.

Au Qtr. 2 1½-hr cl. Not open to music majors. Designed for prospective teachers of young children and personnel of preschools and kindergartens.

**373 Music for Special Education Teachers U 3**

Music literature and teaching strategies for exceptional children, including singing, rhythmic, creative, and listening experiences. Lehr.

Wi, Sp Qtrs. 5 cl. Prereq: Jr or sr standing in Ed-Excep. Not open to students with credit for 370A taken prior to Au Qtr 1983.

**401 Applied Music (Principal) U 1 or 2**

Applied music instruction required in the BME curriculum to develop musicianship, performance, and a wide reading knowledge of music literature.

Au, Wi, Sp Qtrs (except 401.14). 1 1-hr lesson, studio cl and recital attendance arr. Prereq: 201 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of the director of the School of Music. Each decimal subdivision repeatable to a maximum of 8 cr hrs.

- 401.11 Piano
- 401.12 Jazz Piano
- 401.14 Harpsichord
- 401.21 Voice

- 401.31 Violin
- 401.32 Viola
- 401.33 Cello
- 401.34 Double Bass
- 401.36 Jazz Bass
- 401.37 Jazz Guitar
- 401.41 Flute
- 401.42 Oboe
- 401.43 Clarinet
- 401.44 Bass Clarinet
- 401.45 Saxophone
- 401.46 Bassoon
- 401.51 Horn
- 401.52 Trumpet
- 401.53 Trombone
- 401.54 Euphonium
- 401.55 Tuba
- 401.71 Percussion
- 401.72 Jazz Percussion
- 401.91 Harp

**402 Applied Music (Major)**

Instruction required in BM curriculum in performance to develop professional qualities of musicianship, technique, and knowledge of music literature.

Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl and recital attendance arr. Prereq: 201 and written permission of applied area faculty. Each decimal subdivision repeatable to a maximum of 16 cr hrs.

- 402.11 Piano U 2 or 4
- 402.14 Harpsichord U 2 or 4
- 402.21 Voice U 3
- 402.31 Violin U 2 or 4
- 402.32 Viola U 2 or 4
- 402.33 Cello U 2 or 4
- 402.34 Double Bass U 2 or 4
- 402.41 Flute U 2 or 4
- 402.42 Oboe U 2 or 4
- 402.43 Clarinet U 2 or 4
- 402.44 Bass Clarinet U 2 or 4
- 402.45 Saxophone U 2 or 4
- 402.46 Bassoon U 2 or 4
- 402.51 Horn U 2 or 4
- 402.52 Trumpet U 2 or 4
- 402.53 Trombone U 2 or 4
- 402.54 Euphonium U 2 or 4
- 402.55 Tuba U 2 or 4
- 402.71 Percussion U 2 or 4
- 402.91 Harp U 2 or 4

**412 Diction for Singers II (Italian) U 2**

Advanced study of phonetics and sound production as applied to singing in Italian.

Sp Qtr. 3 cl. Prereq: 212.

**413 Diction for Singers II (German) U 2**

Advanced study of phonetics and sound production as applied to singing in German.

Wi Qtr. 3 cl. Prereq: 212 and 213.

**414 Diction for Singers II (French) U 2**

Advanced study of phonetics and sound production as applied to singing in French.

Wi Qtr. 3 cl. Prereq: 212 and 214.

**421 Music Theory IV U 3**

Principles of 18th- and 19th-century chromatic harmony and modulation; extensive practice in part-writing, analysis, and creative application.

Au Qtr. 3 cl. Prereq: 223.

**422 Music Theory V U 3**

Compositional techniques in early 20th-century music; extensive practice through written drill, analysis, and creative projects.

Wi Qtr. 3 cl. Prereq: 421.

**423 Music Theory VI U 3**

Continuation of 422, focusing on more recent developments in 20th-century music (emphasis on creative projects).

Sp Qtr. 3 cl. Prereq: 422.

**424 Aural Training IV U 2**

Intensive training in aural musicianship and music reading; practical application through solfege, dictation, and keyboard drill.

Au Qtr. 4 lab hrs. Prereq: 226. Not open to students with credit for 430.01.

**425 Aural Training V U 2**

A continuation of 424 at a more advanced level.

Wi Qtr. 4 lab hrs. Prereq: 424. Not open to students with credit for 430.02.

**426 Aural Training VI U 2**

A continuation of 425; aural training at an advanced level.

Sp Qtr. 4 lab hrs. Prereq: 425. Not open to students with credit for 430.03.

**427\* Keyboard Harmony I U 2**

Systematic review and utilization of basic harmonic materials at the keyboard.

Au Qtr. 2 cl. Prereq: 201.01 (6 cr hrs), 261.01, 262.01, and 263.01 (6 cr hrs), or equivalents.

**428\* Keyboard Harmony II U 2**

Introduction to score reading at the keyboard.

Wi Qtr. 2 cl. Prereq: 427.

**429\* Keyboard Harmony III U 2**

Continued practical experience in score reading at the keyboard.

Sp Qtr. 2 cl. Prereq: 428.

**433 Scoring for Jazz Ensembles U 3****433.01\* Large Jazz Ensembles**

Scoring projects for the stage band, with concentration on voicing, ranges, doublings, balance, and notational procedures.

Wi Qtr. 3 cl. Prereq: 231.

**433.02†\* Small Jazz Ensembles**

Scoring projects for jazz combos of various sizes and instrumentation.

Wi Qtr. 3 cl. Prereq: 433.01.

**446†\* Survey of Jazz Styles U 3**

Stylistic variants of jazz involving technical and structural aspects so that the student may recognize, play, and score them authentically. McDaniel.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**470 Introduction to Music Education U 4**

Professional orientation for prospective school music teachers; study of musical development, human relations, discipline, evaluation, philosophy of teaching, and the music curriculum; comprehensive field experience. Forsythe.

Au, Wi Qtrs. 2 cl, 2 2-hr labs. Prereq: Soph standing in music educ and Psych 100. Not open to students with credit for 290.

**501 Applied Music (Principal) U 1 or 2**

Applied music instruction required in the BME curriculum to develop musicianship, performance, and a wide reading knowledge of music literature.

Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl arr. Prereq: 401 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of the director of School of Music. Repeatable to a maximum of 8 cr hrs for each decimal subdivision.

501.11 Piano

501.14 Harpsichord

501.21 Voice

501.31 Violin

501.32 Viola

501.33 Cello

501.34 Double Bass

501.35 Guitar

501.41 Flute

501.42 Oboe

501.43 Clarinet

501.44 Bass Clarinet

501.45 Saxophone

501.46 Bassoon

501.51 Horn

501.52 Trumpet

501.53 Trombone

501.54 Euphonium

501.55 Tuba

501.71 Percussion

501.91 Harp

**502 Applied Music (Major)**

Instruction required in BM curricula in performance to develop professional qualities of musicianship, technique, and knowledge of music literature; half recital required in junior year.

Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl and recital attendance arr. Prereq: 402 and written permission of applied area faculty. Repeatable to a maximum of 16 cr hrs for each decimal subdivision.

502.11 Piano U 2 or 4

502.14 Harpsichord U 2 or 4

502.21 Voice U 3

502.31 Violin U 2 or 4

502.32 Viola U 2 or 4

502.33 Cello U 2 or 4

502.34 Double Bass U 2 or 4

502.41 Flute U 2 or 4

502.42 Oboe U 2 or 4

502.43 Clarinet U 2 or 4

502.44 Bass Clarinet U 2 or 4

502.45 Saxophone U 2 or 4

502.46 Bassoon U 2 or 4

502.51 Horn U 2 or 4

502.52 Trumpet U 2 or 4

502.53 Trombone U 2 or 4

502.54 Euphonium U 2 or 4

502.55 Tuba U 2 or 4

502.71 Percussion U 2 or 4

502.91 Harp U 2 or 4

**510 Advanced Jazz Improvisation U 3**

Advanced techniques of improvisation; the use of modal devices, complex meters, and innovative forms; concern for speed, endurance, energy levels, and problems of unaccompanied performance.

Sp Qtr. 3 cl. Prereq: 211 or permission of instructor.

**521 Form and Analysis U 3**

Detailed study of the structural principles and forms of homophonic music.

Au, Sp Qtrs. 3 cl. Prereq: 423.

**524 Orchestration I U 3**

A fundamental course in scoring for the instruments of the orchestra and band in transcriptions and arrangements.

Au Qtr. 3 cl. Prereq: 423.

**531 Counterpoint U 3**

A fundamental course in counterpoint including study of the basic principles of 16th- and 18th-century polyphony.

Au Qtr. 3 cl. Prereq: 423.

**534\* Scoring for Studio Orchestra U 3**

Scoring projects for the recording studio orchestra with emphasis on string section utilization.

Sp Qtr. 3 cl. Prereq: 433.01.

**535 Composition I U 3**

A fundamental course in composition, with emphasis on creative writing in the small forms.

Wi, Sp Qtrs. 3 cl. Prereq: 423.

**565 Marching Band Techniques U 5**

A study of the modern marching band including laboratory work in marching techniques, arranging techniques, and show planning. Woods.

Sp Qtr. 3 1½-hr cl. Not open to freshmen. Open to nonmusic majors with written permission of instructor.

**566\* Jazz Ensemble Techniques U 3**

The organization and operation of the public school jazz ensemble.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**570 General Music in Elementary Schools: Basic Teaching Practices U 3**

A study of the role of the music teacher in planning musical experiences for children with emphasis on child development and appropriate teaching practices. Flowers.

Wi Qtr. 3 cl, 1 lab hr. Prereq: 571 or permission of instructor.

**571 General Music in Elementary Schools: Music Literature for Children U 3**

Study and analysis of art, folk, ethnic, and popular music literature suitable for children in elementary schools. Lehr.

Au Qtr. 3 cl, 1 lab hr. Prereq: Enrollment in EDP.

**572 General Music in Secondary Schools: Middle and Junior High School General Music U 3**

The role of music in adolescents' general education and the development of competencies essential to teaching. Gerber.

Au, Wi Qtrs. 3 cl, 1 lab hr. Prereq: Enrollment in EDP.

**574 Choral Music in the Schools: Basic Teaching Practices U 3**

Factors relating to organizing and teaching choral music in elementary, middle, and junior high schools. Major.

Au Qtr. 2 cl, 2 lab hrs. Prereq: Enrollment in EDP.

**575 Choral Music in Senior High Schools U 3**

Rehearsal procedures, choral techniques, materials, and literature suited to various choral organizations of senior high schools. Major.

Wi Qtr. 2 cl, 2 lab hrs. Prereq: 574, and enrollment in EDP.

**576 Instrumental Music in Elementary Schools U 3**

The role of instrumental music instruction in public education, techniques of teaching instrumental music, study of music appropriate to musical organizations in elementary schools. Delzell.

Au Qtr. 3 cl, 1 1-hr lab. Prereq: 261.07, 262.03, 262.04, 262.05, 262.11, and enrollment in EDP.

**577 Instrumental Music in Secondary Schools U 3**

The role of instrumental music instruction in public education, techniques of teaching instrumental music, study of music appropriate to musical organizations in secondary schools. Woods.

Wi Qtr. 3 cl, 1 1-hr lab. Prereq: 576 and enrollment in EDP.

**586 Student Teaching in Music in Elementary Schools U 3-8**

Assignment to area elementary schools for observation and teaching experiences with groups of students and cooperating teachers; students attend weekly seminars with University supervisors.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 8 cr hrs.

**587 Student Teaching in Music in Secondary Schools U 3-8**

Assignment to area secondary schools for observation and teaching experiences with groups of students and cooperating teachers; students attend weekly seminars with University supervisors.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 8 cr hrs.

**591 Survey of the Music Industry U 3**

Economic aspects of music in America with reference to recordings, films, TV, radio, music theatre, booking, management, publishing, and manufacturing.

Wi Qtr. 3 cl. Prereq: Sr standing or permission of instructor.

**601 Applied Music (Principal) U 1 or 2**

Elective applied music instruction at the senior level for students in the BME curriculum; continuation of study of literature, technique, and musicianship.

Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl arr. Prereq: 501 and permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of director of School of Music. Each decimal subdivision repeatable to a maximum of 8 cr hrs.

601.11 Piano

601.14 Harpsichord

601.21 Voice

601.31 Violin

601.32 Viola

601.33 Cello

601.34 Double Bass

601.35 Guitar

601.41 Flute

601.42 Oboe

601.43 Clarinet

601.44 Bass Clarinet

601.45 Saxophone

601.46 Bassoon

601.51 Horn

601.52 Trumpet

601.53 Trombone

601.54 Euphonium

601.55 Tuba

601.71 Percussion

601.91 Harp

**602 Applied Music (Major) U G 2 or 4**

Applied music instruction required in BM curricula in performance to develop professional qualities of musicianship; full recital required in senior year.

Au, Wi, Sp Qtrs (except 602.14). 1 1-hr lesson, studio cl arr. Prereq: 502 and written permission of applied area faculty. Each decimal subdivision repeatable to a maximum of 18 cr hrs.

602.11 Piano

602.14 Harpsichord

602.21 Voice

602.31 Violin

602.32 Viola

602.33 Cello

602.34 Double Bass

602.41 Flute

602.42 Oboe

602.43 Clarinet

602.44 Bass Clarinet

602.45 Saxophone

602.46 Bassoon

602.51 Horn

602.52 Trumpet

602.53 Trombone

602.54 Euphonium

602.55 Tuba

602.71 Percussion

602.91 Harp

**609 Easy and Intermediate Piano Repertoire U G 2**

Survey and performance of piano literature, Baroque through contemporary, suitable for teaching beginning and intermediate students.

Sp Qtr. 1 2-hr cl. Prereq: 6 cr hrs in 401.01 or 401.11 or permission of instructor.



**610 Alexander Technique U G 1**

The relationship of kinesthetic perception and the postural reflexes to physical coordination in performance. Conable.

Au, Wi, Sp Qtrs. 2 cl. Repeatable to a maximum of 3 or hrs. This course is graded S/U.

**611 Introduction to Piano Pedagogy U G 3**

A critical analysis of various methods and principles of piano instruction, and of literature for the beginning and intermediate performer. Lowder.

Au Qtr. 3 cl. Prereq: 6 or hrs in 501.01 or 501.11 or permission of instructor.

**612 Piano Pedagogy: Group Instruction U G 3**

Concepts of group piano instruction, techniques for development of keyboard musicianship, and knowledge of appropriate materials. Lowder.

Wi Qtr. 3 cl. Prereq: 6 or hrs in 501.01 or 501.11 or permission of instructor.

**613 Piano Pedagogy: Practicum U G 3**

To provide supervised experience in piano instruction and guidance in the development of sequences of instruction and in the treatment of specific teaching problems. Lowder.

Sp Qtr. 3 cl. Prereq: 611 or 612 or permission of instructor. Repeatable to a maximum of 6 or hrs.

**615 Structure and Function of the Singing Mechanism U G 3**

The structure and function of the singing and breathing mechanisms as they relate to developmental teaching of voice in the formative years. Swank.

Su (1st term), Au Qtrs. 3 cl. Prereq: Permission of instructor.

**620 Survey of Music Analysis Techniques U G 3**

Survey of notation symbology, nomenclature, part-writing practices, and analytic techniques related to Western music composed from the mid-18th through the mid-20th centuries.

Su, Au Qtrs. 3 cl. Prereq: 423 or equiv. Not open to grad students specializing in music composition or music theory.

**621 Analysis: The Classic Period U G 3**

Comprehensive analysis of representative works from the Classic literature.

Wi Qtr. 3 cl. Prereq: 521 or 620, or a score in the upper third on the grad placement exam.

**622 Analysis: The Romantic Period U G 3**

Comprehensive analysis of representative works from the Romantic literature.

Sp Qtr. 3 cl. Prereq: 521 or 620, or a score in the upper third on the grad placement exam.

**623 Analysis: Post Romantic to Modern Music U G 3**

Comprehensive analysis of representative works from the latter part of the 19th century to the middle of the 20th century.

Au Qtr. 3 cl. Prereq: 521 or 620, or a score in the upper third on the grad placement exam.

**624\* Band Scoring U G 3**

Practice in scoring for concert band and wind ensembles, including the use of contemporary instrumental devices.

Au Qtr. 3 cl. Prereq: 524 or permission of instructor.

**625\* Orchestration II U G 3**

Study of 20th-century orchestration techniques, including readings in recent literature on timbre and timbre perception; scoring of transcriptions and students' compositions for various ensembles.

Wi Qtr. 3 cl. Prereq: 524.

**626\* Orchestration III U G 3**

Intensive study of orchestration styles; review of current pedagogical works; emphasis on scoring of students' compositions for various ensembles.

Sp Qtr. 3 cl. Prereq: 625.

**631 Baroque Counterpoint I U G 3**

Counterpoint based on the polyphonic style of the 18th century; analysis of representative works and practice in writing two- and three-part inventions.

Wi Qtr. 3 cl. Prereq: 531 or permission of instructor.

**633 Gregorian Chant U G 3**

A study of the historical background and characteristics of plain-song, including the technical aspects of notation, modes, rhythm, and chironomy.

Au Qtr. 3 cl.

**634†\* Modal Counterpoint I U G 3**

Counterpoint based on the vocal polyphonic style of the 16th century; analysis of representative works and practice in motet writing.

Sp Qtr. 3 cl. Prereq: 531 or permission of instructor.

**635 Composition II U G 3-5**

Practice in creative writing; analysis, and evaluation; employment of contemporary methods of composition.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 535 or permission of instructor. Repeatable to a maximum of 9 or hrs.

**636 Introduction to Electronic Music Synthesis U G 3**

Techniques of composition with electronic media; history, literature, and criticism; score preparation; principles of audio engineering; relationships to other communications media. Wells.

Au Qtr. 3 cl. Prereq: 423 and permission of instructor.

**637 Composition with Electronic Media I U G 3-5**

Individual composition projects; further study of sound synthesis techniques, including modification of natural sounds. Wells.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 535, real time electroacoustical modification or equiv and 636. Repeatable to a maximum of 9 or hrs.

**638 Audio Recording U G 3**

Audio recording; microphones and microphone placement; multiple-track recording; mixing; equalization and special effects.

Wi Qtr. 3 cl. Prereq: Elec Eng 201 or equiv with written permission of instructor. Not open to students with credit for Elec Eng 626.

**639 Audio Recording Laboratory U G 2**

Creating an audio recording; familiarity with the recording studio and console, use and placement of microphones; multiple-track recording equalization and special effects; mixing.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 638. Not open to students with 6 or hrs of Elec Eng 627. Repeatable to a maximum of 6 or hrs.

**640†\* Music in the Middle Ages U G 3**

The development of western music through the 14th century.

Au Qtr. 3 cl. Prereq: 243 and 521 or 531.

**641†\* Music in the Renaissance U G 3**

The development of musical styles from Dufay through Palestrina and Lassus.

Wi Qtr. 3 cl. Prereq: 243 and 521 or 531.

**642†\* Music in the Baroque Period U G 3**

The development of musical styles from Monteverdi through Bach.

Sp Qtr. 3 cl. Prereq: 243 and 521 or 531.

**643\* Music in the Classic Period U G 3**

Vocal and instrumental music of the middle and late 18th century.

Au Qtr. 3 cl. Prereq: 243 and 521 or 531.

**644\* Music in the Romantic Period U G 3**

The music of the romantic period in Germany and France.  
Su, Wi Qtrs. 3 cl. Prereq: 243 and 521 or 531.

**645\* Modern Music U G 3**

Major trends in the development of music since 1900.  
Su, Sp Qtrs. 3 cl. Prereq: 243 and 521 or 531.

**646\* History of Music in the United States U G 3**

A survey of music in the United States from colonial times until the present.  
Su, Sp Qtrs. 3 cl. Prereq: Jr or sr standing.

**647†\* Individual Composers: Their Lives and Works U G 3**

A comprehensive study of the works of an individual composer; topic varies from year to year.  
Su, Wi Qtrs. 3 cl. Prereq: 243 and 521 or 531. Repeatable to a maximum of 6 or hrs.

**648\* Chamber Music Literature U G 3**

A survey of chamber music of the classic and romantic periods.  
Au Qtr. 3 cl. Prereq: 243 and 521 or 531.

**649\* Symphonic Literature U G 3**

A survey of orchestral music from the classic period to the present.  
Wi Qtr. 3 cl. Prereq: 243 and 521 or 531.

**650†\* Choral Literature U G 3**

A survey of choral music from the Renaissance to the present.  
Sp Qtr. 3 cl. Prereq: 243 and 521 or 531.

**651†\* Opera Literature U G 3**

A survey of the antecedents of opera and a study of representative works from each of the major periods in the history of opera.  
Au Qtr. 3 cl. Prereq: 243 and 521 or 531.

**652 Song Literature U G 3**

The study of song literature, including historical and philosophical backgrounds selected to meet the needs of the student, artist, or teacher; program building.  
Sp Qtr. 3 cl.

**653†\* Piano Literature U G 3**

A study of the piano sonata and other characteristic forms from the pre-piano period to the present time.  
Sp Qtrs. 3 cl. Prereq: 243 and 521 or 531.

**654†\* Organ Literature U G 3**

A comprehensive survey from the earliest compositions to the works of present-day composers.  
Sp Qtr. 3 cl. Prereq: 243 and 521 or 531.

**660 Advanced Conducting (Instrumental) U G 3**

An attempt to develop the power to interpret the larger forms of instrumental literature and to read from full score. Benstein.  
Su (1st term), Wi, Sp Qtrs. 3 cl. Prereq: 262.11 and 521.

**661 Advanced Conducting (Choral) U G 3**

Development of power to interpret the larger forms of choral literature and to read from full score. Casey.  
Su (1st term) Sp Qtrs. 3 cl. Prereq: 262.12 and 521.

**662 Choral Repertoire U G 2**

Reading and study of sacred and secular choral literature. Casey.  
Su, Wi Qtrs. 1 cl, 1 2-hr lab. Repeatable to a maximum of 6 or hrs.

**665 Content and Structure in Arts Education U G 3**

Students from art, dance, music, and theatre education engage in dialogue, research, and peer teaching focused upon the educational content and structure of each discipline. Gerber.

Sp Qtr. 1 2½-hr cl. Open only to majors in art, dance, music, and theatre education and to grad students seeking certification. Not open to students with credit for Art Educ 665. Cross-listed in Art Education.

**670\* Medieval, Renaissance, and Baroque Musical Instruments U G 3**

A study of the early development of musical instruments and their uses; introduction to instrumental techniques and performance practices in these periods. Maas.  
Sp Qtr. 3 cl.

**672 Introduction to Ethnomusicology U G 3**

General concepts of ethnomusicology applied to the study of different ways in which music has been used outside the Western European tradition of the fine arts. Mazo.  
Sp Qtr. 2 1½-hr cl. Prereq: Jr or sr or grad standing.

**673 19th-Century Russian Music U G 5**

A study of the development of music in Russia during the 19th century; composers to be considered include Glinka, Musorgsky, Rimsky-Korsakov, Tchaikovsky, and others. Mazo.  
Au Qtr. 4 cl. Prereq: Jr standing or above. Not open to students with credit for 541.

**674 20th-Century Russian Music U G 5**

Development of music in Russia from 1900 to present; function of music in Soviet society; composers studied include Skriabin, Stravinsky, Prokofiev, Shostakovich, and current composers. Mazo.  
Wi Qtr. 4 cl, 1 hr arr. Prereq: Jr standing or above. Not open to students with credit for 542.

**675 Music of the Russian Folk Tradition U G 3**

An interdisciplinary study of traditional music of Russian peasants. Mazo.  
Au Qtr. 2 1½-hr cl. Prereq: Jr or sr or grad standing.

**679 Music Theory and Composition Senior Project U 2**

Composition students: preparation of senior composition and half recital of student's compositions; theory students: preparation of senior paper and presentation of paper.  
Su, Au, Wi, Sp Qtrs. Prereq: Admission into music theory and composition major and permission of instructor. Repeatable to a maximum of 6 or hrs. This course is graded S/U.

**680 Collegium Musicum U G 2**

Study and performance of music from the medieval, Renaissance, and baroque periods. Maas.  
Au, Wi, Sp Qtrs. 2 hr rehearsal, 1 cl (alternative wks.) Repeatable to a maximum of 12 or hrs.

**693 Individual Studies U G 1-5**

Individual studies in specified problems in the field of music.  
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Supervised group studies of special problems in the field of music.  
Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.  
Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**701 Applied Music (Non-Major) U G 1 or 2**

Applied music study with special emphasis on literature and performance practices.

1 1-hr lesson, studio classes arr. Prereq: Placement exam or permission of applied area faculty. Each decimal subdivision repeatable to a maximum of 12 or hrs.

**701.11 Piano**

Su, Au, Wi, Sp Qtrs.

**701.14 Harpsichord**

Au, Wi, Sp Qtrs.

**701.21 Voice**

Su, Au, Wi, Sp Qtrs.

**701.31 Violin**

Su (1st term), Au, Wi, Sp Qtrs.

**701.32 Viola**

Su (1st term), Au, Wi, Sp Qtrs.

**701.33 Cello**

Su (1st term), Au, Wi, Sp Qtrs.

**701.34 Double Bass**

Su (1st term), Au, Wi, Sp Qtrs.

**701.41 Flute**

Su (1st term), Au, Wi, Sp Qtrs.

**701.42 Oboe**

Su (1st term), Au, Wi, Sp Qtrs.

**701.43 Clarinet**

Su (1st term), Au, Wi, Sp Qtrs.

**701.44 Bass Clarinet**

Su (1st term), Au, Wi, Sp Qtrs.

**701.45 Saxophone**

Su (1st term), Au, Wi, Sp Qtrs.

**701.46 Bassoon**

Su (1st term), Au, Wi, Sp Qtrs.

**701.51 Horn**

Su (1st term), Au, Wi, Sp Qtrs.

**701.52 Trumpet**

Su (1st term), Au, Wi, Sp Qtrs.

**701.53 Trombone**

Su (1st term), Au, Wi, Sp Qtrs.

**701.54 Euphonium**

Su (1st term), Au, Wi, Sp Qtrs.

**701.55 Tuba**

Su (1st term), Au, Wi, Sp Qtrs.

**701.71 Percussion**

Au, Wi, Sp Qtrs.

**701.91 Harp**

Au, Wi, Sp Qtrs.

**727 Keyboard Harmony for Graduate Students U G 3**

Application of keyboard musicianship, including sight reading, harmonization of melodies, improvisation, transposition, realization of figured bass and modulation. Lowder.

Su (1st term). 5 cl, Au Qtrs. 3 cl. Prereq: 264.01, 423, or equiv with written permission of instructor.

**732\* Fugue U G 3**

Detailed study of the fugue; analysis and writing of three- and four-voice fugues.

Sp Qtr. 3 cl. Prereq: 631.

**752 Performance Literature U G 3**

Intensive study of representative literature for the instrument from each style period.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Admission to MM curriculum or permission of instructor. Each decimal subdivision repeatable to a maximum of 6 or hrs.

**752.01† Piano**

Au, Wi Qtrs.

**752.02 Voice**

Au Qtr.

**752.03 Strings****752.04 Woodwinds**

Wi, Sp Qtrs.

**752.05 Brass**

Wi Qtr.

**752.07 Percussion****756 Improvisation with Orff Instruments U G 3 or 5**

A study of the development of children's musical concepts through improvisation experiences and the use of Orff instruments. Flowers.

Su Qtr. 1 cl, 2 1½ hr labs. Prereq: 570 or equiv with written permission of instructor.

**760 Basic Concepts in Music Education U G 3**

The principles of music education and of the educational and cultural objectives derived from related disciplines which give direction and purpose to the music education program. Gerber and Major.

Su (1st term), Au Qtrs. 3 cl. Prereq: 586 or 587 or equiv.

**761 Principles of Music Learning U G 3**

Analysis of the learning process in music as related to problems of music instruction to the public school. Costanza.

Su (1st term), Sp Qtrs. 3 cl. Prereq: 586 or 587 or equiv.

**762† Principles and Practices in Elementary School Music U G 3**

Analysis and appraisal of the music program in elementary schools including the relationship of music to the total school program. Flowers.

Su (1st term), Sp Qtrs. 3 cl. Prereq: 571 or equiv.

**763\* Literature of Elementary School Music U G 3**

A critical study of folk and art music of various cultures and historic periods for the general vocal and listening activities of the integrated curriculum. Flowers.

Su (1st term), Sp Qtrs. 3 cl. Prereq: 571 or equiv.

**764† Principles and Practices in Vocal Music Education U G 3**

Analysis and appraisal of the organization, purpose, and development of the vocal music program in secondary schools. Major.

Su (1st term) Qtr. 3 cl. Prereq: 575 or equiv.

**765\* Literature for Vocal Music Education U G 3**

A study of vocal literature of various cultures and historic periods for use with choral groups in the secondary music program. Gallagher and Major.

Su (1st term) Qtr. 3 cl. Prereq: 575 or equiv.

**766† Teaching Practices in General Music U G 3**

Study of current concepts in organizing and teaching general music in the secondary school. Gerber.

Wi Qtr. 3 cl. Prereq: 572 or equiv.

**767\* Teaching Music as a Related Art U G 3**

Study and preparation for teaching music in a multiple arts or humanities context; emphasis on understandings, organization, and techniques essential for interdisciplinary instruction. Gerber.

Wi Qtr. 3 cl. Prereq: Course work or background of study and knowledge of another art form.

**768\* Principles and Practices in Instrumental Music Education U G 3**

Role of instrumental music in the public schools; relationship to society and the total music program, historical development, evaluation, and future trends. Delzell.

Su Qtr (1st term), 3 cl. Prereq: 577 or equiv.

### 769†\* Literature for Instrumental Music Education U G 3

Relationship of teaching materials and performance repertory to education objectives: selection of literature, interpretation, rehearsal procedures, conducting problems, attainment of musical understanding through literature. Woods.

Su (1st term) Qtr. 3 cl. Prereq: 577 or equiv.

### 770 Introduction to Research in Music Education U G 3

A study of methods of research as applied to problems in school music. Costanza, Flowers, and Forsythe.

Su (1st term), Wi Qtrs. 3 cl. Prereq: 586 or 587 or equiv.

### 772 Music in Early Childhood U G 3-5

Analysis of research, principles, and practices in early childhood music and application to programs of learning for young children. Flowers.

Au Qtr. 2 1½-hr cl. arr. Prereq: Advanced undergrad standing or above and permission of instructor. For students interested in teaching or research in early childhood music and for experienced personnel in teaching young children.

### 773 Introduction to Music for Exceptional Learners U G 3

Overview of issues, principles, practices, and research related to the music education of exceptional persons. Lehr.

Au Qtr. 1 2½-hr cl. Prereq: Advanced undergrad standing and permission of instructor.

### 774 Directive Teaching in Music U G 3

Principles and practices of music classroom management; directive teaching emphasizing clarity of objectives, assessment, and systematic instructional procedures for skill and concept teaching. Forsythe.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: Advanced undergrad standing and permission of instructor.

### 775 Teaching Music for Exceptional Learners U G 3

An analysis and concentrated study of materials and practices appropriate to teaching music for exceptional learners. Lehr.

Sp Qtr. Prereq: Advanced undergrad standing and permission of instructor.

### 777 Practicum in Teaching Music for Handicapped Learners U G 4-10

Assignment to area schools and institutions for observation and music teaching experiences with groups of handicapped learners and cooperating teachers. Forsythe and Lehr.

Su, Au, Wi, Sp Qtrs. 5-15 hrs per wk in schools or institutions. Prereq: Advanced undergrad standing and permission of instructor. Repeatable to a maximum of 10 cr hrs.

### 778 Curriculum Development in Music Education U G 3

Problems, processes, and trends in music curriculum development; goals and objectives, organization of general music and performance instruction; emphasis on courses of study and evaluation. Lehr.

Su (1st Term) Qtr. 5 cl. Prereq: Sr standing in music education. Not open to students with credit for 578 or 694 taken Sp Qtr 1983.

### 780 Ensembles U G 1-2

Study and performance of literature determined by student's participation in a specific ensemble.

Su, Au, Wi, Sp Qtrs. 3 or more hrs rehearsal each wk. Prereq: Admission by audition and permission of instructor. Repeatable to a maximum of 12 cr hrs.

#### 780.01 Choral

Casey.

#### 780.02 Orchestral

Haddock.

#### 780.03 Band

Kirchhoff.

#### 780.04 Chamber and Small Ensembles

#### 780.05 Ensembles: Piano Accompanying Practicum

### H783 Honors Research U 3-5

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC or College of the Arts or College of Education Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 786 Introduction to Bibliographic Method U G 3

The collection, examination, and documentation of information about music; including general as well as music library materials. Mixer.

Su, Wi Qtrs. 3 cl. Prereq: 243 and 521 or 531.

### 788 Studies in Russian Music U G 5

Selected problems in 19th- and 20th-century Russian music. Mazo.

Sp Qtr. 3 cl. Prereq: 541, 542, or permission of instructor; music majors 243 and 521 or 531. Repeatable to a maximum of 15 cr hrs.

### 790 Problems in Vocal Music Education U G 1-5

Study of problems encountered in the teaching and supervising of vocal music.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

### 791 Problems in Instrumental Music Education U G 1-5

Study of problems encountered in teaching, supervising, and organization of the instrumental music program.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

### 792 Choral Problems U G 1-5

Study of the problems encountered in developing choruses and church choirs. Casey, Gallagher, and Major.

Su (1st term), Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

### 801 Applied Music (Principal) G 1, 2, or 4

Advanced applied music study with emphasis on musicianship, pedagogical techniques, and literature.

1 1-hr lesson, studio cl arr. Prereq: Placement exam or permission of applied area faculty. Open to other qualified students within the limits of instructional facilities by permission of director of School of Music. Each decimal subdivision repeatable to a maximum of 16 cr hrs.

#### 801.11 Piano

Su, Au, Wi, Sp Qtrs.

#### 801.14 Harpsichord

#### 801.21 Voice

Su, Au, Wi, Sp Qtrs.

#### 801.31 Violin

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.32 Viola

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.33 Cello

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.34 Double Bass

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.41 Flute

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.42 Oboe

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.43 Clarinet

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.44 Bass Clarinet

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.45 Saxophone

Su (1st term), Au, Wi, Sp Qtrs.

#### 801.46 Bassoon

Su (1st term), Au, Wi, Sp Qtrs.

**801.51 Horn**

Su (1st term), Au, Wi Sp Qtrs.

**801.52 Trumpet**

Su (1st term), Au, Wi Sp Qtrs.

**801.53 Trombone**

Su (1st term), Au, Wi Sp Qtrs.

**801.54 Euphonium**

Su (1st term), Au, Wi Sp Qtrs.

**801.55 Tuba**

Su (1st term), Au, Wi Sp Qtrs.

**801.71 Percussion**

Au, Wi, Sp Qtrs.

**802 Applied Music (Major) G 2 or 4**

A specialized and intense study of literature and techniques of performance.

1 1-hr lesson, studio cl arr. Prereq: Placement exam. Each decimal subdivision repeatable to a maximum of 16 cr hrs.

**802.11 Piano**

Su, Au, Wi, Sp Qtrs.

**802.14 Harpsichord****802.21 Voice**

Su, Au, Wi, Sp Qtrs.

**802.31 Violin**

Su (1st term), Au, Wi, Sp Qtrs.

**802.32 Viola**

Su (1st term), Au, Wi, Sp Qtrs.

**802.33 Cello**

Su (1st term), Au, Wi, Sp Qtrs.

**802.34 Double Bass**

Su (1st term), Au, Wi, Sp Qtrs.

**802.41 Flute**

Su (1st term), Au, Wi, Sp Qtrs.

**802.42 Oboe**

Su (1st term), Au, Wi, Sp Qtrs.

**802.43 Clarinet**

Su (1st term), Au, Wi, Sp Qtrs.

**802.44 Bass Clarinet**

Su (1st term), Au, Wi, Sp Qtrs.

**802.45 Saxophone**

Su (1st term), Au, Wi, Sp Qtrs.

**802.46 Bassoon**

Su (1st term), Au, Wi, Sp Qtrs.

**802.51 Horn**

Su (1st term), Au, Wi, Sp Qtrs.

**802.52 Trumpet**

Su (1st term), Au, Wi, Sp Qtrs.

**802.53 Trombone**

Su (1st term), Au, Wi, Sp Qtrs.

**802.54 Euphonium**

Su (1st term), Au, Wi, Sp Qtrs.

**802.55 Tuba**

Su (1st term), Au, Wi, Sp Qtrs.

**802.71 Percussion**

Au, Wi, Sp Qtrs.

**803 Conducting G 4**

A specialized and intense study of conducting techniques.

Su, Au, Wi, Sp Qtrs. 3 cl, 1 1-hr lab. Prereq: Placement exam. Open only to conducting majors in the MM curriculum. Each decimal subdivision repeatable to a maximum of 12 cr hrs.

**803.01 Choral**

Casey.

**803.02 Orchestral**

Haddock.

**803.03 Band**

Kirchhoff.

**810 Music Pedagogy G 3**

A critical analysis of various methods, principles, practices, and materials current in teaching applied music.

**810.11†\* Piano**

A critical analysis of various methods and principles of piano instruction, and of literature for beginning and intermediate performers. Lowder.

Su (1st term) Qtr. 5 cl. Prereq: 611 or equiv, and admission to MM or MA programs in piano.

**810.21 Vocal**

An analysis of the principles and practices current in the teaching of voice. Swank.

Wi Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in voice.

**810.22 Vocal Practicum**

Observation of applied voice instruction, participation in and discussion of voice teaching, development of teaching skills and fluency of communications. Swank.

Sp Qtr. 2 hrs arr. Prereq: 615. Repeatable to a maximum of 6 cr hrs.

**810.30†\* String Instrument**

An analysis of the principles and practices current in the teaching of strings. Gillespie.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in string instruments.

**810.40\* Woodwind Instrument**

An analysis of the principles and practices current in the teaching of woodwinds.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in woodwind instruments.

**810.50†\* Brass Instrument**

An analysis of the principles and practices current in the teaching of brass instruments. Burkart.

Su (1st term) Qtr. 5 cl. Prereq: Music grad standing and minimum of 6 cr hrs of applied study in brass instruments.

**810.70 Percussion Instruments**

An analysis of principles and practices in the teaching of percussion instruments. Moore.

Su, Sp Qtrs. 3 cl. Prereq: Music grad standing and a minimum of 6 cr hrs of applied study in percussion instruments, or permission of instructor.

**818\* Theories of Heinrich Schenker G 3**

Musical structural analysis of Schenker as expressed in his own writings; emphasis on his theories rather than on graphing techniques.

Au Qtr. 3 cl. Prereq: 621 or 622 or 623. Not open to students with credit for 728.

**819\* Levels Theory after Schenker G 3**

Concentration on specific concepts of commentators and successors as distinct from Schenker's.

Sp Qtr. 3 cl. Prereq: 818. Not open to students with credit for 729.

**820 Theory Pedagogy G 3**

The teaching of music theory in colleges and secondary schools.

Au Qtr. 3 cl. Prereq: Music grad standing. Not open to students with credit for 711.

**821†\* Seminar in Analysis: The Classic Period G 5**

Critical investigation and application of analytical methods appropriate to works from the Classic period.

Au Qtr. 3 cl. Prereq: 621 or permission of instructor.

**822†\* Seminar in Analysis: The Romantic Period G 5**

Critical investigation and application of analytical methods appropriate to selected works from the Romantic period.

Wi Qtr. 3 cl. Prereq: 622 or permission of instructor.

**823†\* Seminar in Analysis: Post-Romantic to Modern Music G 5**

Critical investigation and application of analytical methods appropriate to selected works from the latter part of the 19th century to the present.

Sp Qtr. 3 cl. Prereq: 623 or permission of instructor.

**824 Computer Applications in Music Research G 3**

The use of computers for research in music, including style analysis, thematic indexing, manuscript collating, and information retrieval. Blombach.

Wi Qtr. 3 cl. Prereq: 621, 622, or 623, or equiv and written permission of instructor. Not open to students with credit for 720.

**825 Advanced Computer Applications in Music Research G 3**

The use of advanced computer programming techniques for research in music. Blombach.

Au, Sp Qtrs. 2 cl. Prereq: 824 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

**826 Development of Music Theory I G 5**

A study of the principal treatises on music theory before 1400. Green.

Au Qtr. 3 cl.

**827 Development of Music Theory II G 5**

A study of the principal treatises on music theory from 1400 to 1700. Green.

Wi Qtr. 3 cl.

**828 Development of Music Theory III G 5**

Critical study of music and theory texts from 1700 to 1900. Green.

Sp Qtr. 3 cl.

**829\* Contemporary Theories of Music G 5**

Major theoretical viewpoints in contemporary music; fundamental concepts of theory construction and critical examination of contemporary theories.

Sp Qtr. 3 cl. Prereq: Music grad standing.

**831†\* Baroque Counterpoint II G 3**

Advanced counterpoint based on the polyphonic style of the 18th century; analysis and stylistic writing, including study of canons and invertible counterpoint.

Sp Qtr. 3 cl. Prereq: 631.

**835 Composition III G 3-5**

Creative writing at an advanced level.

Su, Au, Wi, Sp Qtrs. Prereq: 2 qtrs of 635 or equiv. Repeatable to a maximum of 20 cr hrs.

**837 Composition with Electronic Media II G 3-5**

Advanced composition using electronically generated sound material. Wells.

Su, Au, Wi, Sp Qtrs. 15 cl. Prereq: 637. Repeatable to a maximum of 15 cr hrs.

**838 Seminar in Music Perception G 5**

Investigation and application of experimental techniques for measuring music perception and musical behavior, including a critical survey of recent experimental literature. Butler.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**839 Research Practicum in Music Perception G 3**

Supervised research in music perception with review of relevant theoretical and methodological literature. Butler.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 838. Repeatable to a maximum of 6 cr hrs.

**841\* Studies in Medieval Music G 5**

Problems and research in music before 1400.

Au Qtr. 3-5 cl.

**842\* Studies in Renaissance Music G 5**

Problems and research in music between 1400 and 1600.

Wi Qtr. 3-5 cl.

**843\* Studies in Baroque Music G 5**

Problems and research in music between 1600 and 1750.

Sp Qtr. 3-5 cl.

**844†\* Studies in Classic Music G 5**

Problems and research in music of the late 18th century.

Au Qtr. 3-5 cl.

**845†\* Studies in Romantic Music G 5**

Problems and research in music of the 19th century.

Wi Qtr. 3-5 cl.

**846†\* Studies in Modern Music G 5**

Problems and research in music of the 20th century.

Sp Qtr. 3-5 cl.

**847\* Development of Notation: 900-1600 G 5**

A survey of notational principles from Gregorian neumes through the mensural system of the Renaissance, with exercises in transcription. Atkinson.

Wi Qtr. 3 cl. Prereq. or concur: 640.

**848\* Advanced Studies in Notation G 5**

An intensive investigation of the problematic aspects of pre-mensural and mensural notation. Atkinson.

Sp Qtr. 3 cl. Prereq: 847.

**850\* History of Performance Practices G 5**

A study of primary sources pertaining to contemporary attitudes and practices in the performance of music from the Middle Ages to the present. Mixer.

Sp Qtr. 3 cl.

**851†\* Musical Sources and Historiography G 5**

A study of music historiography, supplemented by the examination of musical documents from each of the periods of music history. Mixer.

Sp Qtr. 3 cl. Prereq: 786.

**852 Performance Literature G 3**

Concentrated study of representative literature from each style period.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 752 and admission to DMA program. Repeatable to a maximum of 9 cr hrs.

**852.01\* Piano**

Au, Wi, Sp Qtrs.

**852.02 Voice****852.03 Strings****852.04 Woodwinds****852.05 Brass****852.06 Organ****872 Administration in Music Education G 3**

Seminar. Major.

Au Qtr. 3 cl. Prereq: Permission of instructor.

**873† Seminar: Comparative Music Education G 3 or 5**

An analysis and comparison of music education programs in other countries including the study of curriculum, teaching procedures, and programs of teacher preparation.

Su (1st term) Qtr. 3 or 5 cl. Prereq: Written permission of instructor.

**874 Seminar: The Development of Music Education G 3 or 5**

The development of music education from the early Greek society to the present day tracing major trends and the influence of certain persons. Lehr.

Wi Qtr. 3 or 5 cl. Prereq: Written permission of instructor.

**875 Seminar: Psychological Factors in Music Education G 3 or 5**

A study of the psychological factors, theory, and research in the musical development of children and adolescents with implications for school music education programs. Costanza. Au Qtr. 3 or 5 cl. Prereq: 761.

**876 Seminar: Evaluation and Measurement in Music Education G 3 or 5**

A study of the theory, principles, and techniques of evaluation and measurement in music education. Costanza. Sp Qtr. 3 or 5 cl. Prereq: 761 and Psych 510.

**877 Seminar: Social Factors in Music Education G 3 or 5**

A study of the social influences on music education and their relationship to school music programs and practices. Lehr. Su (1st term), Wi Qtrs. 3 or 5 cl. Prereq: 760.

**879 Seminar: Music in Higher Education G 3 or 5**

The role of music in higher education historically and in contemporary times, including its philosophical bases, degree programs, and organizations. Major. Au Qtr. 3 or 5 cl.

**893 Individual Studies G 1-5**

Individual research projects not connected with the dissertation.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 3-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**894.01 Seminar in Music Theory****894.02 Seminar in Music Education**

Costanza, Flowers, and Forsythe.

**899 Interdepartmental Seminar G 1-5**

Au, Wi, Sp Qtrs.

**902 Applied Music (Major) G 2 or 4**

Advanced study of music literature in performance including concert recital presentation.

Su, Au, Wi, Sp Qtrs. 1 1-hr lesson, studio cl arr. Prereq: Placement exam. Open only to students admitted to DMA program. Each decimal subdivision repeatable to a maximum of 16 cr hrs.

- 902.11 Piano
- 902.21 Voice
- 902.31 Violin
- 902.32 Viola
- 902.33 Cello
- 902.41 Flute
- 902.42 Oboe
- 902.43 Clarinet
- 902.44 Bass Clarinet
- 902.45 Saxophone
- 902.46 Bassoon
- 902.51 Horn
- 902.52 Trumpet
- 902.53 Trombone
- 902.54 Euphonium
- 902.55 Tuba

**995 Advanced Research Practicum G 1-5**

Utilization of research processes and creative techniques appropriate to the field of inquiry—analysis, survey, experimentation, historiography, philosophy. Flowers and Forsythe.

Su, Au, Wi, Sp Qtrs. Prereq: 45 grad cr hrs and permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**998 Research in Music: Thesis G Arr**

Research for thesis purposes only. Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Music: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## National Security Policy Studies

1712 Neil Avenue, 292-9701, Mershon Center for Education in National Security

**200 Introduction to National Security Policy U 5**

Survey of policies affecting the security of the United States and of the process by which such policies are formulated, executed, and appraised.

Au, Wi, Sp Qtrs. H200 (honors) may be available to students enrolled in an honors program or by permission of dept.

**Experience of War Interpreted in Classic Examples of Literature**

See Comp Std 308—The Western experience of battle, as seen through the eyes of individual combatants, interpreted in classic examples of the literature of war.

3 cl, 1 3-hr lab. Offered in cooperation with National Security Policy Studies.

**693 Individual Studies in National Security Policy U G 1-5**

A special national security topic is assigned to each student for reading and a report.

Au, Wi, Sp Qtrs. Open only to students with credit in 200 or 702.

**702 Advanced Topics in National Security U G 5**

Examination of various topics in the field of national security; survey of literature in field; identification of major problem areas.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs including credit in History 702. Cross-listed in History. Cross-referenced in Political Science.

**702.01 US-USSR Foreign Policy and Strategic Rivalry**

The politics and diplomacy of nuclear weapons since 1945.

**702.02 International Conflict and Peace**

Introduction to theoretical and empirical literature in the study of conflict and peace.

**702.03 Arms Control**

Examination of the US-Soviet strategic arms competition and the threat of nuclear proliferation.

**702.04 Defense Economics and Weapons System Acquisition**

The role of defense investment in national security and the process of weapons system acquisition.

**702.05 Development of the Military Profession**

The development of the military profession in America from the Revolution to the 1970's.

**702.06 War since 1945**

The conduct and results of conventional war in the post-1945 world.

**702.07 North Atlantic Treaty Organization**

The study of the origins, institutions, and evolution of the North Atlantic Treaty Organization in the broader contexts of West European politics and US-West European relations.

**795 Studies in National Security Policy U G 5**

Strategic intelligence, terrorism, and Soviet defense policy; topic varies.

Prereq: 200 and permission of instructor for undergrads; no prereq for grad students. Repeatable to a maximum of 15 cr hrs.

# Natural Resources

210 Kottman Hall, 2021 Coffey Road, 292-2265

## 189 Work Experience in Natural Resources U 3

The student must secure approval of adviser prior to employment and submit a final written report by fourth week of first quarter of school following the work.

Su, Au, Wi, Sp Qtrs. Equiv of 10 wks employment. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

## 201 Introduction to Conservation of Natural Resources U 4

Nature and scope of environmental problems; technical and socio-economic aspects of the solution of such problems. Roth.

Au Qtr. 3 cl, 1 hr arr. SS Admis Cond course.

## 202 Conservation Agencies U 3

History and responsibilities of governmental agencies and some private organizations for natural resources management; representatives of conservation agencies present programs and problems. Disinger.

Wi Qtr. 3 cl. Prereq: 201.

## 220 Man and Wildlife in a Changing World U 3

An introduction to wildlife as a natural resource—its nature and importance and the impact and consequences of human activities upon wildlife and upon man.

Wi Qtr. 3 cl.

## 289 Natural Resources Practicum U 2

Experience in the application of principles and techniques of environmental/natural resources problem solving.

Su, Au, Sp Qtrs. Arr. Prereq: Written permission of instructor. Each decimal subdivision repeatable to a maximum of 6 cr hrs. These courses are graded S/U.

### 289.01 Environmental Education

### 289.02 Fisheries and Wildlife Management

### 289.04 Parks and Recreation Administration

## 300 Conservation in America U 5

Backgrounds of current conservation thought in the United States, explored through the lives, achievements, and writings of key figures in the field. Disinger.

Au Qtr. 5 cl.

## 340 Concepts of Parks and Recreation U 3

Examination of parks and recreation concepts including development, rationale, and frameworks for park and recreation systems in the United States. Douglass.

Wi Qtr. 3 cl.

## 341 Microcomputer Applications in Parks and Recreation Management U 4

Introduction, discussion, and use of existing microcomputer software programs relating to parks and recreation management. Christensen.

Au Qtr. 2 cl, 6 hrs arr. Prereq: 340 or permission of instructor.

## 400 Natural Resources Problems and Policies U 4

Historical and conceptual approach to understanding contemporary renewable resources problems and policies in the US; difficulties in formulating and implementing multiple-purpose policies.

Wi Qtr. 4 cl. Prereq: 201 and Econ 200 or equiv.

## 410 Introduction to Environmental Communications U 5

Fundamentals of communications theory as related to environmental information transmission; surveys various media and methods of reaching the decision-making public on environmental issues. Fortner.

Au Qtr. 3 2-hr cl.

## 411 Introduction to Environmental Education U 3

Survey of various local and national programs and methods for implementing environmental education into curricular and other programmatic areas.

Wi Qtr. 2 1½-hr cl. Prereq: 201 or permission of instructor.

## 421 Introduction to Wildlife Management

Basic principles and practices of wild animal and habitat management for persons with a career interest in natural resources management. Townsend.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in biological science. Not open to students with credit for 621.

### 421.01 Lecture U 3

### 421.02 Laboratory U 1

Prereq or concur: 421.01.

## 498 Study Tour U 1-15

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Su, Au, Sp, Wi Qtrs. Prereq: Permission of instructor.

Repeatable for different titled study tours only.

### 498.01 Domestic

### 498.02 Foreign

## 510 Natural History of Ohio U G 5

Field course emphasizing inter-relationship among physical and biological factors in various ecological settings; field techniques and identification skills used for research paper; teacher section offered. Roth.

Sp Qtr. 2 2½-hr cl and Sat field trip.

## 511 Environmental Interpretation Methods U G 5

The concept of the interpreter, basic interpretive principles, visitor characteristics, and the range of interpretive services. Mullins.

Au Qtr. 1-3 hr cl, 2 hrs. arranged. Prereq: 15 cr hrs of content base in the student's major specialization.

## 515 Interpretive Planning and Center Design U G 5

Practice in interpretive master planning/center design; case studies of public/private interpretive sites/facilities; considerations include visitor services, visitorship, and integration with natural environment. Mullins.

Au Qtr. 2 2½-hr cl. Prereq: 511 or equiv with permission of instructor.

## 517 Interpretive Field Studies U 2-5

A short-course, inter-session course, or study tour which will involve travel to regional or national interpretive facilities; in-depth analysis of each facility. Mullins.

Su, Au, Wi, Sp Qtrs. 2-5 hrs cl. Prereq: 511 or equiv with permission of instructor. Repeatable to a maximum of 10 cr hrs.

## 518 Interpretive Programming U G 5

Case studies of public and private interpretive programs; practice in program presentation and comprehensive program planning. Mullins.

Sp Qtr. 2 2½-hr cl. Prereq: 511 or equiv with permission of instructor.

## Natural Resources Economics

See Agr Econ 531. Offered in cooperation with Agricultural Economics.

## 540 Principles of Park and Recreation Management U G 5

Structure and behavior of outdoor recreation land management concepts for public programs at state, regional, and national levels of government. Andrew.

Wi Qtr. 5 cl. Prereq: 201, or equiv with permission of instructor.

## 541 Recreation Resources Program Planning U G 5

Analysis of recreation resources, users, and suppliers in establishing goals, objectives, and actions for recreation programs; scheduling and program budgeting for recreation opportunities.

Au Qtr. 6 cl, and 1 1-day field trip. Prereq: 540.



**H590 Honors Colloquium U 2**

Instruction in the preparation of research proposals and discussion of current research in natural resources. Christensen.

Wi Qtr. 1 2-hr cl. Prereq: Jr standing in NRE honors program. Required of all NRE honors students. This course is graded S/U.

**Economics of Environmental Quality**

See Econ 591. Offered in cooperation with Economics.

**598 Parks and Recreation Administration Study Tour U 2-5**

Analysis and comparative studies of various park and recreation management programs and policies through on-site visits and interaction with professional managers.

Au, Wi, Sp Qtrs. Arr. Prereq: 541 and jr standing with permission of instructor. Repeatable to a maximum of 10 or hrs. Travel and subsistence costs will be borne by the student.

**601 Interactions in Natural Resources Management U G 4**

Impact of man's activity on natural resources; interrelationships between resources and physical and social environment and prospects for effective resources management. Disinger.

Sp Qtr. 2 2-hr cl. Prereq: 400 or grad standing with written permission of instructor.

**602 Watershed Resource Evaluation U G 5**

In-depth field study and evaluation of natural resource parameters and management interactions within a small watershed. Disinger.

Wi Qtr. 2 3-hr cl. Prereq: 601 or equiv with permission of instructor.

**611 Great Lakes Education Workshop U G 1-4**

Techniques and curricula for presenting interdisciplinary aspects of the oceans and Great Lakes in formal and nonformal education settings. Fortner and Mayer.

Su, Au, Wi, Sp Qtrs. 10 course hrs per cr hr, field trip. Prereq: Teaching certificate or sr standing. Repeatable to a maximum of 5 or hrs. Offered frequently off-campus on request. Cross-listed with Educational Studies.

**613 Methods for Conservation Education U G 3**

Experience centered course for conservation/natural resources education including objectives, instructional, and evaluative procedures appropriate to formal and non-formal settings. Helgeson and Roth.

Sp Qtr. 1 3-hr cl. Prereq: 201; and Forestry 223 or equiv; or sr standing. Not open to students with credit for Ed-Sc&Ma 613. Cross-listed in Education: Science and Mathematics.

**614 Marine and Aquatic Education U G 3**

Overview of oceanic and Great Lakes resources, their roles in history, climate, commerce, and culture; examination of teaching materials for formal and informal settings.

Su, Wi Qtrs. 1 3-hr cl, field trip. Prereq: 20 or hrs of social, physical, and/or biological sciences or teacher certification, and permission of instructor. Not open to students with credit for Ed-Sc&Ma 614. Cross-listed with Educational Studies. Travel and subsistence costs for winter field trip must be borne by students. Summer offering at Stone Lab.

**615 Skills for Environmental Communications U G 5**

Skills development and practice in communicating natural resources/environmental information through written and broadcast media. Fortner.

Wi Qtr. 3 2-hr cl. Prereq: 201 or equiv.

**618 Environmental Pollution Abatement U G 5**

Problems, philosophies, principles, and methods of pollution abatement in the total environment; quantitative approaches to environmental problems in air, water, and land systems.

Wi Qtr. 5 cl. Prereq: Sr or grad standing in ENG or science. Not open to students with credit for Civil En 520 or 618; Mech Eng 618, or Zoology 618. Cross-listed in Civil Engineering, Mechanical Engineering, and Zoology.

**620 Management of Fisheries U G 5**

Fisheries resource management problems and programs including biological, economic, and social factors of local, national, and international importance. Johnson.

Wi Qtr. 5 cl. Prereq: Zoology 313 or equiv.

**621 Advanced Wildlife Management U G 5**

Detailed examination of current knowledge and theory relating to the effective practice of wildlife management. Townsend.

Sp Qtr. 3 2-hr cl, 4 Friday field trips. Prereq: 421, sr standing in wildlife\_mgt, or grad standing with permission of instructor.

**626 Field Techniques in Fisheries Management U G 5**

Methods of sampling, evaluation, and managing freshwater fish populations; techniques are compared and related problems discussed; actual field experience. Johnson.

Au Qtr. 3 cl, 1 4-hr lab 4 overnight field trips. Prereq: 620; Hlth Edu 122 or American Red Cross CPR or concur.

**628 Introduction to Aquaculture U G 5**

An introduction to the physical, biological, and economic factors that influence the development of fish culture systems; current US hatchery practices will be compared with methods used elsewhere in the world.

Sp Qtr. 3 cl, 4-hrs lab. Prereq: 620.

**633 Silviculture II U G 5**

A detailed examination of selected silvicultural techniques and of silvicultural systems for selected forest types found in the United States. Brown.

Sp Qtr. 2 cl, 1 3-hr lab, 2 all-day field trips. Prereq: Forestry 321, or written permission of instructor.

**634 Aerial Photointerpretation Applications in Natural Resources Management U G 3**

Advanced course in using aerial photointerpretation technology in solving natural resources management and research problems.

Sp Qtr. 1 cl, 2 3-hr labs. Prereq: Forestry 324 or Civil En 603, Civil En 604, or Civil En 605 or permission of instructor.

**635 Forest Resource Policy and Management U G 5**

Integration of planning and decision making processes into the development of a forest resource management plan. Floyd.

Sp Qtr. 5 cl. Prereq: Forestry 525 or equiv with written permission of instructor.

**642 Urban Parks and Recreation Management U G 3**

Organization and administration of metropolitan, county, and municipal areas; land acquisition and planning of these facilities. Douglass.

Sp Qtr. 3 cl.

**643 Outdoor Recreation and Tourism by the Private Sector U G 4**

Factors influencing supply and demand for outdoor recreation and tourism facilities provided by the private sector; the feasibility study, liability, insurance, and other managerial concerns. Andrew.

Wi Qtr 4 cl. Prereq: 540 and Econ 200 or equiv.

**644 Park Design U G 5**

Interrelationship of facility design and recreation land management, including various types of parks and criteria for their location and design. Heywood.

Sp Qtr. 6 cl. Prereq: 541.

**647\* Wilderness Policy and Management U G 4**

Detailed study of policy processes, planning procedures, designation mechanics, utilization issues, and management programs for wilderness resources. Andrew.

Sp Qtr. 4 cl. Prereq: 421 and 400 or 600 or 540 or equiv with permission of instructor.

**650 Water Resources Institutions and Policies U G 5**

Review and advanced analysis of Ohio, interstate, and federal institutions and policies which influence the use and management of water resources. Vertrees.

Sp Qtr. 2 2-hr, 1 1-hr cl arr. Prereq or concur: 400 and 601 or permission of instructor.

**655 Management of Aquatic Ecosystems U G 3**

Physical, chemical, biological, and systems aspects of management of freshwater ecosystems; pollution of lakes, streams, rivers, and wetlands; quantitative methods for management. Mitsch.

Sp Qtr. 1 3-hr cl. Prereq: 201 or permission of instructor.

**684 Internships in Natural Resources Professions U G 6**

Internship employment for a minimum of three months in natural resources professions arranged with cooperating natural resources or environmental agencies, organizations, or industries.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. These courses are graded S/U.

- 684.01 Environmental Education
- 684.02 Fisheries and Wildlife
- 684.03 Forestry
- 684.04 Parks and Recreation Administration
- 684.05 Resource Development

**691 Workshop in Environmental Management Education U G 1-2**

Identification of environmental problems and management alternatives with emphasis on related education and communications techniques; survey of related research; development of applied educational and communications strategies.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 4 cr hrs. This course is graded S/U.

**692 Workshop in Environmental Education U G 3**

Problems of instruction in environmental education with consideration of both traditional approaches and current developments in content and methodology.

Su, Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**693 Individual Studies in Natural Resources U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. These courses are graded S/U.

- 693.01 Environmental Education
- 693.02 Fisheries and Wildlife
- 693.03 Forestry
- 693.04 Parks and Recreation
- 693.05 Resource Development

**694 Group Studies U G 2-5**

Group studies on the nature and management of natural resources encompassed in one of the following areas.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs for each subdivision.

- 694.01 Environmental Education
- 694.02 Fisheries and Wildlife
- 694.03 Forestry
- 694.04 Parks and Recreation
- 694.05 Resource Development

**700 Natural Resources Policy Analysis U G 5**

Frameworks of planning and analyzing contemporary natural resources policies; instructor and student critiques of legislation, forecasts, plans, and policy analyses. Vertrees

Au Qtr. 2 2½-hr cl. Prereq: 400 with permission of instructor or grad standing.

**725 Wetland Ecology and Management U G 5**

Biological, physical, chemical, and ecological aspects of major wetland ecosystems in North America; valuation, classification, and management of wetlands for biotic resources and water management. Mitsch.

Su, Au Qtrs. 1 5-hr cl, field trip. Prereq: Zoology 313 or permission of instructor.

**731\* Ecological Relationships of Forest Stands U G 3**

Ecological and physiological aspects of the forest-soil-site complex as it relates to forest tree establishment and growth. Brown, Gatherum, McClenahan, Larson, and Vimmerstedt.

Sp Qtr. 1 cl, 2 hrs arr. Prereq: 786 or Genetics 650 or equiv, Agronomy 240, Botany 436 or 620, 631; and Forestry 223.

**745 Recreation Land Site Analysis — Computer Techniques U G 3**

Comparative analysis of data systems used to evaluate natural resources data for recreation or other land uses.

Wi Qtr. 2 1½-hr cl. Prereq: Sr standing with 15 hrs of natural/physical sciences.

**750 Resolving Social Conflict G 3**

A multidisciplinary examination of social conflict, its dynamics, and its negotiated and consensual resolution; offers a broad-based framework for diagnosing and managing conflict; applied to legal, environmental, organizational, and geopolitical conflicts.

Sp Qtr. 1 3-hr cl. Prereq: Grad standing or permission of instructor. Cross-listed in Business Administration: Interdisciplinary and City and Regional Planning.

**760 Ecosystem Modeling U G 5**

Development and simulation of ecological models for natural resource/ecosystem management; conceptual and symbolic models, simulation techniques on main frame and microcomputers. Mitsch.

Wi Qtr. 5 cl. Arr. Prereq: Math 117 and Zoology 313 or equiv.

**785 Research Methods in Natural Resources Management U G 4**

Research design; experimental procedures; information-gathering tools, including reporting units for resource-related data; statistical methods; and procedures for analysis of data. Cole.

Au Qtr. 2 2-hr cl. Prereq: Math 117, 130, or 150; an introductory course in statistics.

**795 Parks and Recreation Research Seminar U G 2**

Presentation, evaluation, and discussion of current parks and recreation research and research needs. Christensen.

Wi Qtr. 1 2-hr cl. Prereq: Grad standing or honors students in parks and recreation administration. Repeatable to a maximum of 4 cr hrs.

**797 Interdepartmental Seminar U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced. Repeatable by permission.

Su, Au, Wi, Sp Qtrs.

**798 Current Topics in Environmental Science and Engineering U G 1**

Seminar course which presents current research findings on environmental quality and pollution control.

Au, Sp Qtrs. 1 cl. Prereq: Grad standing in engineer, science, nat res, or agr, or permission of instructor. Not open for simultaneous credit for Agronomy 798 or Civil En 798. Repeatable to a maximum of 3 cr hrs. Cross-listed in Agronomy and Civil Engineering.

**810 Case Studies and Evaluation of Environmental Communication G 5**

Case studies in effectiveness of environmental communication and practice in evaluation of various communication techniques associated with a current environmental issue. Fortner.

Au Qtr. 1 3-hr cl. Prereq: Journal 202 and Nat Res 410 or equiv with permission of instructor.

**811\* Program Development in Environmental Education G 3**

Development of environmental education programs with respect to the situations of participants; existing programs are studied as models to aid in development of unique programs. Roth.

Au Qtr. 1 3-hr cl. Prereq: 692 or equiv and permission of instructor.

**819 Interpretive Research and Theory G 5**

Analysis of the theoretical basis for interpretive technique; review of current research in environmental interpretation and exposure to models for evaluation of interpretive services. Mullins.

Wi Qtr. 2 2½-hr cl. Prereq: 511 or equiv with permission of instructor; introductory statistics course; research methods course.

**840 Policies Relating to Governmental Recreation Areas G 3**

Organizational policies and structures relating to federal, state, and local governmental agencies. Douglass and Heywood.

Wi Qtr. 3 cl. Prereq: 540, and 642 or 643, or 644, or equiv with permission of instructor.

**897 Seminar in Natural Resources G 1**

A seminar on current research and practice in natural resources; required of all graduate students in the School of Natural Resources.

Au, Sp Qtrs. Repeatable to a maximum of 3 or hrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Naval Science

110 Converse Hall, 2121 Tuttle Park Place, 292-6015

The sequence of naval science courses is the same for all officer candidate students for the first two academic years. Officer candidate students accepted into the Marine Corps Option will have curriculum variations with their third year. Additionally, some candidates may be required to complete courses in American Military Affairs, National Security Policy, mathematics, and/or the physical sciences. Descriptions of the course requirements for each candidate classification (scholarship/college programs) may be obtained from the Naval Science Department office.

Naval science courses are open to a limited number of civilian students with permission of the Professor of Naval Science. Initial enrollment in the NROTC Program may be completed by scheduling Naval Science 154 during fall quarter registration. Completion of Naval Science and degree requirements may lead to a commission in the U.S. Navy or the U.S. Marine Corps.

Normal sequence of Naval Science courses is as follows:

**First Year:** All candidates—154, 155, 156.

**Second Year:** All candidates—261, 262, 265.

**Third Year:** Navy candidates—321, 322, 323.  
Marine candidates—351, 352, 353.

**Fourth Year:** Navy candidates 465, 476, 477.  
Marine Candidates—451, 452, 453.

**154 Survey of Naval Science U 3**

An introduction to and survey of disciplines peculiar to naval science including a discussion of naval tasks and missions, regulations, customs, traditions, and organizational relationships.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Enrollment in NROTC Unit or permission of instructor.

**155 Naval Ship Systems U 3**

Study of ship design, compartmentation, stability, buoyancy, and damage control.

Wi Qtr. 3 hrs. lec, 1 2-hr lab. Prereq: 154 or written permission of instructor.

**156 Naval Ship Systems Engineering U 3**

Study of conventional ship propulsion systems, auxiliary power systems, nuclear power, and new innovations in ship propulsion.

Sp Qtr. 3 hrs lecture, 1 2-hr lab. Prereq: 155 or written permission of instructor.

**261 Naval Weapons Systems II U 3**

Investigation of concept and technique of weapons systems, linear analysis of ballistics, and the dynamics of the basic components of weapons control systems.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 156 or permission of instructor.

**262 Naval Weapons Systems III U 3**

Further development of the basic principles of naval weapons.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 261 or permission of instructor.

**265 Seapower and Maritime Affairs I U 3**

An analysis of seapower and maritime affairs as related to the naval forces of the United States.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 262 or permission of instructor.

**321 Introduction to Navigation U 3**

A study of marine navigation, including the determination of position by dead reckoning and electronic methods, and the rules of the nautical road.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 265 or permission of instructor.

**322 Celestial Navigation U 3**

The determination of position by celestial methods of navigation.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 321 or permission of instructor. Not recommended for Astronomy majors.

**323 Naval Operations U 3**

A study of fleet operations, including tactics, the naval communications system, and the principles of relative motion.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 322.

**351†\* Evolution of the Art of War, Part I U 3**

A study of the evolution of weapons and tactics, illustrating the principles and variables of war used in certain battles from Alexander through the Prussian influence.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 265 or completion of summer camp.

**352†\* Evolution of the Art of War, Part II U 3**

A continuation of the study of evolution of the art of war from the age of Mahan through contemporary problems and military possibilities.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 351.

**353†\* Modern Basic Military Strategy and Tactics U 1**

A survey of modern strategical and tactical principles, and current military developments.

Sp Qtr. 1 2-hr sem. Prereq: 352.

**451\* Amphibious Warfare, Part I U 3**

The history of amphibious warfare and its development from the battle of Marathon through the Marshalls Campaign.

Au Qtr. 3 cl, 1 2-hr lab.

**452\* Amphibious Warfare, Part II U 3**

A study of the doctrinal techniques and present concepts of amphibious warfare from the Marianas Campaign through contemporary evolutions.

Wi Qtr. 3 cl, 1 2-hr lab.

**453\* Leadership and the Uniform Code of Military Justice U 1**

Survey of the UCMJ and a study of the psychology of human relationships and techniques of leadership as applied by Marines.

Sp Qtr. 1 2-hr sem.

**465 Principles of Naval Organization and Administration U 2**

Introduction to the structure and principles of naval organization and management.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: 323.

**476 Naval Leadership U 2**

A seminar study of management, leadership, and human relations problems and decisions which confront the junior Naval officer in today's fleet.

Wi Qtr. 2 cl, 1 2-hr lab.

**477 Naval Leadership U 2**

A continuation of 476 with emphasis on problem-solving techniques and solutions.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: 476.

## Nuclear Engineering

1079 Robinson Laboratory, 206 West 18th Avenue, 292-8519

**294 Group Studies in Nuclear Engineering U 1-5**

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 or hrs.

**505 Introduction to Nuclear Science and Engineering U G 3**

Discussion of nuclear energy and nuclear radiation; sources, methods of utilization, and projections for future engineering uses. Blue.

Su, Wi, Sp Qtrs. 3 cl. Prereq: Math 255 or 415 and Physics 133, or permission of instructor.

**605 Reactor Theory I U G 3**

Introduction to the concepts of neutron flux, neutron current, fission chain reactions, diffusion theory, criticality of nuclear assemblies, and time dependent behavior. Aldemir.

Au Qtr. 3 cl. Prereq: 505 or equiv, Math 255 and 415 or equiv with permission of instructor. Not open to students with credit for 660.

**606 Radiological Safety U G 3**

General principles of radiation, radioactivity, and protection methodology with emphasis on approved operating, handling, and waste disposal procedures, also regulations and biological effects. Carey.

Au Qtr. 2 cl, 1 2-hr lab.

**Corrosion**

See Metal En 681.

**636 Nuclear Power Plants U G 3**

A study of thermal and mechanical design aspects and economics of nuclear power plants and processes. Christensen.

Su, Wi Qtrs. 3 cl. Prereq: 505 and Mech Eng 501 or 309 with permission of instructor. Not open to students with credit for Mech Eng 636. Cross-listed in Mechanical Engineering.

**637 Heat Transfer Applications in Nuclear Reactor Systems U G 3**

The heat transfer applications in nuclear reactor systems include but are not limited to: heat transfer in PWR and BWR fuel rods, coolant, and reactor internals. Christensen.

Sp Qtr. 3 cl. Prereq: 636 or Mech Eng 636, and Mech Eng 510 or 311 with permission of instructor. Not open to students with credit for Mech Eng 637. Cross listed in Mechanical Engineering.

**641 Nuclear Engineering Measurements U G 2**

A theoretical and experimental study of the principles of radiation and reactor measurements. Miller.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: 505, 605, and Mech Eng 570 or Physics 516 or permission of instructor. Not open for grad or to students majoring in Nuclear Engineering.

**694 Group Studies in Nuclear Engineering U G 1-5**

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 or hrs.

**705 Reactor Theory II U G 3**

An analytical and mathematical treatment of multi-energy, multi-dimensional neutron diffusion theory including reactivity, criticality, and rigorous derivation of power reactor kinetics. Aldemir.

Wi Qtr. 3 cl. Prereq: 605.

**707 Numerical Methods in Particle Diffusion, Heat Transfer, and Radiation Transport U G 3**

Computer solutions of neutron diffusion, heat conduction, and radiation transport based on finite difference methods using marching, iterative, and direct solution schemes. Nakamura.

Wi Qtr. 3 cl. Prereq: 605 or Math 512 or Mech Eng 510, Cptr/Infr 541, and Eng Graph 200. Not open to students with credit for Mech Eng 707 or Nuclear Eng 767. Cross-listed in Mechanical Engineering.

**716 Nuclear Plant Safety U G 3**

Modeling theory developed and applied to nuclear systems to facilitate analysis of possible nuclear accidents; nuclear incidents, accident description criteria for evaluation, nuclear plant siting, and operational procedures. Aldemir.

Sp Qtr. 3 cl. Prereq: 605.

**720 Reactor Dynamics and Control U G 3**

Nuclear reactor and nuclear reactor system operation; control system performance requirements and control mechanisms; automatic control systems and their performance with transient and with steady state operation. Miller.

Wi Qtr. 3 cl. Prereq: 605.

**735 Introduction to Power Plant Operations I G 3**

Introduction to power plant systems, regulatory requirements, and integrated plant operations. Hajek.

Su Qtr. 2 1½-hr cl. Prereq: 605; 606; Mech Eng 501, Weld Eng 503, and Mech Eng 510 or Nuclr En 636 and 637; 741 or 744, or permission of instructor. Repeatable to a maximum of 6 or hrs.

**741 Nuclear Instrumentation U G 3**

A study of radiation detectors, measuring instruments, block diagrams, and applications to research, nuclear reactors, and measurement systems. Miller.

Au Qtr 2 cl, 1 3-hr lab. Prereq: 505 and 605; Math 415 and Elec Eng 520 or equiv.

**742 Nuclear Radiations and Their Measurement U G 3**

A theoretical and experimental study of nuclear radiation sources, interactions with matter, and detection. Blue.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 605, 606, 741 or permission of instructor.

**743 Nuclear Radiations and Their Shielding U G 3**

A theoretical and experimental study of nuclear radiation, interactions with matter, and shielding. Blue.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 742.

**744 Nuclear Reactor Laboratory U G 3**

An experimental study of nuclear reactor operating characteristics and fundamental concepts of reactor design. Miller.

Su Qtr. 1 cl, 1 4-hr lab. Prereq: 605 and 743.

**745 Introduction to Power Plant Operations II G 2**

Provides experience with integrated plant operations at a nuclear power plant simulator. Hajek.

Au Qtr. Prereq: 735 or permission of instructor. Repeatable to a maximum of 4 or hrs.

**751 Nuclear Materials Engineering U G 3**

A theoretical study of microstructural damage mechanisms and response of materials exposed to radiation fields.

Au Qtr. 3 cl. Prereq: 505, 605, and 742.

**765 Analysis of Neutron Chain Reactions U G 3**

The neutron distributions in infinite and finite mediums are analyzed with particular emphasis placed upon asymptotic solutions, space dependent slowing down theory, multigroup slowing down theory, and transport theory. Aldemir.

Sp Qtr. 3 cl. Prereq: 705 and Math 512 or equiv with permission of instructor.

**766 Nuclear Engineering Design U G 3**

Practice in the analysis and design of nuclear systems and the use of nuclear engineering principles. Christensen.

Sp Qtr. 1 cl, 2 2-hr lab. Prereq: 605 and 742.

**770 Plasmas and Controlled Fusion U G 3**

The Thermonuclear problem; approaches to a stable and sufficiently hot plasma; nuclear reactions, plasma kinetics, diagnostic devices, and engineering problems in research, development, and power production. Blue.

Au Qtr. 3 cl. Prereq: 605.

**776 Nuclear Fuel Cycles U G 3**

A study of the production, utilization, waste disposal, safeguards, and economic aspects of nuclear fuel cycles of importance in nuclear power technology. Bailey.

Au Qtr. 3 cl. Prereq: 505 and 636.

**793 Individual Studies in Nuclear Engineering U G 1-10**

Affords the qualified student the opportunity for independent reading, study, or laboratory work in a specialized field of interest.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**880 Advanced Topics G 3**

An advanced course of study for special topics in nuclear engineering; topics will be announced each quarter.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor. Each subdivision repeatable to a maximum of 12 cr hrs.

**880.01 Reactor Physics**

**880.02 Reactor Kinetics**

**880.03 Reactor Design**

**880.04 Fuel Management**

**880.05 Radiation Effects**

**880.06 Radiation Transport and Shielding**

**880.08 Nuclear Instrumentation**

**880.20 Special Topics**

**881 Nuclear Engineering Seminar G 1**

Current topics in nuclear engineering.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in nucl en. Repeatable to a maximum of 4 cr hrs.

**894 Group Studies in Nuclear Engineering G 1-5**

Special group studies of a selected area of nuclear engineering not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**999 Research in Nuclear Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Nurse Anesthesia

School of Allied Medical Professions

435 School of Allied Medical Professions Building, 1583 Perry Street, 292-0577

**300 Dimensions of Anesthesia U P 2**

Introduction to the profession of nurse anesthesia emphasizing medical and legal responsibilities of the practitioner.

Au Qtr. 2 cl. Prereq: Enrollment in the School of Allied Medical Professions or College of Nursing or permission of instructor.

**320 Principles of Anesthesia Practice U P 5**

Basic introduction to the principles and techniques for the use of anesthesia and related equipment, IV therapy, airway management, and other related procedures.

Au Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: Enrollment in Nurse Anesthesia Division.

**421 Applied Anesthesia: Phase I U P 5**

In-depth study of anesthetic selection and management for patients undergoing general surgery and orthopedic surgery; anesthetic management of the geriatric patient.

Wi Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 320.

**422 Applied Anesthesia: Phase II U P 4**

In-depth study of anesthetic selection and management for patients undergoing pediatric and obstetrical surgery; study of selected obstetrical procedures.

Sp Qtr. 2 2-hr cl. Prereq: 421.

**423 Applied Anesthesia: Phase III U P 4**

In-depth study of anesthetic selection and management for patients undergoing gynecological and genitourinary surgery.

Sp Qtr. 2 2-hr cl. Prereq: 422.

**431 Anesthesia Practicum I U P 6**

Supervised clinical education and experience in the administration of anesthesia in the operating room.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 421.

**432 Anesthesia Practicum II U P 6**

Supervised clinical education and experience in the administration of anesthesia in the operating room; stresses care of the patient presenting problems in anesthetic management.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 431.

**433 Anesthesia Practicum III U P 10**

Supervised clinical education and experience in the administration of anesthesia in the operating room; stresses care of the patient requiring advanced monitoring techniques.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 432.

**520 Applied Anesthesia: Phase IV U P 4**

An in-depth study of anesthetic selection and management for patients undergoing vascular and cardiopulmonary surgery, emergency surgery, neurosurgery, and head and neck surgery.

Su Qtr. 2 2-hr cl. Prereq: 421, 422, 423, and enrollment in Nurse Anesthesia Division.

**531 Anesthesia Practicum IV U P 10**

Supervised clinical education and experience with emphasis on more difficult anesthetic procedures and patients with more complex disease processes.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 433.

**532 Anesthesia Practicum V U P 10**

Supervised clinical education and experience with emphasis on more difficult anesthetic procedures and patients with more complex disease processes; stresses post-operative care.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 531.

**533 Anesthesia Practicum VI U P 10**

Supervised clinical education and experience with emphasis on more difficult anesthetic procedures and patients with more complex disease processes; stresses total anesthetic management.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 532.

**595 Anesthesia Seminar U P 2**

Conferences, group discussion; presentations on current issues.

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Enrollment in School of Allied Medical Professions, or the Colleges of Dentistry, Medicine, Nursing, Optometry, or Veterinary Medicine. Repeatable to a maximum of 8 cr hrs.

## Nursing

120 Newton Hall, 1585 Neil Avenue, 292-4041

**293 Individual Studies in Nursing U 1-8**

Individual investigation of selected areas in introductory nursing studies.

Su, Au, Wi, Sp Qtrs. Prereq: 1st or 2nd year standing in nursing and written permission of instructor. Repeatable to a maximum of 16 cr hrs. This course is graded S/U.

**294 Group Studies in Nursing U 1-5**

Selected topics in Nursing.

Su, Au, Wi, Sp Qtrs. Prereq: 1st or 2nd yr standing in nursing, or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**303 Basic Concepts and Skills in Patient Care U 2-3**

A study of selected concepts and skills in patient care used by health professionals.

Au Qtr. 2 cl, 2-hr lab. Prereq: Enrolled in a dental hygiene or allied medical professions clinical course. Not open to students in Nursing.

*Open only to students registered in the College of Nursing*

**335 Human Developmental Processes: A Nursing Perspective I U 4**

Normal biopsychosocial development from conception through adolescence; special emphasis on health promotion and implications for nursing.

Au Qtr. 4 cl. Prereq: 1st yr standing in nursing, or permission of instructor. Not open to students with credit for 315 or 316.

**336 Human Developmental Processes: A Nursing Perspective II U 4**

Normal biopsychosocial development from young adulthood through late adulthood; special emphasis on health promotion and implications for nursing.

Wi Qtr. 4 cl. Prereq: 335 or permission of instructor. Preference given to students registered in the College of Nursing. Not open to students with credit for 316 or 317.

**340† Nursing Process and Theory U 3**

Introduction to the nurse-client interaction using nursing process theory and research.

Au, Wi Qtrs. 3 cl. Prereq: Admission to nursing.

**341† Nursing Process and Health U 3**

The study of health and its relationship to lifestyle, application of teaching-learning, and nursing process in health promotion through the lifespan.

Sp Qtr. 3 cl. Prereq: Admission to nursing.

**342† Nursing Process and Interpersonal Relations U 3**

Study of professional relationships with emphasis on perception in personal, interpersonal, and social systems; experiences in observation, data collection, and communication with nursing process.

Au, Wi Qtrs. 3 cl. Prereq: Admission to nursing.

**350† Nursing Process: Health Assessment I U 3**

The study and application of health assessment techniques concerning the eyes, ears, head, neck, neurological, cardiovascular, and respiratory systems throughout the life cycle.

Au, Wi Qtrs. 2 cl, 3 hrs lab. Prereq: Admission to nursing.

**351† Nursing Process: Health Assessment II U 3**

The study and application of health assessment techniques concerning breast, normal pregnancy, gastrointestinal, genitourinary, musculoskeletal, and integumentary systems throughout the life cycle.

Au, Wi Qtrs. 2 cl, 3 hrs lab. Prereq: Admission to nursing.

**370 Transition into Baccalaureate Nursing****370.01 Theory and Process U 5**

Application of nursing theory and nursing process to the practice of professional nursing.

Au Qtr. 2 2-hr cl, 1-3 hr clinical. Prereq: RN student in nursing or permission of instructor; prereq or concur: Communic 209. Not open to students with credit for 340, 341, or 342.

**370.02 Laboratory/Clinical U 1-3**

Laboratory/clinical study encompassing nursing theory and nursing process.

Au Qtr. 1-3 3-hr lab. Prereq or concur: 370.01 or permission of instructor. Repeatable to a maximum of 3 cr hrs.

**400† Introduction to Nursing in Acute Health Care Delivery Systems U 3**

Information and skills necessary to begin to function in nursing roles in acute health care delivery systems.

Sp Qtr. 2 cl, 3 hrs lab. Prereq: 1st yr standing in nursing, 340, 341 or 342, or permission of instructor.

**430 Young Adults and Newborns U 4**

Au, Wi, Sp Qtrs.

**430.01 Nursing Process with Individuals Experiencing Health Alterations: Young Adults and Newborns**

Nursing process during the normal childbearing cycle and with alterations in childbearing/reproduction, endocrine function, and cellular proliferation.

4 cl. Prereq: Jr standing in nursing.

**430.02 Nursing Practicum with Individuals Experiencing Selected Health Alterations: Young Adults and Newborns**

Nursing process with young adults and newborns during childbearing and with clients experiencing alterations in childbearing/reproduction, endocrine function, cellular proliferation, and physiological coping.

12 hrs clinical. Prereq: Jr standing in nursing or permission of instructor; Concur or prereq: not more than one yr following 430.01.

**431 Infants and Children U 4**

Au, Wi, Sp Qtrs.

**431.01 Nursing Process with Individuals Experiencing Health Alterations: Infants and Children**

Infant and child's responses to alterations in health, specifically the nursing care necessary to attain, maintain, and regain an optimal health state.

4 cl. Prereq: Jr standing in nursing or permission of instructor.

**431.02 Nursing Practicum with Individuals Experiencing Health Alterations: Infants and Children**

Nursing process with practical application of the theoretical component of nursing care of children experiencing selected health alterations in acute care setting.

12 hrs clinical. Prereq: Jr standing in nursing or permission of instructor; Concur or prereq: not more than one yr following 431.01.

**432 Adults U 4****431.01 Nursing Process with Individuals Experiencing Health Alterations: Adults**

Adult and elderly individuals' responses to alterations in health and nursing interventions necessary to attain, maintain, and regain optimal health states.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Jr standing in nursing or permission of instructor.

**432.02 Nursing Practicum with Individuals Experiencing Health Alterations: Adults**

Application of nursing process with adults experiencing selected health alterations.

Au, Wi, Sp Qtrs. 12 hr clinical. Prereq: Jr standing in nursing or permission of instructor; Concur or prereq: not more than one yr following 432.01.

**520 Managing Groups of Clients****520.01 Nursing Process: Managing Groups of Clients U 3**

Study of management and leadership skills with groups of clients within a health care system and analysis of contemporary issues in nursing.

Au, Wi, Sp Qtrs. 3 cl. Prereq: Sr standing in nursing.

**520.02 Nursing Practicum: Managing Groups of Clients U 7**

Implementation of management and leadership skills with groups of clients within an acute health care system and analysis of contemporary issues in nursing.

Au, Wi, Sp Qtrs. 24 hr clinical. Prereq: Sr standing in nursing; concur or prereq: 520.01.

**521 Concepts in Mental Health and Mental Illness U 4**

Au, Wi, Sp Qtrs.

**521.01 Nursing Process: Concepts in Mental Health and Mental Illness**

Theoretical study of persons of all ages experiencing mental health alterations; emphasis upon the concepts of perception, interpersonal relations, social systems, and health.

4 cl. Prereq: Sr standing in nursing.

**521.02 Nursing Practicum: Concepts in Mental Health and Mental Illness**

Application of the nursing process to persons who are experiencing alterations in mental health; emphasis upon perception, interpersonal relations, social systems, and health.

12 hrs clinical. Prereq: Sr standing in nursing; concur or prereq: 521.01.

**522 Concepts of Health and Community Systems U 4**

Au, Wi, Sp Qtrs.

**522.01 Nursing Process: Concepts of Health and Community Systems**

Theoretical basis of nursing process with population aggregates including families, groups, and communities within an ecological context.

4 cl., Prereq: Sr standing in nursing.

**522.02 Nursing Practicum: Concepts of Health and Community Systems**

Nursing process application of concepts of health in community systems.

12 hrs clinical. Prereq: Sr standing in nursing; concur or prereq: 522.01.

**540 Introduction to Nursing Research U 3**

Introduction to the research process and the relevance to the advancement of nursing theory and practice.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Stat 125, Psych 220 or Sociol 549 and sr standing in nursing or permission of the instructor.

**H541 Introduction to Nursing Research U 5**

An introductory course in nursing research methods; alternate research designs and data analysis techniques for interested and capable students.

Prereq: Stat 125 or Psych 220 or Sociol 549, jr or sr standing, 3.50 cum pt-hr ratio or above and permission of instructor. Not open to students with credit for 540.

**593 Individual Studies U 1-8**

Study of selected problems in nursing.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 16 or hrs. This course is graded S/U.

**601 Theoretical Foundations of Nursing U G 3**

Study of knowledge development in nursing with a critical examination of selected theories, models, and concepts in nursing science.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Admission to master's program in nursing or permission of instructor.

**602 Advanced Practice Role in Nursing U G 2**

The study of roles for advanced practice in nursing; focus on roles of clinician, manager, educator, researcher, and consultant.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Admission to master's program in nursing or permission of instructor.

**603 Nursing within the American Health Care System U G 3**

Analysis of American health care delivery system and policy making process with an emphasis on social, political, and economic factors affecting delivery of nursing services.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Admission to master's program in nursing or permission of instructor.

**651 Nursing Process: The Culturally Diverse Client U G 3 or 5**

Study of nursing theory and process with culturally diverse clients; health values, beliefs, and behaviors of selected ethnic/minority groups are examined.

Au, Wi, Sp Qtrs. 3 cl, or 3 cl and 2-hrs arr. Prereq: Jr, sr, or grad standing in nursing; or permission of instructor.

**652 Nursing Process in the Operating Room U 3**

Study of nursing process with clients in the pre-operative, intra-operative, and post-operative phase; emphasis on scrub nurse and circulating nurse roles.

Au, Wi, Sp Qtrs. 1 cl, 4-hrs clinical. Prereq: Sr standing in nursing and permission of instructor. This course is graded S/U.

**653 Nursing-Child Assessment U G 3**

Study of selected child assessment tools; e.g., sleep/activity record; home observation measurement of environment; nursing child assessment feeding scale; assessment teaching scale.

Sp Qtr. 1 3-hr cl. Prereq: Sr or grad standing in nursing with permission of instructor.

**694 Group Studies in Nursing U G 2-5**

Group studies of special problems in nursing; topics vary for quarters.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr nursing or grad student. Repeatable to a maximum of 15 or hrs.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3 cl. Repeatable to a maximum of 6 or hrs. Limited to students in allied medical professions, education, law, nursing, medicine, social work, and theology (Columbus seminars).

**700.01 Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi Qtr.

**700.02 Changing Societal Values U G 3**

Identification and clarification of value considerations as they relate to professional problems in dealing with consumers/clients/patients.

Sp Qtr.

**700.03 Ethical Issues U G 3**

Ethical issues of concern to the professions and arising out of the advanced technology: euthanasia, mind control, malpractice, and social responsibility of the profession.

Au Qtr.

**700.04 Interprofessional Practicum in Clinical Settings U G 3 or 5**

Interprofessional teamwork in clinical settings.

Wi Qtr. Arr. Prereq: Permission of instructor.

**700.05† Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr. Prereq: Permission of instructor. This course is graded S/U.

**700.07 Interprofessional Approaches to Child Abuse and Neglect U G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**701 Research Methods in Nursing G 3**

Methods of research used in nursing emphasizing quantitative methods, critique of research studies, data management principles and techniques, and practice in computer applications.

Au, Wi, Sp Qtrs. 1 2-hr cl, 1 3-hr lab. Prereq: 540 or equiv, concurrent or previous enrollment in required parametric stat course, or permission of instructor

**702 Utilization of Research in Nursing Practice G 3**

Evaluation of current nursing practice with research utilization methods, development of critical analysis of extant research, and evaluation protocols for research based practice.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: 701.

**703 Nursing Study of Health I****703.01 Theoretical Perspectives in the Study of Health States I G 4**

Analysis of theories and research regarding health states across the life span with an emphasis on the bio-physiological perspective.

Au Qtr. 2 2-hr cl. Prereq: Admission to master's program in nursing or permission of instructor.

**703.02 Health Assessment Laboratory I G 1**

Analysis of health assessment data through a systems approach.

Au Qtr. 1 3-hr lab. Prereq of concur: 703.01

**704 Nursing Study of Health II****704.01 Theoretical Perspectives in the Study of Health States II G 4**

Analysis of theories and research regarding health states across the life span with an emphasis on the bio-physiological perspective.

Wi Qtr. 2 2-hr lab. Prereq: 703.01 or permission of instructor.

**704.02 Health Assessment Laboratory II G 1**

Analysis of health assessment data through a systems approach.

Wi Qtr. 1 3-hr lab. Prereq or concur: 704.01.

**753† Assessing the Performance of Nurses U G 3**

Focus on strategies and modes of implementation of assessment of performance of nurses in clinical and non-clinical settings.

2 cl, 1 hr arr. Prereq: Sr standing, or grad standing in nursing, or permission of instructor.

**793 Individual Studies in Nursing U G 1-5**

Reading, conferences, and minor investigation by an individual student who wishes to study a particular nursing problem intensively.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**797 Interdepartmental Seminars U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced. Repeatable by permission.

Au, Wi, Sp Qtrs. Repeatable by permission of college secretary.

**802 Research in Nursing G 3**

Research in nursing and its role in developing nursing; application in nursing of various methodologies and techniques and particular problems of design are considered.

Au, Wi Qtrs. 1-3 cl, or up to 4 4-hr lab. Prereq: Course in basic statistical methods.

**802.01† Non-Experimental Designs**

Application in nursing of non-experimental approaches of research, pertinent data collection techniques and tools, problems most frequently encountered in designing and conducting non-experimental studies.

Wi, Sp Qtrs. 2 cl, 2 hr lab. Prereq: 802.02; prereq or concur: course in basic statistical methods.

**802.02 Inquiry in Nursing**

Components of fulfilling man's urge to explain including the scientific method and the ways of testing reality appropriate in the discipline of nursing.

Au Qtr. 2 cl, 1 hr arr. Prereq or concur: Statistics course and/or concur 801.

**803 Nursing of Individuals****803.01 Advanced Theoretical Perspectives in the Study of Health States G 3 or 4**

Evaluation of theories and research of health states from a psychosocial-cultural and physiological perspective; development of a multicausal framework for health assessment of the individual.

Au Qtr. 3 cl, 3 hr lab (optional).

**803.02† Advanced Concepts in the Measurement of Health Status Variables G 3 or 4**

Identification of psychosocial-cultural and physiological variables affecting the health status of the individual; analysis of health assessment data through a systems approach.

3 cl, 3 hr lab (optional). Prereq: 803.01 and permission of instructor.

**803.03† Analysis of Advanced Measurements G 3-6**

Analysis and synthesis of variables that impinge on the health status of the individual; application of data analysis in a preceptorship and seminar experience.

3 cl; 3 hr lab, 2 hr sem (optional). Prereq: 803.01 and permission of instructor.

**804 Nursing of Groups G 3**

Study of common core of knowledge in nursing with respect to the interpersonal systems inherent in health care institutions; applications to human process.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**805 Nursing Within Larger Social Systems G 3**

Study of the common core of knowledge in nursing with respect to social systems as might be applied in health care systems.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**806 Nursing Practice Problems G 2-10**

Studies of nursing care problems pertaining to a variety of client groups; may register for more than one section concurrently.

Au, Wi, Sp Qtrs. 2 cl, lab arr. Prereq: Permission of instructor and current Ohio license; concur 801. Each decimal subdivision repeatable to 10 or hrs.

**806.01 Family Health Care**

Study of the family and the role of the nurse with healthy families.

Prereq: Permission of instructor.

**806.02 Children**

Application of theoretical, conceptual, and affective components needed to conduct inquiry and to practice nursing with children (newborn to six years) and their families.

Prereq: Permission of instructor.



**806.03 Schoolagers and Adolescents**

Application of theoretical, conceptual, and affective components needed to conduct inquiry and to practice nursing with children (school age and adolescent) and their families.

Prereq: Permission of instructor.

**806.04 Young and Middle Adults**

Study of health problems of adults.

Prereq: Permission of instructor.

**806.05 Late Adults**

Study of health problems of the aged.

Prereq: Permission of instructor.

**806.06 Acute Health Crises**

Studies of crisis and crisis intervention with respect to the individual, group, and family organization with special emphasis on loss.

Prereq: Permission of instructor.

**806.07 Chronic Health Problems**

Studies of chronicity, disability, impairment, and rehabilitation in long-term problems.

Prereq: Permission of instructor.

**806.08 Community Health Problems**

Studies of community, community health problems, and nursing role in identifying and studying these problems.

Prereq or concur: 805 or permission of instructor.

**860 Theoretical Bases for Leadership Roles in Nursing I G 3**

A study of theoretical bases for administrative, teaching, and practice roles in nursing.

Au Qtr. 3 cl hrs. Prereq or concur: 801.

**861 Theoretical Bases for Leadership Roles in Nursing II G 3**

A study of concepts basic to administrative, teaching, and practice roles in nursing.

Wi Qtr. 3 cl hrs. Prereq or concur: 801.

**862 Practicum in Nursing G 2-10**

Supervised experiences which permit in-depth study of the roles and relationships in administration, practice, or teaching of nursing.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

**862.01 Administration**

Study of administrative position with opportunity to test theoretical knowledge in a health care system.

Wi, Sp Qtrs. 2 hr sem; field work.

**862.02† Primary Care Practitioner**

Supervised experiential component which permits in-depth study of the roles and relationships in the primary care area of practice.

2 2-hr cl, lab.

**862.03 Acute Care Practitioner**

Supervised experiential component which permits in-depth study of the roles and relationships in the acute care area of practice.

Su, Au Qtrs. 2 2-hr cl, lab.

**862.04† Long-Term Care Practitioner**

Superv. experiential component which permits in-depth study of the roles and relationships in the long-term area of practice.

2 2-hr cl, lab.

**862.05 Teaching in a Baccalaureate Program in Nursing**

Supervised experiential component of preparation to teach nursing in a baccalaureate program.

Au, Sp Qtrs. 3 sem; field work.

**862.06† Teaching in an Associate Degree Program in Nursing**

A supervised experiential component of preparation to teach in a community college nursing program.

3 sem; field work.

**880 Seminar G 2-5**

Discussion of issues, trends, and problems in nursing; topics to be announced.

Su Qtr. Repeatable to a maximum of 30 cr hrs.

**894 Group Studies in Nursing G 2-5**

Reading and group conferences for graduate students who desire to study a particular trend in nursing or nursing education.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor.

Repeatable to a maximum of 5 cr hrs.

**900 Pro Seminar in Nursing G 2**

An examination of current issues about nursing science and career trajectories of doctorally prepared nurses.

Au Qtr. 2 cl. Prereq: PhD student in nursing, or permission of instructor. Repeatable to a maximum of 4 cr hrs.

**901 Theoretical Foundations of Nursing Science G 5**

Study of the major philosophies of nursing from a historical perspective and analysis of methods for theory development in nursing science.

Au Qtr. 5 cl. Prereq: PhD student in nursing, or permission of instructor; prereq or concur: 900.

**902 Quantitative and Qualitative Analysis in Nursing Science**

Study of quantitative and qualitative methodologies used in developing and conducting holistic health research at the individual, family, and community levels of analysis.

3 cl, 4-hrs lab. Prereq: PhD student in nursing or permission of instructor.

**902.01 Qualitative Methods in Nursing Science G 5**

Study of qualitative methods used in conducting nursing research; laboratory experience will include field work; data management and analysis.

Au Qtr. Prereq: 904 or permission of instructor.

**902.02 Quantitative Methods in Nursing Science G 5**

Study of biobehavioral quantitative methods and measurement strategies used in conducting nursing research; laboratory experiences will include instrument testing, data management, and analysis.

Wi Qtr. 3 cl, 4 hrs lab. Prereq: 904, 15 cr hrs of res and stat or permission of instructor.

**902.03 Research Program Development in Nursing G 3**

Study of theoretical, methodological, and analytical approaches building and testing in nursing science, grantmanship process, and career development of a nurse scientist.

Sp Qtr. 2 cl, 3-hr lab. Prereq: 902.01, 902.02, 905.01, 906.01, 907.01, or permission of instructor.

**903 Theory Synthesis I G 3**

In-depth analysis of health theories from nursing, biological, and behavioral sciences; emphasis on theories derived from a nursing perspective.

Wi Qtr. 3 cl. Prereq: 900, enrollment in PhD program, or permission of instructor.

**904 Theory Synthesis II G 3**

In-depth analysis of selected theories and concepts from the biological and behavioral sciences which have utility for nursing.

Sp Qtr. 3 cl. Prereq: 900, enrollment in PhD program, or permission of instructor.

**905 Studies in Nursing Science at the Individual System Level**

Advanced studies in nursing theory and nursing research about individuals in nursing science.

5 cl. Prereq: 900 and enrollment in PhD program or permission of instructor.

**905.01 Study in Nursing Science at the Individual System Level G 3**

Study of nursing theory about the individual from a holistic health perspective and development of nursing theory about the individual.

Au Qtr. 3 cl.

**905.02† Issues and Trends G 5**

Study of theoretical, research, and ethical issues in the development of nursing theory about the individual.

Wi Qtr.

**905.03† Special Topics G 5**

In-depth exploration of selected contemporary topics and problems critical to the continuing development of nursing at the individual level.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

**906 Studies in Nursing Science at the Family System Level**

Advanced studies in family nursing theory and family nursing research in nursing science.

5 cl. Prereq: 900 and enrollment in PhD program or permission of instructor.

**906.01 Studies in Nursing Science at the Family System Level G 3**

Study of family nursing theory from a holistic health perspective and methods for theory construction about the family system in nursing science.

Wi Qtr. 3 cl.

**906.02† Issues and Trends G 5**

Study of theoretical, research, and ethical issues in the development of family nursing theory.

Wi Qtr.

**906.03† Topical Seminar G 5**

An in-depth study of family nursing research studies from a holistic health perspective.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

**907 Studies in Nursing Science at the Community System Level**

Advanced studies in community nursing research in nursing science.

5 cl. Prereq: 900, enrollment in PhD program or permission of instructor.

**907.01 Studies in Nursing Science at the Community System Level G 3**

Study of community nursing theory from a holistic perspective and methods for theory construction about the community system in nursing science.

Sp Qtr. 3 cl.

**907.02† Issues and Trends in Nursing Science G 5**

Study of theoretical, research, and ethical issues in the development of community nursing theory.

Wi Qtr.

**907.03† Topical Seminar in Nursing Science at the Community Level G 5**

An in-depth study of community nursing research studies from a holistic health perspective.

Sp Qtr. Repeatable to a maximum of 10 cr hrs.

**999 Research in Nursing G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Obstetrics and Gynecology

505 Means Hall, 1655 Upham Drive, 293-8697

The faculty of the Department of Obstetrics and Gynecology is responsible for the instruction in the pathophysiology of the reproductive system as part of Med II in the medical curriculum. This instruction is offered under the course designated as Med Coll 663. The department also offers clinical instruction in obstetrics and gynecology during Med III and IV. This clinical clerkship is designated Med Coll 664. Additional clinic electives are offered in perinatology, reproductive endocrinology and oncology after the required two month Med III and IV clinical rotation. Research electives are available at any time in the curriculum of medical education.

**999 Research in Obstetrics and Gynecology G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Occupational Therapy

School of Allied Medical Professions

406 School of Allied Medical Professions Building, 1583 Perry Street, 292-5824

**435 The Analysis of Human Motion Relative to Occupational Therapy Practice U 4**

A study of nerve-muscle-bone structures as these relate to observing, counting, and measuring overt bodily movement.

Au Qtr. 3 1-hr cl, 1 2-hr lab. Prereq: 540, Anatomy 201, and enrollment in Occupational Therapy Division.

**450 Practice of Occupational Therapy in Hospital Settings U 5**

The development of observational skills through analysis of health care team in a hospital setting.

Wi, Sp Qtrs. 2 1-hr cl, 6 clin hrs. Prereq: 315.

**451 Directed Practicums U 4**

Systematic observation, assessment, and development of treatment plans for selected chronic emotional and physical problems. Page and Rybski.

Au, Sp Qtrs. 1 cl, 6 clin hrs. Prereq: 435, 450, 451, and 452; concur: 661 or 663. Repeatable to a maximum of 10 cr hrs.

**452 Interpersonal Dynamics and Task Oriented Groups in Occupational Therapy U 3**

Identification, examination, and demonstration of factors that facilitate or hinder small primary group functioning in occupational therapy. Page.

Au Qtr. 1 2-hr cl, 1 2-hr lab. Prereq: Enrollment in Occupational Therapy Division.

**522 Studies in Psychopathology U 2**

A description of selected psychopathic disorders, diagnoses of behavior, psychiatric treatment procedures and their implications for the practice of occupational therapy.

Wi Qtr. 1 cl, 2-hr lab. Prereq: 3 cr hrs of Psych 330, 331, 332, 333, or 530; or permission of instructor.

**540 Alternative Theoretical Constructs of Occupational Therapy Practice and Professional Issues U 5**

Examination of the history, organization, and issues of the profession; examination of alternative theoretical constructs that characterize occupational therapy practice.

Au Qtr. 2 2½-hr cl. Prereq: Enrollment in occ ther.

**541 Occupational Behavior Construct in the Practice of Occupational Therapy U 3**

Conversion of selected theoretical propositions in occupational behavior for assessment, planning, and implementing occupational therapy.

Au Qtr. 2 1½-hr cl. Prereq: 315, 450, and 540.

**545 Activity Analysis and Media U 2**

Activity analysis in relationship to self-care, work, and play. Adamson.

Wi, Sp Qtrs. 2 2-hr labs. Prereq: 315 and 540.

**546 Applied Media: Dysfunction, Equipment, and Graded Activity U 2**

Grading activity and adapting selected activities that have an impact on performance in patients with selected dysfunctions. Adamson.

Au Qtr. 2 2-hr labs. Prereq: 435 and 545.

**560 Neurodevelopmental Constructs in the Practice of Occupational Therapy U 3**

An examination of the neurodevelopmental constructs and their application to the practice of occupational therapy. Patterson.

Au Qtr. 2 1½-hr cl. Prereq: 435, Alli Med 425, Anatomy 201, and enrollment in Occupational Therapy Division.

**595 Seminar U 1-3**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs.

**661 Occupational Therapy in Mental Health U 5**

The competing theoretical constructs and related intervention techniques for the practice of occupational therapy in the treatment of patients with chronic emotional problems. Page.

Sp Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 315, 450, 522, and 540.

**662 Application of the Neurodevelopmental Constructs U 4**

Analysis of case studies for deviations that require application of neurodevelopmental assessment techniques to develop treatment plans. Patterson.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 435, 450, 545, 546, and 560.

**663 Physical Dysfunction and the Practice of Occupational Therapy U 5**

The application of assessment techniques to patients with selected physical dysfunction problems for the development of treatment plans. Rybski.

Wi Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: 435, 450, 540, and 546.

**664 Advanced Therapeutic Intervention U 3**

Principles and methods of evaluation, treatment, and prevention for advanced clinical students.

Au, Wi, Sp Qtrs. 2 cl hr, 1 2-hr lab. Prereq: 560, 661, 662, 663 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs; subdivisions not repeatable.

**664.01 Psycho-Social Intervention****664.03 Rehabilitation Technique****670 Introduction to Alternative Research Methodologies Used in Occupational Therapy Practice U 3**

Historical, theoretical, and descriptive research methodologies applied to the practice of occupational therapy. Grant.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 540, 661, and elementary stat.

**675 Developing Plans for Initiating Occupational Therapy Services U 3**

Developing and evaluating plans for introducing occupational therapy practice in selected clinical facilities requiring specialized services.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 2nd yr standing in Occupational Therapy Division.

**685 Field Work in Occupational Therapy**

A practical experience in application of the principles and functions of occupational therapy in selected hospitals, health care facilities, and community agencies. Adamson.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Cumulative pt-hr ratio of 2.25 in all professional courses and written permission of division director. Repeatable to a maximum of 18 cr hrs. These courses are graded S/U.

**685.01 Mental Health U 6****685.02 Physical Function U 6****685.03 Specialty Area U 2, 4, 6**

1, 2 or 3 months, arr with instructor. Repeatable to a maximum of 6 cr hrs.

**693 Individual Studies U 1-5**

Individual reading or research projects by special agreement between instructor and student.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Supervised group studies of special topics pertinent to the practice of occupational therapy.

Su, Au, Wi, Sp Qtrs. Open only to students enrolled in Occupational Therapy Division. Repeatable to a maximum of 15 cr hrs.

## Ophthalmology

5024-B University Hospitals Clinic, 456 West 10th Avenue, 293-8159

The faculty of the Department of Ophthalmology is responsible for the instruction in the pathophysiology of the eye and its adnexa as part of the Med II of the medical curriculum. This instruction is offered under the course designation Med Coll 663. The Department also offers clinical instruction in ophthalmology during Med III and Med IV of the Medical Program designated Med Coll 664. This instruction is offered as a clinical elective period of two weeks to one month as part of the ophthalmology/otolaryngology elective. Research electives are available at any time in the curriculum of medical education.

**999 Research in Ophthalmology G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Optometry

A 400 Starling-Loving, 338 West 10th Avenue, 292-2647

**401 Survey of Optometry P 1**

Development of optometry and optometric education; scope of optometric services; sources of vision information; kinds of current vision research.

Au Qtr. 1 cl. Prereq: Optomtry 1st yr standing.

**411 Intermediate Geometric Optics P 5**

Thick-lens optics; image evaluation; application to optometric systems.

Wi Qtr. 3 cl, 1 4-hr lab. Prereq: Optomtry 1st yr standing and Phys Opt 501.

**431 Ophthalmic Optics I P 5**

Ophthalmic optics of single-vision and multifocal spectacle lenses; measurement and inspection of spectacle lenses; manufacturing processes.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: Optomtry 2nd yr standing and 411.

**432 Ophthalmic Optics II P 5**

Ophthalmic lens design; minimizing lens aberrations; theory and practice in fitting and adjusting spectacles.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 431.

**433 Ophthalmic Optics III P 4**

The optics of corneal and scleral contact lenses; laboratory exercises in inspecting, measuring, edging, surfacing, and modifying contact lenses.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 432.

**441 Practical Optometry I P 5**

Theory and techniques of keratometry, skiametry, objective and subjective tests of refraction, accommodation, and functions of the extra-ocular muscles.

Au Qtr. 4 cl, 1 4-hr lab. Prereq: Optomtry 2nd yr standing, Physics 112, and Math 150.

**442 Practical Optometry II P 4**

Correlation and analysis of data; systematic determination of the etiology of anomalies and sources of visual discomfort and inefficiency; diagnosing and prescribing.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 441.

**443 Practical Optometry III P 4**

Ophthalmoscopy and examination of the external parts and the media of the eye; case histories; techniques of investigating special types of anomalies; diagnosing; prescribing.

Sp Qtr. 3 cl, 1-3 hr lab. Prereq: 442.

**641 Clinical Practice in Optometry I P 5**

Clinical practice in examining eyes and carrying out corrective procedures; the conference periods are devoted to the discussion of problems encountered during the clinic periods.  
Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 443.

**642 Clinical Practice in Optometry II P 5**

Continuation of 641.  
Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 641.

**643 Clinical Practice in Optometry III P 5**

Continuation of 642.  
Su, Au, Wi, Sp Qtrs. 2 cl, 9 clinic hrs. Prereq: 642.

**651 Orthoptics P 4**

Definitions, characteristics, incidence, and phenomenology of visual problems producing loss or inefficiency of binocular vision; diagnosis, prognosis, and orthoptic treatment of such problems.  
Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

**652 Aniseikonia and Low Vision P 4**

Etiology; clinical methods of diagnosing and evaluating aniseikonia and low vision; design of optical aids for such conditions; environmental aids and agencies available to the visually handicapped.  
Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

**653 Contact Lenses I P 4**

The uses of contact lenses; theory and methods of prescribing and fitting; specification and verification; post-fitting care; contact lens solutions.  
Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Optomtry 3rd yr standing and 443.

**654 Contact Lenses II P 4**

Theory and clinical methods involving meridional and bifocal contact lenses; fitting astigmatic corneas and aphakic eyes; haptic and keratoconic lenses; cosmetic shells and prosthetic eyes.  
Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 653.

**660 Ophthalmic Pathology P 5**

Gross and microscopic pathology of the eye, including diseases of the conjunctiva, orbital cavity, and pertinent pathology of the central nervous system.  
Au Qtr. 3 cl, 4 lab hrs. Prereq: Optomtry 2nd yr standing, Pathology 650.

**682 Clinical Ocular Pharmacology P 3**

A survey of pharmacologic principles pertaining to drugs which relate to normal and abnormal conditions of the eye, including topical and systemic agents affecting visual performance.  
Sp Qtr. 3 cl. Prereq: Pharmacol 681, and 3rd yr standing in optomtry. Open only to students registered in the College of Optometry.

**701 Applied Pathology of the Eye I P 4**

Advanced ophthalmoscopy, slit lamp microscopy, tonometry, and other methods of detecting pathological conditions; systematic study of ocular diseases; artificial eyes and other prosthetic devices.  
Sp Qtr. 3 cl, 1 2-hr lab. Prereq: 443 and Phys Opt 608.

**702 Applied Pathology of the Eye II P 4**

Motor disturbances of eyes, paralytic strabismus, peripheral fixation anomalies, nystagmus, ptosis, ptosis crutches, anomalous accommodative, and pupillary responses.  
Au Qtr. 3 cl, 1 2-hr lab. Prereq: 701.

**703 Applied Pathology of the Eye III P 4**

Visual fields; scotometry; subnormal central vision involving pathology; telescopic lenses and aids for subnormal vision; theory and practice in the use of contact lenses.  
Au Qtr. 3 cl, 1 2-hr lab. Prereq: 702.

**721 Optometric Economics and Jurisprudence P 3**

Historical background; legal status; practice building techniques; office accounting and general practice management; representative organizations in optometry; professional ethics.  
Wi Qtr. 3 cl. Prereq: 643.

**722 Civic and National Problems in Eye Care P 3**

Number, distribution, supply interrelationships, and roles of the various ophthalmic groups; prevalence of visual anomalies; governmental and public-health aspects of vision care.  
Wi Qtr. 3 cl. Prereq: 721.

**741 Advanced Practical Optometry I P 2**

Consideration of selected conditions encountered during the 4th year clinical assignments; their diagnosis and treatment.  
Au Qtr. 2 cl. Prereq: 643.

**742 Advanced Practical Optometry II P 2**

Continuation of 741.  
Wi Qtr. 2 cl. Prereq: Optomtry 4th yr standing and 741.

**743 Advanced Practical Optometry III P 2**

Continuation of 742.  
Sp Qtr. 2 cl, 3 clinic hrs. Prereq: Optomtry 4th yr standing and 742.

**745 Special Clinical Practice P 1-6**

Clinical experience in specialized phases of optometric practice.  
Su, Au, Wi, Sp Qtrs. 3-18 clinic hrs. Prereq: Optomtry 4th yr standing and course indicated in selected subdivision. Repeatable to a maximum of 30 cr hrs.

**745.01 General Practice**

Prereq: 643.

**745.02 Contact Lenses**

Prereq: 654.

**745.03 Strabismus and Orthoptics**

Prereq: 651.

**745.04 Ocular Pathology**

Prereq: 703.

**745.05 Aniseikonia**

Prereq: 652.

**745.06 Low Vision**

Prereq: 652.

**745.07 Perceptual-Motor Problems**

Prereq: 643.

**745.08 Ophthalmic Dispensing**

Clinical experience in ophthalmic dispensing.

Prereq: 643.

**745.09 Geriatric Optometry**

Specialized techniques, evaluation methods, patient instructions, and lens design appropriate to the vision problems of the older patient.

Prereq: 643.

**745.10 Pediatric Optometry**

Specialized testing techniques and methods of evaluation appropriate to infants and children (through age 12) as well as exceptional children of any age.

Prereq: 643.

**780 Topics in Optometry P 1-5**

Clinical and theoretical aspects of areas of current interest in optometry.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in College of Optometry and permission of dean. Repeatable to a maximum of 30 cr hrs. Each subdivision repeatable to a maximum of 10 cr hrs.

**780.01 General Optometry****780.02 Contact Lenses****780.03 Strabismus****780.04 Ocular Pathology**

- 780.05 Aniseikonia
- 780.06 Low Vision
- 780.07 Visual Development
- 780.08 Visual Perception
- 780.09 Visual Performance
- 780.10 Environmental Vision
- 780.11 Pediatric Optometry
- 780.12 Geriatric Optometry
- 780.13 Ophthalmic Optics
- 780.14 Special Optical Design
- 780.15 Optometric Instrumentation
- 780.16 Public Health Optometry
- 780.17 Ocular Pharmacology
- 780.18 Microbiology of the Eye
- 780.19 Binocular Vision
- 780.20 Visual Problems of Minorities
- 780.21 Special

## Otolaryngology

4100 University Hospital Clinic, 456 West 10th Avenue,  
293-8150

The faculty of the Department of Otolaryngology is responsible for instruction in the pathophysiology of disease of the ear, nose, and throat as part of MED II of the medical curriculum. This instruction is offered under the course designated Med Coll 663. The Department also offers clinical instruction in otolaryngology during MED III and MED IV of the medical program designated Med Coll 664. This instruction is offered as a clinical elective period of 1-2 months and as part of the ophthalmology/otolaryngology elective.

### 794 Group Studies in Otolaryngology P 6

Clinical application of the principles of otolaryngology with patients in clinic and operating room; at least one hour daily supervised teaching by staff members; instruction by slides, films, seminars, and personal supervision. Schuller and Staff.

1 month, offered all months. Prereq: Permission of instructor. This course is graded S/U.

## Pathology

4170 Graves Hall, 333 West 10th Avenue, 292-4471

### 501 Principles of Hematopathology U 2

Clinical hematology, including coagulation; urinalysis. Brandt and Theil.

Au Qtr. 2 cl. Prereq: Admission to med tech or permission of instructor. This course is no longer graded S/U.

### 502 Principles of Clinical Microbiology U 2

Clinical microbiology, including mycology. Buesching and Ayers.

Wi Qtr. 2 cl. Prereq: Admission to med tech or permission of instructor. This course is no longer graded S/U.

### 503 Principles of Immunology U 1

Immunology. Blazina and Neff.

Sp Qtr. 1 cl. Prereq: 502 and admission to med tech or permission of instructor. This course is no longer graded S/U.

### 504 Principles of Clinical Chemistry U 2

Clinical blood and tissue chemistry; modes of investigating diseases by biochemical methods, and their interpretation. Lott.

Su Qtr. 2 cl. Prereq: Admission to med tech or permission of instructor. This course is no longer graded S/U.

### 505 Principles of Immunohematology U 1

Immunohematology.

Au Qtr. 1 cl. Prereq: 503 and admission to med tech or permission of instructor.

### 601 General Pathology G 5

Pathophysiology and manifestations of disease.

Au Qtr. 39 hrs lecture, 10 3-hr labs. Prereq: One course in anatomy, physiologic, organic chem, biochem and permission of instructor.

### 610 Administration in Laboratory Medicine G 3

Principles of administration applied to the management of health care services in laboratory medicine. Snyder.

Wi Qtr. 3 cl. Prereq: Grad standing in pathology or allied med; pathol resident; or permission of instructor.

### 630 Chemical Pathology G 3

Clinical chemistry of disease.

Sp Qtr. 3 cl. Prereq: Grad standing and Biochem 601 and 602; or permission of instructor.

### 640\* Pathobiology P G 4

Seminars on topics in comparative cellular pathology. Barth and Capen.

Wi Qtr. 4 cl. Prereq: Permission of instructor. Cross-listed in Vet Path.

### 650 Pathology P G 5

Designed to give optometry and selected graduate students an understanding of general pathology including cell injury, inflammation, infection, hemodynamic disturbances, neoplasia, basic immunopathology, and selected specific diseases; with gross and histologic demonstrations. Baker.

Au Qtr. 5 cl. Prereq: Optomtry 2nd yr standing or permission of instructor.

### 655 General Pathology P 4

General pathology, including the etiology of diseases, disturbances of nutrition, inflammation, regeneration, and organ pathology. Marquard.

Sp Qtr 4 cl, 2 3-hr lab. Prereq: Dent 2nd yr standing.

### 665 Clinical Immunopathology P G 3

Current overview of clinical immunopathology, etiology, clinical characteristics, and lab diagnosis of immune-mediated diseases.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Med Micr 701 or Microbiol 632 or equiv grad immunology course strongly recommended.

### 680 Research Design in Biomedical Sciences U G 3

Concepts related to initiating and conducting research; experimental design; use of computer graphics and statistics; and analysis of research reports.

Wi Qtr. 1 2-hr cl, 1 hr arr. Prereq: Sr standing in all med with permission of instructor, or grad standing in all med, pathol or related field.

### 792 Special Lectures in Pathology U P G 3

Lectures in special fields of pathology; one decimal subdivision will be offered each quarter.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: Grad standing or enrollment in MD program or undergrad with permission of instructor. Repeatable to a maximum of 24 cr hrs.

#### 792.01 Blood and Bone Marrow

Pathology of the blood and bone marrow with emphasis on the laboratory diagnosis of anemia. Stevenson.

#### 792.02 Lectures in Clinical Chemistry

The metabolic basis of disease, interpretation of laboratory data, and clinical laboratory methodology. Newman, Lott, Roberts, and Walters.

#### 792.04 Neuropathology

Selected lectures on neuropathology. Yates.

## 792.05 Immunohematology

Transfusion related clinical and laboratory problems and procedures.

## 792.08\* Cellular Pathology

Cellular pathology with emphasis on ultramicroscopic changes in cell injury. Lucas.

Offered odd yrs only.

## 792.11 Automation and Instrumentation in Clinical Chemistry

Advanced analytical technique as applied to clinical chemical problems with discussion of the applicable area of chemical pathology. Lott.

## 793 Individual Studies in Pathology U P G 3-6, 12, 18

1, 2, or 3 months; offered all months. (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Med III and IV standing, grad standing, or undergrad standing with permission of instructor. When registration is for 3 professional or hrs, an additional 3 hr professional course must be taken. Each subdivision repeatable to 18 or hrs. These courses are graded S/U.

### 793.01 Pathologic Anatomy

Sharma.

### 793.04 Clinical Chemistry

Lott and Newman.

### 793.05 Neuropathology

Liss.

### 793.06 Immunohematology

Kennedy.

### 793.07 Clinical Microbiology

Ayers.

### 793.08 Pediatric Pathology

Newton.

### 793.09 Surgical Pathology

Clausen.

### 793.11 Special Topics in Pathologic Anatomy

Sharma.

### 793.12 Ultrastructure of Cells in Disease

Sharma.

### 793.13 Laboratory Medicine—The Erythrocyte

Stevenson.

### 793.15 Problems in Pathology and Clinical Pathology

## 794 Group Studies in Pathology U P G 1-3

Group studies of selected topics in various fields of pathology.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing, 2nd yr med student, or undergrad with permission of instructor. Repeatable to a maximum of 12 or hrs.

## 850 Seminar in Pathology and Clinical Pathology G 2

Discussion of pertinent literature, presentation and discussion of research work, and demonstration of fresh specimens and slides.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Grad standing in pathol. This course is graded S/U.

## 851 Neurochemical Pathology G 1

Lecture series on selected topics relevant to biochemical mechanisms of neurological disorders; topics change each qtr.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in pathol. Repeatable to a maximum of 10 or hrs. This course is graded S/U.

## 999 Research in Pathology G Arr

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Pediatrics

Children's Hospital, 700 Children's Drive and N-118 Doan Hall, 410 West 10th Avenue, 461-2076

## 793 Individual Studies in Pediatrics

Su, Au, Wi, Sp Qtrs (grad cr). 1, 2, 3, or 4 months (prof cr). Prereq: Permission of instructor. These courses are graded S/U/I.

### 793.02 Genetics P 6, 12, 18 G 1-5

Sommer.

1, 2, or 3 months; offered all months. Repeatable to a maximum of 18 or hrs for professional credit.

### 793.03 Infectious Diseases P 6, 12, 18 G 1-5

Powell.

1, 2, 3, or 4 months; offered all months. Repeatable to a maximum of 24 or hrs for professional credit.

### 793.06 Blood Diseases of Infants and Children P 6 G 1-5

Ruymann.

1 month, offered all months except June.

# Persian

256 Cunz Hall, 1841 Millikin Road, 292-9255

## 101 Elementary Persian I U 5

Introduction to Persian; development of listening, reading, speaking, and writing skills.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

## 102 Elementary Persian II U 5

Further development of listening, reading, speaking, and writing skills.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

## 103 Intermediate Persian I U 5

Development of listening, reading, speaking, and writing skills; reading of simplified literary texts about Persian culture.

Sp Qtr. 5 cl. Prereq: 102. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

## 104 Intermediate Persian II U 5

Reading of Persian short stories and poems with attention to literary and cultural appreciation; development of basic language skills.

Au Qtr. 5 cl. Prereq: 103. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

## Masterpieces of Near Eastern Literatures in Translation

See JANELL 272.

## 293 Individual Studies U 1-5

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

## 294 Group Studies U 1-5

Special topics to be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

## 371\* Persian Literature in Translation U 5

A study of Persian literature in translation and the history of its discourses, genres, and styles.

Wi, Sp Qtrs. 5 cl.

**401 Advanced Persian I U 5**

Extensive reading from literary texts, with practice in conversation and composition.

Wi Qtr. 5 cl. Prereq: 104 or equiv. Not open to students with credit for 294 Wi Qtr 1983 or Wi Qtr 1984.

**402 Advanced Persian II U 5**

Advanced reading from literary texts, with further practice in conversation, composition, and translation.

Sp Qtr. 5 cl. Prereq: 401 or equiv. Not open to students with credit for 294 Sp Qtr 1983 or Sp Qtr 1984.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Special topics to be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**H783 Honors Research U 3-5**

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

## Pharmacology

5198 Graves Hall, 333 West 10th Avenue, 292-8608

**400 Pharmacology for Circulation Technologists U 5**

A survey of pharmacology emphasizing cardiovascular drugs and agents used in circulation technology and general surgery. Hollander.

3 cl. Prereq: Physiol 311 and 321; Phys Chem 311 and 312; and permission of instructor. Open only to students registered in the School of Allied Medical Professions.

**600 General Pharmacology U G 3**

Introduction to the general principles of pharmacology, drug classification, and the sites and mechanisms of drug action. Tejwani.

Sp Qtr. Prereq: Physchem 611, Physiol 601, or permission of instructor.

**609\* Molecular Pharmacology U G 4**

The interaction of clinical drugs and environmental agents on macromolecules with emphasis on their involvement in aging, mutagenesis, cancer, and arteriosclerosis. D'Ambrosio.

Sp Qtr. 2 2-hr cl. Prereq: Permission of instructor. Cross-referenced in Radiology.

**680 General Pharmacology for Optometrists P 3**

A survey of general pharmacologic principles and actions; effects of drugs on the central-nervous system, cardiovascular system, and other systems. Fertel.

Sp Qtr. 3 cl. Prereq: 1st yr standing in optometry. Open only to students registered in the College of Optometry.

**700 Medical and Mammalian Pharmacology P G 4**

General principles of pharmacology; drugs used for diagnosis, prevention, or eradication of the cause of disease, including endocrine products and chemotherapeutic agents. Tjioe.

Au, Wi Qtrs. 4 cl. Prereq: 600 or permission of instructor.

**701 Medical and Mammalian Pharmacology P G 5**

Continuation of 700. Tjioe and staff.

Sp Qtr. 4 cl, 3 lab hrs. Prereq: 700.

**702 Practice of Pharmacology P G 3**

Performance and application of specialized pharmacological techniques and methods in evaluation of pharmacodynamic and pharmacokinetic activity of chemical substances. Tjioe and staff.

Au Qtr. Prereq or concur: 701.

**793 Individual Studies in Pharmacology P 6, 12, 18 G 3-15**

Digitalis pharmacodynamics; neuropharmacology; endocrine pharmacology; cardiovascular pharmacology; autonomic pharmacology; clinical pharmacology; biochemical pharmacology; toxicology. Staff.

1, 2, 3, months; offered all months except June (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**820 Autonomic Pharmacology G 3**

Comprehensive review of drugs that mimic or affect the actions of autonomic neurones with emphasis on biochemical and cellular analysis of autonomic drug action. Tjioe.

Wi Qtr. Prereq: 701 or permission of instructor.

**821\* Cardiovascular Pharmacology G 15**

Modern concepts of the action of drugs on the heart and circulation. Hollander.

Sp Qtr. 2 cl, lab arr. Prereq: Permission of instructor.

**824\* Psychopharmacology G 3**

Psychotropic drug-induced changes in central nervous system activity in relation to the varieties of perceptual-behavioral interpretations of that activity by self-referential systems, i.e. man. N. Neff.

Wi Qtr. 2 cl arr. Prereq: 600, 701, or permission of instructor.

**845 Bioelectric Potentials G 5-15**

Methods of recording transmembrane potentials from cells; interpretation of cell potentials; effects of drugs on transmembrane potentials. Hollander.

Au Qtr. 5 cl, lab arr. Prereq: Physiol 601, 602 or equiv or permission of instructor.

**850 Seminar in Pharmacology G 2**

Conferences on selected topics in pharmacology. M. Neff and Enyeart.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 40 cr hrs.

**894 Group Studies in Pharmacology G 3-5**

Designed to allow the introduction of new topics and innovative approaches to the curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**999 Research in Pharmacology G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Pharmacy

217 Lloyd M. Parks Hall, 500 West 12th Avenue,  
292-2266

The divisions of instruction and the courses in the College of Pharmacy comprising these divisions are listed below:

## Medicinal Chemistry and Pharmacognosy

434, 440, 441, 442, 461, 462, 465, 577, 693, 694, 737, 789, 835, 836, 846, 850, 851, 894, 993, 999.

## Pharmaceutical Administration

400, 513, 515, 521, 522, 523, 528, 614, 625, 693, 694, 715, 814, 816, 817, 820, 821, 824, 825, 826, 827, 850, 884, 894, 970, 993, 999.

## Pharmaceutics and Pharmaceutical Chemistry

403, 404, 405, 406, 501, 502, 506, 603, 693, 694, 701, 702, 707, 710, 800, 800.01, 800.02, 802, 811, 812, 850, 894, 993, 999.

## Pharmacology

200, 470, 671, 672, 674, 677, 681, 693, 694, 850, 870, 871, 872, 881, 894, 993, 999.

## Pharmacy Practice

515, 516, 517, 518, 519, 546, 547, 548, 612, 615, 616, 619, 685, 686, 689, 693, 694, 695, 705, 712, 713, 718, 719, 720, 743.13-743.17, 743.19-743.29, 745.01-745.16, 785, 794, 795, 814, 850, 894, 993, 999.

## 200 The Rational and Irrational Use of Drugs U 3

Survey of the fundamentals of drug action with special emphasis on drugs of abuse; discussion of medical, social, legal, and educational aspects of drug use. Uretsky and Wallace.

Au, Sp Qtrs. 3 cl. Not open for credit to students in the College of Pharmacy. NS Admis Cond course.

## 400 Introduction to Pharmacy P 2

A survey of the profession of pharmacy, dealing with its history, educational requirements, organization, regulation, and current developments. Buerki.

Au Qtr. 2 cl. This course is graded S/U.

## 402 Pharmaceutical Calculations P 1

Introduction to prescription terminology and pharmacy calculations; emphasis on measurement systems, conversion, percentage preparations, calculation of doses, dilutions, milliequivalents, and milliosmoles. Burns.

Au Qtr. 1 cl. Prereq: Math 152, 2nd yr standing in pharmacy.

## 403 Pharmaceutics I P 3

The application of physical chemical principles to pharmaceutics: a fundamental introduction to solid and liquid dosage forms. Sokoloski.

Wi Qtr. 3 cl. Prereq: 440, Chem 246 and 253, and Math 152.

## 404 Prescription Pharmacy Practice I P 2

The principles and practice of pharmaceutical dispensing: simple solutions, syrups, elixirs, dilutions, and aerosols. Sokoloski and Burns.

Wi Qtr. 1 3-hr lab; 1 cl. Prereq: Chem 246 and 253, and Math 152; prereq or concur: 403.

## 405 Pharmaceutics II P 3

The application of physical chemical principles to pharmaceutics and biopharmaceutics; colloids, suspensions, emulsions, solid, and topical dosage forms and the formulation factors affecting drug availability. Frank.

Sp Qtr. 3 cl, 1 recitation. Prereq: 403.

## 406 Prescription Pharmacy Practice II P 2

The principles and practice of pharmaceutical dispensing: lotions, creams, ointments, powders, capsules, and suppositories. Frank and Burns.

Sp Qtr. 1 3-hr lab; 1 cl. Prereq: 403 and 404; prereq or concur: 405.

## 434 Pharmaceutical Analysis P 4

An introduction to quantitative analysis of pharmaceuticals. Olson.

Au Qtr. 2 cl, 6-hr lab, computer managed instruction. Prereq: Chem 246 and 253, and Math 152.

## 440 Principles of Medicinal Chemistry U P 2

An introduction to functional group properties of importance to drugs, heterocycles, acidity and basicity, metabolism, physico-chemical properties of drugs, and drug-receptor interactions.

Au Qtr. 2 1-hr cl, 1 1-hr rec. Prereq: Chem 253. The introductory course in a 3-qtr undergrad sequence in medicinal chemistry.

## 441 Medicinal Chemistry I U P 3

Chemical and biochemical principles governing the properties of drugs affecting the peripheral nervous system, cardiovascular drugs, diuretics, coagulants, sulfonamides and sulfones, and antiallergenic agents. Brueggemeier, Miller, and Witak.

Wi Qtr. 3 cl, 1 recitation. Prereq: 440 or Chem 253. Open to non-pharmacy students by written permission of instructor.

## 442 Medicinal Chemistry II U P 3

Chemical and biochemical principles governing the properties of drugs affecting the central nervous system, steroids, carcinogenesis and environmental chemicals, and cancer chemotherapeutic agents. Brueggemeier, Miller, and Witak.

Sp Qtr. 3 cl, 1 recitation. Prereq: 441. Open to non-pharmacy students by written permission of instructor.

## 461 Bio-Pharmacy I P 3

A study of the chemical building blocks of biological systems and their properties. Black.

Au Qtr. 3 cl, 1 recitation. Prereq: Chem 253.

## 462 Bio-Pharmacy II P 3

A study of biochemical processes pertinent to the status of health and disease and the use of pharmaceutical agents. Doskotch and Robertson.

Wi Qtr. 3 cl. Prereq: 461. 30 lectures pharmaceutical biochem only.

## 465 Pharmacognosy P 4

Basic and clinically useful information concerning the medically important antibiotics, alkaloids, and glycosides. Robertson.

Sp Qtr. 4 cl. Prereq: 462; prereq or concur: Microbiol 509.

## 470 Pharmacology for Nurses P 4

A survey of the important drugs used in medicine and a consideration of their therapeutic applications. Wallace and Mackay.

Au Qtr. 4 cl. Prereq: Chem 102 or 122, and Physiol 312. Open only to students registered in the School of Allied Medical Professions and the College of Nursing or by permission of instructor.

## 501 Pharmaceutics III P 3

The application of biopharmaceutics and pharmacokinetic principles to drug absorption, distribution, and elimination. Staubus.

Au Qtr. 3 cl, Prereq: 405.

## 502 Prescription Pharmacy Practice III P 2

Principles and practice of pharmaceutical dispensing: instruction and use of aseptic technique and application of pharmaceutical principles and techniques to the solution of prescription problems. Staubus and Burns.

Au Qtr. 1 cl, 1 3-hr lab. Prereq: 405 and 406; prereq or concur: 501.

## 506 Pharmaceutics IV P 3

The application of biopharmaceutical and pharmacokinetic theory to dosage regimen adjustment, drug and drug product selection, evaluation and use, and optimizing drug therapy. Malspeis.

Wi Qtr. 3 cl, 1 recitation. Prereq: 501.

## 513 History of Pharmacy U P 3

Evolution and development of the profession of pharmacy from antiquity to the present, with emphasis on its Anglo-American development since the 18th century. Buerki.

Au Qtr. 3 cl. Prereq: Jr standing or permission of instructor.



### 515 Pharmaceutical Distribution and Health Care Systems U P 4

A study of the pharmaceutical distribution system in the United States and its relation to the health care system. Birdwell.  
2 1½-hr cl, 1 2-hr cl. Prereq: Jr standing or permission of instructor. Not open to students with credit for 520.

### 516 Fundamentals of Disease P 4

A study of the basic pathological principles and a review of the etiology, pathogenesis, and pathology of common human diseases subject to modification by pharmacotherapy. Dasta and clinical staff.  
Au Qtr. 4 cl. Prereq: 462, Anatomy 199 or 200, Physiol 312, and Microbiol 509.

### 517 Pharmacotherapeutics I P 3

The application of the pharmaceutical and biomedical sciences to the treatment and management of common human diseases. Coyle and clinical staff.  
Wi Qtr. 2 1½-hr cl. Prereq: 442, 516, and 671; prereq or concur: 506 and 672.

### 518 Pharmacotherapeutics II P 3

The application of the pharmaceutical and biomedical sciences to the treatment and management of common human diseases. Nahata and clinical staff.  
Sp Qtr. 2 1½-hr cl. Prereq: 517.

### 519 Institutional Pharmacy Practice P 3

The organization, management, and provision of comprehensive pharmacy services in hospitals and other organized health settings. Hale and clinical staff.  
Sp Qtr. 3 cl. Prereq: 405 and 406.

### 521 Introduction to Pharmacy Operations P 3

An introductory overview of various activities involved in a pharmacy operation.  
Sp Qtr. 3 cl. Prereq: 515.

### 522 Pharmacy Management P 4

Theoretical considerations and applied techniques associated with planning, organizing, activating, and controlling the resources used in pharmacy practice. Reardon.  
Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Acct&MIS 201 and Jr standing.

### 523 Pharmaceutical Information Systems P 3

The design and implementation of pharmacy information systems, including prescription and business records, as a basis for decision-making, professional service, and regulatory compliance.  
Au Qtr. 2 cl, 1 2-hr lab. Prereq: Acct&MIS 201 and sr standing, or permission of instructor.

### 528 Pharmacy Communications P 3

Communication problems arising out of professional relations of the pharmacist with the physician, medical interns, nurses, laboratory technicians, and especially patients. Buerki.  
Wi Qtr. 2 cl, 1 2-hr workshop. Prereq: Jr or sr standing in pharmacy.

### 546 Clerkship I U P 1

The use of problem-solving skills to interpret and understand medical information in patient charts as related to specific disease processes.  
Au Qtr. 1 2-hr cl. Prereq: Jr standing or permission of instructor; concur: 516. This course is graded S/U.

### 547 Clerkship II U P 1

On-site/classroom evaluations of drug therapy, with an emphasis on development of verbal communication skills between pharmacists and patients, and utilization of drug information resources.  
Wi Qtr. 1 2-hr cl. Prereq: Jr standing or permission of instructor; concur: 517. This course is graded S/U.

### 548 Clerkship III U P 1

On-site evaluation of drug therapy in hospitalized or out-patients, with an emphasis on development of communication and decision-making skills.  
Sp Qtr. 1 2-hr cl. Prereq: Jr standing or permission of instructor; concur: 518. This course is graded S/U.

### 577 Biological Products P 3

USP standards and legal requirements governing manufacture, standardization, storage, and distribution of toxins, antitoxins, serums, and vaccines. Robertson.  
Au Qtr. 3 cl. Prereq: Microbiol 509.

### 603 Chemotherapy of Cancer U P G 3

Fundamentals of cancer chemotherapy, pharmacokinetics, and mechanism of action of anticancer agents, with emphasis on the biological, biochemical, biopharmaceutical, and pharmacological determinants of drug action. Au.  
Sp Qtr. 3 cl. Prereq or concur: 501 and 674, or permission of instructor.

### 612 Appliances and Prescription Accessories P 1

Study of conditions requiring a series of orthopedic and surgical appliances, invalid aids, and prescription accessories. Marcy.  
Wi Qtr. 1 2-hr cl. Prereq: 674.

### 614 Professional Ethics P 2

The conceptual basis and content of pharmaceutical ethics; significance of codified ethics, interprofessionally considered; differences of view underlying ethical issues; methods of encouraging compliance. Buerki.  
Sp Qtr. 1 2-hr cl. Prereq: Jr standing or permission of instructor.

### 615 Sterile Products P G 3

Formulation, preparation, and testing of sterile products including injections, bulk solutions, and nasal and ophthalmic preparations. Hale.  
Au Qtr. 2 cl, 1 3-hr lab. Prereq: 502 or equiv.

### 616 Medical Applications of Radionuclides and Radiopharmaceuticals P G 3

A study of the theoretical and clinical aspects of the preparation, use, control, and handling of radionuclides and radiopharmaceuticals used in medicine. Hinkle.  
Wi Qtr. 3 cl. Open to students with Jr standing in College of Pharmacy or School of Allied Medical Professions.

### 619 Nonprescription Drug Products P 3

Didactic and practical experience in appropriate nonprescription drug product selection, monitoring, and patient information. Bennett.  
Au, Sp Qtrs. 2 2-hr cl. Prereq: 518 and 674 or concur with permission of instructor.

### 625 Pharmaceutical Jurisprudence P 3

A study of the laws and regulations relating to the practice of pharmacy with emphasis on cases and court decisions illustrating the pharmacist's responsibilities. Grauer.  
Au, Sp Qtrs. 3 cl. Prereq: Jr standing or permission of instructor.

### H650 Pharmacy Honors Seminar P 1

Presentation of pharmaceutical science and pharmacy practice topics by honors students and guest lecturers.  
Sp Qtr. 1 cl. Prereq: Enrollment in PHR honors program. Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

### 671 Systematic Pharmacology I P G 5

A comprehensive study of the pharmacodynamic, toxicological, and therapeutic effects of drugs on living organisms with emphasis on their rational application to the treatment of disease in man. Gerald, Patil, Rahwan, and Uretsky.  
Au Qtr. 5 cl. Prereq: 462 and Physiol 312 or equiv.

### 672 Systematic Pharmacology II P G 5

A comprehensive study of the pharmacodynamic, toxicological, and therapeutic effects of drugs on living organisms with emphasis on their rational application to the treatment of disease in man. Burkman, Gerald, and Uretsky.  
Wi Qtr. 5 cl. Prereq: 671.

**674 Systematic Pharmacology III P G 5**

A comprehensive study of the pharmacodynamic, toxicological, and therapeutic effects of drugs on living organisms with emphasis on their rational application to the treatment of disease in man. Rahwan, Burkman, Feller, and Wallace.

Sp Qtr. 5 cl. Prereq: 672.

**677 Toxicology U P G 3**

Fundamentals of modern and environmental toxicology with emphasis on preclinical and clinical testing of new drugs, principles of teratology, carcinogenicity and mutagenicity, and drug interactions. Rahwan.

Wi Qtr. 3 cl. Prereq: 674 or permission of instructor.

**681 Ocular Pharmacology P 3**

A survey of the general principles of drug action and the properties of drugs affecting ocular structure and function. Burkman and Patil.

Sp Qtr. 2 cl. Prereq: 2nd yr standing in optometry. Open only to students registered in College of Optometry.

**685 Community/Clinical Practice Externship P 7**

Pharmacy students, under the supervision of college faculty and community pharmacists, gain experience in community pharmacy practice. Hale and preceptor staff.

Su, Au, Wi, Sp Qtrs. 21 hr practicum. Prereq: 502, 506, 518, 674, and licensure by the Ohio Board of Pharmacy as Pharmacy Intern; concur: 686. This course is graded S/U.

**686 Institutional/Clinical Practice Externship P 8**

Pharmacy students, under the supervision of college faculty and institutional pharmacists, gain experience in institutional (e.g., hospital, mental health facility) pharmacy practice. Hale and preceptor staff.

Su, Au, Wi, Sp Qtrs. 24 hr practicum. Prereq: 502, 506, 518, 674, and licensure by the Ohio Board of Pharmacy as Pharmacy Intern; concur: 685. This course is graded S/U.

**689 Clinical Practice in Pharmacy P 7-15**

A basic clinical clerkship experience in various pharmacotherapeutic and clinical pharmacy practice areas with emphasis on an interdisciplinary health team approach. Bennett, Hale, and clinical staff.

Su, Au, Wi, Sp Qtrs. 10 wks, minimum of 21 hrs/wk. Prereq: 685 and 686, or permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**693 Individual Studies in the Pharmaceutical Sciences P 1-5**

Laboratory and library work designed to give the qualified student an opportunity to complete an original investigation or pursue an interest in a special problem.

Su, Au, Wi, Sp Qtrs. Prereq: Jr standing, a cumulative pt-hr ratio of 2.50, and permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies in Pharmacy**

Group studies of selected topics in various fields of pharmacy. Prereq: Permission of instructor.

**694.01 History of Pharmacy P 2**

The history of the development of representative classes of therapeutic drugs and the work of the pharmacist before the rise of modern pharmaceutical science. Buerki.

Sp Qtr. 1 cl, 2-hr lab. Prereq: Jr standing, 513, or permission of instructor.

**694.02 Practicum in History of Pharmacy P 1**

Supervised discussions and demonstrations of 19th-century pharmaceutical techniques in a museum setting. Buerki.

Su, Au, Wi, Sp Qtrs. 1 cl, 10 hrs demonstrations. Prereq: Jr standing, 513; prereq or concur: 694.01. Repeatable to a maximum of 3 cr hrs. This course is graded S/U. Students may obtain up to 300 hrs of internship or toward their Ohio State Board of Pharmacy internship requirement by participating in this course.

**694.03 Community Practice Externship P 5**

Pharmacy students, under the supervision of college faculty and community pharmacists, gain full-time experience in community pharmacy practice. Bennett.

Su, Au, Wi, Sp Qtrs. 45 hrs/wk, practicum for 3-4 wks. Prereq: 502, 506, 518, 674, and licensure by the Ohio Board of Pharmacy as Pharmacy intern; concur: 694.04 and 694.05. 694.03-694.05 taken in place of 685-686. This course is graded S/U.

**694.04 Institutional Practice Externship P 5**

Pharmacy students, under the supervision of college faculty and institutional pharmacists, gain full-time experience in institutional pharmacy practice. Bennett.

Su, Au, Wi, Sp Qtrs. 45 hrs/wk, practicum for 3-4 wks. Prereq: 502, 506, 518, 674, and licensure by the Ohio Board of Pharmacy as Pharmacy intern; concur: 694.03 and 694.05. 694.03-694.05 taken in place of 685-686. This course is graded S/U.

**694.05 Clinical Clerkship P 5**

Pharmacy students, under the supervision of college, institutional, and community pharmacists, gain full-time experience in patient monitoring and other clinical pharmacy practice. Bennett.

Su, Au, Wi, Sp Qtrs. 45 hrs/wk, practicum for 3-4 wks. Prereq: 502, 506, 518, 674, and licensure by the Ohio Board of Pharmacy as Pharmacy intern; concur: 694.03 and 694.05. 694.03-694.05 taken in place of 685-686. This course is graded S/U.

**695 Seminar P 2**

Problems arising out of professional relations of the pharmacist with the physician, medical interns, nurses, laboratory technicians, and the laity. Reuning and clinical staff.

Sp Qtr. 2 cl. Prereq: Sr standing or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**701 Concepts of Pharmaceutical Research I P G 3**

Presentation of some basic principles and techniques used in pharmaceutical research and product development: drug stabilization, solubilization, complexation, and macromolecule interactions. Sokoloski and Frank.

Au Qtr. 3 cl. Prereq: 506 or equiv with written permission of instructor.

**705 Individualization of Drug Dosage P G 3**

A problem-oriented course designed to provide experience in recognition and solving of patient cases where drug dosage regimen must be modified to optimize therapy. Visconti and Wooding-Scott.

Sp Qtr. 3 cl. Prereq: 506 and 674 or permission of instructor. Repeatable to a maximum of 6 cr hrs.

**712 Clinical Pharmacokinetics I P G 4**

Basic concepts of drug disposition, pharmacokinetics and response kinetics, and the application of these concepts to optimizing specific drug therapy. Reuning, Lima, and MacKichan.

Wi Qtr. 3 cl, 1 2-hr rec. Prereq: 506, 518, and 674 or permission of instructor.

**713 Advanced Clinical Pharmacokinetics II P G 6**

Anatomical and physiological basis of pharmacokinetics; emphasis on the influence of disease states on the pharmacokinetics of drugs, and drug dosage alterations in patients. Lima and MacKichan.

Sp Qtr. 3 2-hr cl. Prereq: 712 or equiv, and admission to Pharm D program or permission of instructor.

**715 Hospital Pharmacy and the Hospital Organization P G 3**

Hospital organization and the relationship of the departmental components to the pharmacy. Moore.

Au Qtr. 3 cl. Prereq: Sr or grad standing. Not open to students with credit for 816.

**718 Drug Therapy Selection P G 3**

Application of comparative pharmaceutical and therapeutic data to guide formulary development and selection of drugs of choice among major therapeutic drug groups. Reitz.  
Wi Qtr. 3 1-hr cl. Prereq: 518 and 674, or permission of instructor.

**719 Drug Literature Evaluation P G 3**

Introduction to the fundamentals of drug information storage and retrieval and experiences in evaluating clinical drug studies. Visconti.  
Au, Wi Qtrs. 1 3-hr cl. Prereq: 518 and 674, or permission of instructor.

**720 Advanced Pharmacotherapeutics P G 6**

An advanced course emphasizing therapeutic principles based on medical pathophysiology, pharmacodynamics, and pharmacokinetics. Lima and clinical staff.  
Au, Wi Qtrs. 3-5 2-hr cl. Prereq: 712 or equiv, and admission to Pharm D program or permission of instructor. Repeatable to a maximum of 12 or hrs. Two-quarter sequence. Progress graded. Final grade awarded upon completion of 12 or hrs.

**737 Advanced Pharmaceutical Analysis P G 5**

The use of specialized instruments in the assay and control methods of drugs and drug preparations. Olson.  
Au Qtr. 3 cl. 2 3-hr lab. Prereq: Permission of instructor.

**743 Pathophysiology for Clinical Pharmacists**

An independent study program in the pathophysiology of major human diseases associated with various organ systems.  
Su, Au, Wi, Sp Qtrs. Prereq: Admission to Pharm D program and permission of the director of the independent study program in the College of Medicine. Repeatable to a maximum of 55 or hrs. These courses are graded S/U.

**743.13 Medical Immunology P 3****743.14 Behavioral Sciences P 2****743.16 Pathologic Mechanisms/Genetics P 5****743.19 Cardiovascular System P 7****743.20 Infectious Diseases P 5****743.21 Respiratory System P 3****743.22 Hematology System P 3****743.23 Gastrointestinal System P 3****743.24 Renal System P 5****743.25 Central and Peripheral Nervous System P 7****743.26 Musculoskeletal System P 2****743.27 Endocrine System P 2****744 Physical Assessment P 3**

This course is graded S/U.

**745 Advanced Clinical Practice in Pharmacy**

An advanced clinical experience in various therapeutic and pharmacy practice areas.  
Su, Au, Wi, Sp Qtrs. 1 or 2 months (fulltime). Prereq: Admission to Pharm D program or permission of instructor. Repeatable to a maximum of 60 or hrs.

**745.02 Drug Information Service P 5****745.03 Poison Control/Toxicology Service P 5****745.04 Clinical Pharmacokinetics Laboratory P 5-10****745.05 Pediatric Clinical Pharmacy P 5-10****745.06 Cardiovascular Clinical Pharmacy P 5-15****745.07 Critical Care Pharmacy P 5-10****745.08 Psychiatric Clinical Pharmacy P 5****745.09 Oncologic Clinical Pharmacy P 5****745.10 Renal Clinical Pharmacy P 5****745.11 Pulmonary Clinical Pharmacy P 5****745.12 Infectious Disease Clinical Pharmacy P 5****745.13 Gastroenterology Clinical Pharmacy P 5****745.14 Parenteral Nutrition P 5-10****745.15 Medical/Surgical Clinical Pharmacy P 5-15****745.16 Applied Pharmacokinetics Service P 5**

An advanced clinical experience in applied pharmacokinetics. Repeatable to a maximum of 10 or hrs.

**789 Isolation Techniques in Research P G 5**

A study and application of selected isolation techniques for the purification of natural products or other organic mixtures. Black.  
Wi Qtr. 3 cl. 2 3-hr lab. Prereq: Chem 253 and 246, or equiv, or permission of instructor.

**794 Group Studies in Clinical Pharmacy P 1-18**

Prereq: Admission to Pharm D program. Repeatable to a maximum of 50 or hrs.

**795 Seminar P 1**

A seminar designed to develop the speaking and scientific presentation abilities of Pharm D students through presentation of therapeutic and research material. Lima and Reitz.  
Au, Wi, Sp Qtrs. 1 1-hr seminar. Prereq: Admission to Pharm D program or permission of instructor. Repeatable to a maximum of 3 or hrs.

**800 Radioisotope Tracer Techniques and Radiopharmaceuticals**

A survey of the properties of radioisotopes and radiation; radioisotope tracer methods and applications to pharmaceutical sciences; the preparation, standardization, and handling of radiopharmaceuticals. Malspeis, Feller, and Brueggemeier.  
Au Qtr. 3 cl. 2 3-hr lab. Prereq: Permission of instructor.

**800.01 Principles of Radioisotope Tracer Techniques G 3**

A survey of properties of radioisotopes and radiation, instrumentation used for detection of radioisotopes, and radioisotope tracer methods and applications to biomedical sciences.  
Au Qtr. 3 cl. Prereq: Permission of instructor.

**800.02 Laboratory in Radioisotope Tracer Techniques G 2**

Laboratory applications of radioisotope tracer methodology in biomedical sciences and operations of instruments used for detection of radioisotopes.  
Au qtr. 2 3-hr labs. Concur: 800.01.

**802 Pharmacokinetics G 4**

The analysis of the absorption, distribution, and elimination of drugs, and the mathematical characterization of these processes, with emphasis on theory and application. Staubus.  
Sp Qtr. 2 2-hr cl. Prereq: 674 and Math 152, or equivalents with written permission of instructor.

**812 Advanced Pharmacy G 3**

A study of the methods used to predict, determine, and improve the stability characteristics of medicinal agents in dosage form. Malspeis.  
Sp Qtr. 3 cl. Prereq: Chem 521 or 533, and permission of instructor.

**814 Issues in Drug Therapy for Pharmacy Administrators G 3**

Principles of drug therapeutics with application to hospital pharmacy departments. Moore and clinical staff.  
Sp Qtr. 3 cl. Prereq: 712.

**816 Principles of Hospital Pharmacy G 3**

Administrative and professional principles and concepts of, and trends affecting, hospital pharmacy. Reardon.  
Wi Qtr. 3 cl. Prereq: 715.

**817 Principles of Hospital Pharmacy G 3**

A continuation of 816.  
Sp Qtr. 3 cl. Prereq: 816.

**820 Drugs, Society, and Human Behavior G 3**

A review of behavioral and administrative science research as applied to drug use in society, emphasizing the impact of drug use decisions on strategic development. Pathak.  
Wi, Sp Qtrs. 3 cl. Prereq: Permission of instructor.

### 821 Research Methodology in Pharmacy Practice G 4

Investigation of the research principles and methods involved in planning, analysis, and interpretation of studies and projects in pharmacy practice. Birdwell and Visconti.  
Wi Qtr. 2 2-hr cl. Prereq: Econ 442 or Ed-F & R 786 or equiv.

### 824 Evaluation of Pharmaceutical Programs G 3

An overview and appraisal of the state-of-the art in the evaluation of pharmaceutical programs and services. Pathak.  
Sp Qtr. Prereq: Econ 442 or equiv, and background in stat.

### 825 Advanced Pharmaceutical Markets G 3

Investigation of pharmaceutical markets with an emphasis on the marketing practices manufacturers and the public policies affecting pharmaceutical firms. Birdwell and Pathak.  
Au Qtr. 2 1½-hr cl. Prereq: 515 or Bus-Mktg 650 or equiv.

### 826 Advanced Pharmacy Administration G 4

Investigation and analysis of strategic decision-making in pharmacy administration. Reardon.  
Su, Au Qtrs. 3 cl. Prereq: 825 and Bus-MHR 500 or equiv.  
Repeatable to a maximum of 6 cr hrs.

### 835 Advanced Medicinal Chemistry G 3

Chemistry of autonomic receptor sites; recent literature references on the biological, chemical, and stereochemical requirements for adrenergic and cholinergic stimulation and blockade. Miller.  
Au Qtr. 3 cl. Prereq: 674 or equiv, and Chem 833; or permission of instructor.

### 836 Advanced Medicinal Chemistry G 3

Selected topics in medicinal chemistry, the subject matter being drawn from the current literature. Bruggemeier and Curley.  
Wi Qtr. 3 cl. Prereq: 674 or equiv, and Chem 833; or permission of instructor.

### 850 Seminar G 1

Round-table discussion, oral and written reports dealing with recent advances in the pharmaceutical sciences.  
Au, Wi, Sp Qtrs. 1 cl. Repeatable to a maximum of 30 cr hrs.

#### 850.01 Presentation

Presentation of oral and written reports dealing with recent advances in the pharmaceutical sciences.

#### 850.02 Participation

Participation in round-table discussion, oral, and written reports dealing with recent advances in the pharmaceutical sciences.

This course is graded S/U.

### 851 Advanced Pharmacognosy G 3

A study of research involving biosynthesis of plant constituents of pharmaceutical interest. Doskotch and Robertson.  
Sp Qtr. 3 cl. Prereq: Biochem 707 or Botany 631 or permission of instructor.

### Drug Metabolism

See Pharmacol 852—Discussions of mechanisms of biotransformation of drugs by enzymes, pharmacologic characteristics of these systems, and techniques for the study of drug metabolism.  
Offered in cooperation with Pharmacol.

### 870 Drug Receptor Theory G 3

A systematic examination of the ideas, notions, hypotheses, and theories that led to the development of quantitative models of drug-receptor interaction. Burkman.  
Au Qtr. 3 cl. Prereq: Math 152 or equiv and an introductory course in pharmacology; or permission of instructor.

### 871 Experimental Methods in Pharmacology G 3

Qualitative and quantitative pharmacology covering the standard laboratory methods used in the screening and evaluation of drugs. Staff.  
Wi Qtr. 1 cl, 2 3-hr lab. Prereq: 870 or equiv, and permission of instructor.

### 872 Advanced Methods in Pharmacology G 3

Theory and practical application of specialized pharmacological approaches used for the elucidation of mechanisms of drug action. Patil and staff.  
Sp Qtr. 1 cl, 2 3-hr lab. Prereq: 871 and permission of instructor.

### 881 Advanced Topics in Pharmacology G 3

A study of current advance theories of pharmacodynamics. Feller.  
Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 871 and permission of instructor. Repeatable to a maximum of 9 cr hrs.

### 884 Field Experiences in Pharmaceutical Administration G 6

Supervised practicum in an administrative setting within the pharmaceutical industry.  
Su, Au, Wi, Sp Qtrs. 50 hrs/wk arr. Prereq: 25 cr hrs of course work in pharmacy administration and enrollment in pharmacy administration specialization. This course is graded S/U.

### 894 Group Studies in Pharmaceutical Sciences G 1-5

Group studies of selected topics in various fields of the pharmaceutical sciences.  
Su, Au, Wi, Sp Qtrs. 1-5 cl, opt lab. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

### 970 Supervised Project in Hospital Pharmacy G 3

Investigation of a major problem facing a hospital pharmacy or pharmacy practice.  
Su, Au, Wi, Sp Qtrs. Prereq: 2nd yr standing in hospital pharmacy specialization. Repeatable to a maximum of 9 cr hrs. Required of all students specializing in hospital pharmacy; must be taken each qtr of 2nd yr. This course is graded S/U.

### 993 Individual Studies in the Pharmaceutical Sciences G 1-5

Individual investigation of problems in one of the areas below:

- A—Pharmaceutical Administration
- B—Medicinal Chemistry and Pharmacognosy
- C—Pharmaceutics and Pharmaceutical Chemistry
- D—Pharmacology
- E—Pharmacy Practice

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

### 999 Research in the Pharmaceutical Sciences G Arr

Research for thesis or dissertation purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Philosophy

350 University Hall, 230 North Oval Mall, 292-7914

### 101 Introduction to Philosophy U 5

Examination of major problems, such as the nature of reality, knowledge, truth, morality, and the relation of philosophy to science and religion.

Su, Au, Wi, Sp Qtrs. H101 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 100. BER/LAC/LAR course.

### 130 Introduction to Ethics U 5

The nature of right and wrong, good and evil; the grounds of moral choice and decision; the resolution of moral conflicts.

Su, Au, Wi, Sp Qtrs. H130 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course.

**150 Introduction to Logic U 5**

Deduction and induction: principles of clear statement and valid reasoning; fallacies; and the methods by which theories and laws are established.

Su, Au, Wi, Sp Qtrs. Prereq: Math 102 or equiv. BER course.

**215\* Asian Philosophies U 5**

A survey including at least three of the following major philosophical systems of Asia: Hinduism, Buddhism, Jainism, Zoroastrianism, Taoism, and Confucianism.

Wi Qtr. 5 cl.

**217†\* Fundamental Concepts of Existentialism U 5**

Key concepts of the movement: commitment, absurdity, freedom, and death, as expressed in the works of Nietzsche, Sartre, Camus, et al.

Wi Qtr. 5 cl. Not open to students with credit for 617.

**230 Political and Social Philosophy U 5**

Philosophical bases of social and political institutions and practices; analysis of such fundamental conceptions as rights, justice, equality, political obligation, and civil disobedience.

Au, Wi, Sp Qtrs. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**240 Aesthetics U 5**

Principal systems of aesthetics; interpretation of the creative activity of the artist, the work of art, and the contemplation and criticism of art objects.

Au, Wi, Sp Qtrs. H240 (honors) may be available to students enrolled in an honors program, or by permission of instructor. BER/LAC/LAR course.

**250 Symbolic Logic U 5**

A formal presentation of the elements of modern and classical deductive logic; decision and proof procedures in sentential logic, functional logic, and Aristotelian logic.

Au, Wi, Sp Qtrs. BER course.

**255 Introduction to the Philosophy of Science U 5**

A survey of the main philosophical problems relating to the natural sciences.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in logic or math above 104, and 5 cr hrs in natural science or permission of instructor. BER course.

**270 Introduction to Philosophy of Religion U 5**

A philosophical analysis of the nature of religion and the foundations of religious belief.

Au, Wi, Sp Qtrs. 5 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

**H276 Freshman-Sophomore Proseminar U 5**

Topic varies; emphasis on current philosophical problems.

Au, Wi, Sp Qtrs. Prereq: Fr or soph standing, and either a 3.00 cumulative pt-hr ratio, enrollment in an honors program, or permission of instructor. Not open to students with credit for H570. Repeatable to a maximum of 15 cr hrs with written permission of dept adviser.

**294† Group Studies U 1-5**

Groups of students are given an opportunity to pursue special topics not otherwise offered.

Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**310† Philosophical Bases of Western Culture U 5**

Major themes in philosophy in the context of the development of western culture.

Au Qtr. Prereq: Jr standing or permission of instructor. Not open to students with credit for 210. BER/LAC course.

**360† Jewish Mysticism U 5**

Introduction to issues and texts in the Jewish mystical tradition, with emphasis on the Zohar, Lurianic, Kabbalah, and Hasidism.

Sp Qtr. 5 cl.

**361† Introduction to Jewish Philosophy U 5**

A general introduction to major figures and trends in medieval, modern, and contemporary Jewish philosophy; emphasis on Philo, Saadia, Maimonides, Spinoza, Mendelssohn, and Buber.

Wi Qtr. 5 cl. Not open to students with credit for 260 or 261 prior to Au Qtr 1986.

**368 Philosophical Problems in the Law U 5**

Introduction to the nature of law and the philosophical and moral problems concerning law; justification of civil disobedience, criminal punishment, plea bargaining, and the enforcement of morality.

Au Qtr. 5 cl.

**511 History of Ancient and Hellenistic Philosophy U G 5**

Major figures and issues in Greek philosophy; presocratics, Socrates, Plato, Aristotle.

Au Qtr. BER/LAC course.

**512 History of Philosophy from Bacon to Hume U G 5**

Major figures in European philosophy in the 17th and 18th centuries, including Bacon, Hobbes, Descartes, Spinoza, Leibniz, Locke, Berkeley, and Hume.

Wi Qtr. BER/LAC course.

**513 History of Philosophy from Kant through the 19th Century U G 5**

Major figures in 19th-century philosophy, beginning with Kant and generally including Fichte, Hegel, J. S. Mill, Kierkegaard, Nietzsche, and Marx.

Sp Qtr. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC course.

**518†\* Movements in 20th-Century Philosophy U G 5**

Three or more of the following Anglo-American and European philosophical movements will typically be surveyed:

existentialism, philosophical analysis, positivism, marxism, pragmatism, linguistic philosophy.

Au Qtr. 5 cl.

**520\* American Philosophy U G 5**

The development of American philosophy: puritanism, deism, transcendentalism, and pragmatism.

Au Qtr. Not open to students with credit for 613. BER/LAC course.

**525†\* Russian Philosophy U G 5**

Selected topics in the history of Russian philosophy: nihilism; anarchism; existentialism; slavophilism and Russian religious thought; philosophy of Dostoyevsky and Tolstoy.

Au Qtr. Prereq: English 110 or 111 or equiv, one course in the history of philos, and permission of instructor. Fulfills in part the ASC advanced English composition requirement.

**532 Moral Problems of the Health Professions U G 5**

An examination of some moral problems that arise in the health professions, along with the codes, theories, and reasoning involved in their resolution.

Sp Qtr. 5 cl. Prereq: 130 and Comp St 305, or permission of instructor. Designed for students in medicine, nursing, clinical psych, social work, guidance and counseling, and the health professions.

**553\* Theory of Rational Choice U G 5**

Introduction to the principles and methods of the theory of rational choice; with applications in the theory of knowledge; ethics, and social and political philosophy.

Wi Qtr. 5 cl.

**H570\* Junior-Senior Proseminar U G 3-5**

Topics vary; emphasis on recent philosophical writing in some specific area or on some specific problem.

Sp Qtr. Prereq: 11 hrs in philos, and either 3.25 or better cumulative pt-hr ratio with 3.50 or better in philos, or permission of instructor. Repeatable to a maximum of 15 cr hrs with written permission of dept honors adviser.

**General Prerequisites for Courses  
Numbered 600 and 700**

*Not open to freshmen or sophomores. Unless otherwise indicated the prerequisites for 600- and 700-level courses are 10 hours in philosophy.*

**614\* Medieval Philosophy U G 5**

An examination of the main philosophical traditions of the Middle Ages, based on a study of philosophers such as Abelard, Aquinas, Scotus, and Ockham.

Sp Qtr. Prereq: English 110 or 111 or equiv. and 10 cr hrs in philos including 511, or 712 and 713. Not open to students with credit for 714. Fulfills in part the ASC advanced English composition requirement.

**615†\* Pragmatism U G 5**

An examination of the main themes of pragmatism: pragmatic theories of truth, reality, nature of physical objects, knowledge of reality, and normative matters.

Wi Qtr.

**617\* Existentialism U G 5**

Existentialist tradition from its sources in authors such as Kierkegaard and Nietzsche to its phenomenological forms as expressed in writings by Heidegger and Sartre.

Wi Qtr. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**621†\* Topics in Jewish Philosophy U G 5**

An examination of a philosophical issue in Jewish thought or of the thought of a particular author; topics vary.

Wi Qtr. Prereq: 260 or 261, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**625 Marxist Philosophy U G 3**

Philosophical principles of classical Marxism; with an examination of one or more of the following additional topics: Marx's early writings, Soviet Marxism, present Western Marxism.

Wi Qtr. Prereq: 1 course in the history of philos or permission of instructor.

**630 Advanced Political and Social  
Philosophy U G 5**

An intensive examination of issues in political and social philosophy, including democracy, civil disobedience, anarchism, totalitarianism, nature of the state, etc.

Au Qtr. Prereq: 230 or permission of instructor, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**631 Advanced Ethical Theory U G 5**

An intensive examination of representative ethical systems such as egoism, hedonism, intuitionism, and utilitarianism.

Sp Qtr. Prereq: 130.

**641†\* Advanced Esthetic Theory U G 5**

Basic issues in philosophy of art: the definition of art; meaning, truth, and representation in art; the nature and basis of criticism; the criteria of interpretation of works of art.

Sp Qtr.

**650 Advanced Symbolic Logic U G 5**

Introduction to the metatheory of first-order logics and languages: axiomatic development of propositional and predicate logic; model theory; soundness, completeness, and Lowenheim-Skolem theorems.

Wi Qtr. Prereq: 250.

**652\* Nonclassical Logic U G 5**

Study of selected systems of nonclassical logic, such as entailment systems, modal, many-valued, epistemic, deontic, imperative, erotetic, tense, and free logics.

Sp Qtr. Prereq: 650. Repeatable to a maximum of 10 cr hrs.

**653†\* Inductive Logic and Probability U G 5**

Analysis of selected systems of inductive inference; the probability calculus and its interpretations; confirmation theory.

Au Qtr. Prereq: 150 or permission of instructor.

**660 Theory of Knowledge I U G 5**

A survey of major epistemological problems: the possibility, origin, foundation, structure, methods, limits, types, and validity of knowledge.

Au Qtr. Prereq: 250 or permission of instructor.

**663 Metaphysics I U G 5**

A survey of major metaphysical problems: categories, universals, substance and process, causality and law, space and time, metaphysical presuppositions of knowledge.

Wi Qtr. Prereq: 250 or permission of instructor.

**668\* Philosophy of Law U G 5**

An examination of the nature and function of law and of such problems as the relation of law to morality and the justification of punishment.

Sp Qtr. 3 cl. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**672†\* Philosophy in Literature U G 5**

Philosophical problems as reflected in classics of literature, such as the Greek dramatists, Shakespeare, Voltaire, T. S. Eliot, Proust, and Tolstoy.

Sp Qtr. Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**673 Philosophy of Language U G 5**

Basic problems and results in the philosophy of language, concentrating on theories of reference, theories of meaning, and theories of language-use (speech-acts, implicature, etc.).

Au Qtr. Prereq: 150 or permission of instructor.

**674\* Philosophy of Logic and Mathematics U G 5**

Analysis of basic concepts used in logic and in philosophical claims about logic and mathematics, such as: proposition, logical truth, mathematical objects, and necessity.

Au Qtr. Prereq: 650.

**675 Philosophy of Religion U G 5**

A study of religious concepts and problems; the idea and nature of God, of man, their relation to the world and human destiny.

Sp Qtr.

**676 Philosophy of Science U G 3**

A study of the nature and structure of scientific concepts, laws, and theories; appraisal of methodologies, presuppositions, and frames of reference in science.

Au Qtr.

**677\* Conceptions and Methods of the Social  
Sciences U G 3**

Philosophic assumptions of social science: nature of explanation (methodological individualism, holism, functionalism); methods in natural and behavioral science; fact and value in social inquiry.

Wi Qtr.

**693 Individual Studies U G 1-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Students ordinarily earn from 1 to 5 cr hrs, but honors students may earn up to 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**701†\* Studies in Medieval Philosophy U G 5**

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Sp Qtr. Prereq: 10 cr hrs in philos including 511 or 614; or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**702 Studies in 17th-Century Philosophy U G 5**

An intensive examination of a major philosopher or philosophical problem of the rationalist period; topics vary from quarter to quarter.

Au Qtr. Prereq: 10 cr hrs of philos including 512 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**703 Studies in 18th-Century Philosophy U G 5**

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Wi Qtr. Prereq: 10 cr hrs in philos including 512, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**704†\* Studies in 19th-Century Philosophy U G 5**

An intensive examination of a major philosopher or philosophical problem of the period; topics vary from quarter to quarter.

Sp Qtr. Prereq: 10 cr hrs in philos including 513, or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**712†\* Philosophy of Plato U G 5**

Wi Qtr. Prereq: 10 cr hrs in philos including 511.

**713†\* Philosophy of Aristotle U G 5**

Wi Qtr. Prereq: 10 cr hrs in philos including 511.

**722†\* Kant: Critique of Pure Reason U G 5**

An intensive examination of Kant's epistemology as expounded in Kant's first *Critique*.

Sp Qtr. Prereq: 10 cr hrs in philos including 513.

**750†\* Advanced Logical Theory U G 5**

Topics include formal arithmetic, recursive functions, Turing machines, Godel's incompleteness theorems, Church's thesis, arithmetical truth, logical paradoxes, and higher-order logic.

Sp Qtr. 3 cl. Prereq: 250 and 650. Repeatable to a maximum of 15 cr hrs.

**753†\* Theory of Rational Choice U G 5**

An intensive study of classical and contemporary approaches to rational decision making of individuals and groups; topics vary.

Au Qtr. 2 2-hr cl. Prereq: 250 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**761†\* Theory of Knowledge II U G 5**

An intensive study of a systematic epistemological treatise or issue.

Au Qtr. Prereq: 660 or permission of instructor.

**764\* Metaphysics II U G 5**

An intensive study of a systematic metaphysical treatise or issue.

Au Qtr. Prereq: 663 or permission of instructor.

**767\* Philosophy of Mind U G 5**

Classical and contemporary approaches to the nature of mind, mind-body, other minds, intentionality, and other problems.

Sp Qtr.

**770 Advanced Studies in Philosophy U G 3-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 21 cr hrs.

**771 Selected Topics in Analytic Philosophy U G 5**

Origins of modern analytical philosophy; major writings of its founding fathers, beginning in 1879 with Frege's "Conceptual Notation" and culminating in 1922 with Wittgenstein's *Tractatus*.

Sp Qtr. Prereq: 150 and 518. Repeatable to a maximum of 21 cr hrs.

**776†\* Problems in Philosophy of Science U G 5**

Detailed and critical examination of significant contributions to the traditional and contemporary philosophical literature on the philosophy of science.

Wi Qtr. Prereq: 250 or permission of instructor.

**H783 Honors Research U 3-5**

A program of reading arranged for each student, with individual conferences, reports, and papers.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the philos courses taken and with an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the BA *with distinction* in philos. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**General Prerequisites for Courses Numbered 800 and 900**

*Unless otherwise indicated the prerequisites for 800- and 900-level courses are acceptable foundation courses either in general philosophy, logic and ethics, or history of philosophy, and in some cases in all these subjects.*

**811\* Seminar in the History of Philosophy G 5**

Au Qtr. Repeatable to a maximum of 15 cr hrs.

**830 Seminar in Value Theory G 5**

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

**850\* Seminar in Logic G 5**

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

**861\* Seminar in Theory of Knowledge G 5**

Su Qtr. Repeatable to a maximum of 15 cr hrs.

**873†\* Seminar in Philosophy of Language G 5**

Sp Qtr. Repeatable to a maximum of 15 cr hrs.

**877\* Seminar in Philosophy of Science G 5**

Au Qtr. Repeatable to a maximum of 15 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**993 Individual Studies G 2-15**

Doctoral students may register for individual study in areas not normally covered by courses.

Su, Au, Wi, Sp Qtrs. Prereq: An MA degree or at least 50 cr hrs of grad study, and permission of dept chairperson. This course is graded S/U.

**999 Research in Philosophy G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Photography and Cinema

206 Haskett Hall, 156 West 19th Avenue, 292-0404

**201 Photography U 5**

A basic course concerned with taking, printing, and presenting photographs; including technical, social, historical, and aesthetic considerations.

Au, Wi, Sp Qtrs. 1 lec, 2 cl, 2 2-hr labs. Not open to students with credit for 203. Students must have adjustable 35 mm camera and light meter. VPA Admis Cond course.

**220 Color Slide Photography U 3**

Introduction to the technical and aesthetic foundation of color slide materials; designed for students who desire only one production course.

Au, Wi, Sp Qtrs. 2 2-hr cl. Students should have an adjustable 35 mm camera. VPA Admis Cond course.

**500 History and Systems of Film Theory U G 5**

Study of historically important theories of film, with emphasis on the way each theorist deals with recurring issues concerning the general nature of the cinema.

Au Qtr. 2 3-hr cl.

**502 History of Photography U G 3**

Study of the history of photography and its contribution to the arts and sciences; the critical and aesthetic considerations of the photographic image.

Au, Wi Qtrs. 3 cl.

**503 History of Cinema U G 3**

History of the motion picture and critique at the contextual, artistic, technical, and information levels; evaluative study of selected films.

Au, Sp Qtrs. 2 2-hr cl.

**505 Film Theory I U G 3**

Study of the development of film theory and its relation to the other arts; aesthetic of the medium and the modes of film communication as created, viewed, and analyzed.

Wi Qtr. 2 2-hr cl.

**509 Photographic Process U G 3**

The principles and theories in the photographic process, including optics, chemistry, sensitometry, and nonconventional processes.

Au, Sp Qtrs. 2 2-hr cl.

**521 Intermediate Photography U G 5**

Advanced techniques related to specific topics with emphasis on creative photography.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 201 or equiv.

**522 Zone System U G 5**

History, theory, and mechanics; application of sensitometry to black and white film; its impact on the students' personal work.

Au, Wi, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 509 and 521 and written permission of instructor.

**523 Lighting for Photography U G 5**

Principles and lighting techniques for both objects and people; selection, use, and maintenance of lighting equipment; examination of the role of light and lighting techniques in creative photography.

Wi Qtr. 2 cl, 2 2-hr labs. Prereq: 524 and permission of instructor.

**524 Large Format Photography U G 5**

Mechanics, aesthetics, and psychology of large format photography and the application of zone system for large format cameras.

Au, Sp Qtrs. 2 cl, 2 2-hr labs. Prereq: 522 and written permission of instructor.

**531 Color Photography I U G 5**

Principles of color photography including color theory, lighting, recent color processes, and production of a slide show.

Au, Sp Qtrs. 2 2-hr cl. Prereq: 509 and 521 and written permission of instructor.

**532 Color Photography II U G 5**

Continuation of 531 with emphasis on color printing.

Au, Sp Qtrs. 2 2-hr cl, 2 1-hr labs. Prereq: 531 and permission of instructor.

**551 Cinema Production I U G 5**

Principles and procedures in super 8mm cinema production including camera, scripting, lighting, and editing, and sound; emphasis on film as a form of visual expression.

Au, Wi, Sp Qtrs. 1 2-hr cl, 2 2-hr labs. Students must have super 8mm camera.

**552 Cinema Production II U G 5**

Beginning 16mm film production, nonsynchronous sound.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 551 and written permission of instructor.

**553 Cinema Production III U G 5**

Intermediate 16mm film production, introduces lip-sync sound recording, principles and techniques of cinematic lighting; familiarizes students with a variety of cameras and lenses.

Sp Qtr. 2-3 hr cl. Prereq: 552 and written permission of instructor. Not open to students with credit for 553 or 558.

**555 Editorial Process U G 5**

Studies for intermediate students in the styles, techniques, processes, and effect of film editing.

Sp Qtr. 2 3-hr cl. Prereq: 552 and written permission of instructor. Not open to students with credit for 555 and 556.

**557 Animation I U G 5**

Animation as a communication and art form, from storyboard to finished film; tools, the techniques, styles, and applications analyzed through screenings, discussions, and individual studio productions.

Au, Wi, Sp Qtrs. 2 3-hr cl. Prereq: 551 and written permission of instructor.

**560 Scriptwriting I: Composition for Film/Video U G 5**

Principles of writing fiction and nonfiction scripts; practice in writing scripts for film, video, or other audio-visual presentations; analysis and discussion of student work.

Wi Qtr. 2 3-hr cl. Prereq: 551. Not open to students with credit for 554.

**590 BFA Exhibit Presentation U 1**

Preparation and presentation of the student's final works in photography, cinema, or video in the form of a public showing.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Candidacy for BFA degree in photography, cinema, or video and written permission of adviser. To be taken the qtr of graduation.

**591 Undergraduate Internship U 3 or 5**

Planned field, teaching, curatorial, or lab experience under academic and professional supervision.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission. Appropriate curricular background is required. Open only to dept majors with jr standing and above. Repeatable to a maximum of 15 or hrs.

**600 Photography: The Early Years U G 3**

A study of the discovery of photography and its early history, with its contribution to the arts, sciences, and society in the 19th century.

Au Qtr. 2 2-hr cl. Prereq: 502 or permission of instructor.

**601 20th-Century Photography to 1940 U G 3**

An in-depth survey of 20th-century photographic history dealing with pictorialism, the photographic industry, straight photography, and the documentary approach to 1940.

Wi Qtr. 2 2-hr cl. Prereq: 502 or permission of instructor.

**602 History of Photography 1940—Present U G 3**

An extensive study of selected topics dealing with contemporary photographic history.

Sp Qtr. 2 2-hr cl. Prereq: 502 or permission of instructor.

**605 Film Theory II U G 3 or 5**

Three approaches to the cinema: dialectical, structuralistic, and phenomenological; the three contemporary viewpoints, their achievements, and ideological roots.

Sp Qtr. 2 2-hr cl.

**606 Photographic Communication and Expression U G 3**

Theoretical introduction to the photographic image and film as realist and formative modes of communication, art, language, and reflection of reality.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Jr standing and above.



**607 Seminar in Documentary Studies U G 5**

Investigation of aesthetic, critical, social, and personal issues involved in study of the historical origins of photography, cinema, and video as documentary works.  
Sp Qtr. 2 3-hr cl. Prereq: 502 or 503 or 606.

**610 Silent Cinema U G 3**

An intensive study of the silent film, its growth and development of film as an international medium.  
Au Qtr. 2 2-hr cl.

**612 Sound Film: 1928-1948 U G 3**

Analytical study of the most important trends of sound filmmaking; their relationship to other arts and to social and ideological currents of the period.  
Wi Qtr. 2 2-hr cl.

**614 Cinema: 1948—Present U G 5**

Analytical study of the most important trends of modern filmmaking; their relationship to other arts and to contemporary social and ideological currents.  
Sp Qtr. 2 3-hr cl.

**622 American Film Genres U G 3**

Study of several cinema types with uniquely American coinage: the western, the gangster film, the musical, and the screwball comedy as expressions of social reality.  
Au Qtr. 2 2-hr cl.

**623 Film Auteurs, Authors, and Collaborators U G 5**

Film as an act of directorial auteurship; the screenwriter as film author; film as a collaborative art; screening and analysis of selected film examples.  
Sp Qtr. 2 3-hr cl. Prereq: 503 or 610 or 614.

**630 Film Criticism U G 5**

Theories, major critical methodologies historically and currently applied to film analysis; practicum in which students begin to consciously develop a personal approach to analysis.  
Sp Qtr. 2 2-hr cl. Prereq: Written permission of instructor.

**635 Photographic Criticism U G 3**

Reading, lectures, and discussions dealing with the study and practice of photographic criticism to facilitate and enrich the understanding and criticism of photography.  
Wi Qtr. 2 2-hr cl. Prereq: 521 or 606 or Art Educ 604 or written permission of instructor. Not open to students with credit for Art Educ 635. Cross-listed in Art Education.

**657 Animation II U G 5**

Intermediate animation work emphasizing strong storyboard development, including direction and design, and introducing character movement, advanced animation stand techniques, sound, editing, and budgeting.  
Sp Qtr. 2 3-hr cl, Arr studio. Prereq: 552, 557, and written permission of instructor. Not open to students with credit for 694B, 694L, or 657.

**660 Scriptwriting II: Composition for Film/Video U G 5**

Intensive writing course for video dealing with previsualization, script composition, dramatic structure, editing processes, and relationship of images, sounds, music, and words.  
Wi Qtr. 2 3-hr cl. Prereq: 560. Not open to students with 15 or hrs of 660. Each decimal subdivision repeatable to a maximum of 15 or hrs.

**660.01 Drama**

Au Qtr.

**660.02 Documentary**

Wi Qtr.

**661 Video Production I: Individual Projects U G 5**

The application of cinematic aesthetics and techniques to three-quarter inch portable video production.  
Au, Wi, Sp Qtrs. 2 3-hr cl. Prereq: 552 or written permission of instructor. Designed for advanced cinema or media students with background in montage theory and single camera recording skills.

**662 Video Production II: Group Projects U G 5**

A production team oriented approach to the creation of 20-30 minute projects that further the students' skills in the area of applying cinematic aesthetics and techniques to three-quarter inch portable video production.  
2 3-hr cl. Prereq: 661 and written permission of instructor. Not open to students with 15 credit hrs of 662. Each decimal subdivision repeatable to a maximum of 15 or hrs.

**662.01 Drama**

Wi Qtr.

**662.02 Documentary**

Sp Qtr.

**662.03 Collaborative Arts—Music, Poetry, Dance**

Au Qtr.

**691 Individual Production U G 3-5**

Use of departmental facilities for adding to the student's knowledge of a specially selected production problem pertaining to the major field.

Su, Au, Wi, Sp Qtrs. Arr. 2 lab hrs/wk/cr hr. Prereq: Written permission of instructor and dept chairperson. Open only to dept majors with jr standing or above. Repeatable to a maximum of 15 or hrs.

**692 Imagemakers' Workshop I U G 3 or 5**

Advanced group investigation of aspects of photography, cinema, or video with emphasis on individual expression and creativity.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs. Open only to dept majors with jr standing or above.

**693 Individual Studies U G 3 or 5**

Research based on assigned reading and resulting in a paper or script to add to the student's knowledge of a specially selected problem pertaining to the major field.

Su, Au, Wi, Sp Qtrs. 4-8 lab hrs. Prereq: 9 or hrs in dept and written permission of instructor. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

**694 Group Studies in Photography, Cinema, or Video U G 3-5**

Group studies in photography, cinema, or video.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 or hrs.

**695 Topics in Photographic Production U G 3-5**

Exploration of advanced photographic work with an emphasis on production of a cohesive portfolio within the selected topic.

Au, Wi, Sp Qtrs. 2 3-hr cl. Prereq: 522 and written permission of instructor. Repeatable to a maximum of 50 or hrs.

A— Architecture/Landscape

B— Illustration/Still Life

C— Fashion/Figure/Environmental Portrait

D— Social/Documentary

E— The Simple Camera

F— Polaroid

G— Alternative Processes

H— Color: Advanced Print and Slide Show Production

I— Unclassified

**700 Selected Topics in History, Criticism, and Theory of Photography U G 4**

In-depth studies of specific movements, periods, theories, and photographers; topics vary with each offering.

Au, Wi Qtrs. 2 2-hr cl. Written permission of instructor. Repeatable to a maximum of 32 or hrs.

A— 19th-Century Photography

B— 1900-1945

C— 1945-Present

D— Photography, Unclassified

**706 Theories of Photographic Representation and Expression U G 5**

Examination of theories of photographic meaning; the 19th century debates between romanticism and realism; recent models including semiology, structuralism, communication theory, Marxist sociology of culture.

Sp Qtr. 2 2-hr cl. Prereq: 606 or written permission of instructor.

**753 Advanced Film Production U G 3-5**

A team-oriented approach to the creation of an advanced level of production which will further the students' skills in cinematography, sound, editing, and direction.

Au Qtr. 1 2-hr cl, 10 hrs studio. Prereq: 553, 555, 556, and 558; or equivs, and permission of instructor. Repeatable to a maximum of 15 cr hrs including cr hrs earned in 694R. Progress (P) grading is available.

**757 Animation III U G 5**

Advanced animation work encompassing image timing and cycling, squash and stretch, familiarization with the computer-assisted animation stand, and associated techniques such as underlighting and rotoscoping.

Au Qtr. 2 3-hr cl. Prereq: 555 and 657.

**789 Methods and Purposes of Research U G 3**

A study in the methods and purposes of research in the field of photography and cinema.

Au Qtr. 1 3-hr cl. Prereq: Grad standing.

**H783 Honors Research U 3-5**

A program of research and/or visual investigation for each student with individual conferences resulting in a honors thesis or honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing; a cumulative pt-hr ratio of 3.50 in photog, cinema, or video; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committees. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Symposium in Photography, Cinema, or Video U G 2**

Studies in historical, philosophical, empirical, or studio problems in photography and cinema.

Au, Sp Qtrs. 1 2-hr cl. Prereq: 789 or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs.

**792 Imagemakers' Workshop II U G 3 or 5**

Advanced group investigation of aspects of photography, cinema, or video with emphasis on developing individual work.

Au, Wi Qtrs. 2 2-hr cl. Prereq: 692 and written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**900 Graduate Internship in Photography, Cinema, or Video G 5**

Planned field, teaching, curatorial, or laboratory experience under academic and professional supervision.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in dept with written permission of instructor. Appropriate curricular background required. Repeatable to a maximum of 15 cr hrs. Not open to students with a TA or RA appointment.

**893 Individual Studies G 3 or 5**

Research based on assigned readings and resulting in a paper on photography, cinema, or video history, theory, or criticism.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing and written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**994 Group Studies in Photography, Cinema, or Video G 3-5**

Graduate level group studies in photography, cinema, or video.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Grad standing and written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**970 Preparation of Master's Project—Plan B G Arr**

Preparation of a master's project for Plan B leading to the MA with specialization in photography, cinema, or video.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in dept. Repeatable to a maximum of 10 cr hrs.

**998 Research in Photography, Cinema, or Video G Arr**

Research for thesis purpose only.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in dept. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

# Physical Education

**School of Health, Physical Education, and Recreation**

The areas of specialization in physical education and the courses comprising these areas are listed below:

**Exercise Science**

129 Larkins Hall, 337 West 17th Avenue, 292-6887  
209, 360, 414, 650, 660, 661, 664, 665, 666, 667, 692, 693, 694, 760, 800, 801, 802, 803, 860, 867, 886, 889, 894, 995D, 995L, 999

**Teacher Education**

309 Pomerene Hall, 1760 Neil Avnue, 292-5679  
206, 211, 212, 213, 214, 215, 216, 231, 232, 233, 289.01, 323, 441, 489.02, 489.05, 489.07, 489.08, 501, 502, 503, 504, 505, 506, 540, 541, 586, 587, 647, 692, 693, 694, 751, 831, 851, 870, 871, 874, 876, 880, 889, 894, 995C, 995L, 995L, 999

**Sport, Leisure Studies, and the Movement Arts**

252 Larkin Hall, 337 West 17th Avenue, 292-6538  
221, 230, 240, 260, 261, 262A-E, 264, 289.02, 289.03, 293, 294, 448, 489.09, 530, 610, 620.01-620.06, 620.08-620.12, 620.14, 621, 622, 623, 625, 628, 630, 631, 642, 648, 692, 693, 694, 731, 805, 806, 809, 810, 811, 830, 832, 841, 842, 873, 875, 881.01, 881.02, 889, 894, 995B, 995E, 995F, 995G, 995J, 995K, 995L, 999

**Graduate Studies 292-6787****Basic Instruction**

344 Larkins Hall, 337 West 17th Avenue, 292-2504

All 100-and 200-level courses are open to all University students with the exception of 211-216, 231-233 and 289.01 and 289.06 which are reserved for students intending to major in physical education or recreation education.

The minimal requirement for 600 and 700 level courses is junior standing.

*Preregistration with the dept is required for 139, 140, 161, 289 and 293. Preregistration must be completed before schedule is filed.*

Unless otherwise specified all equipment is furnished. Students must provide clothing suitable for the activity and bring it to the first class meeting along with their schedule and I.D. card.

**137 Sport for the Spectator U 3**

A study of the great American spectator sports including football, basketball, baseball, ice hockey, golf, tennis, and others which meet the interests of the class.

1 2-hr cl, 1 2-hr lab.

**139 Introductory Program of Outdoor Pursuits U 1**

A study of and participation in the skills and knowledges of various sports and outdoor recreational activities in a natural setting.

Minimum of 6 cl and 24 lab hrs. Arr. Not open to students who have completed a corresponding subdivision of 140. Preregistration with department required. Travel and subsistence costs for activities will be borne by the student. These courses are graded S/U.

**139.01 Scuba II**

Introduction to fresh water diving.

Prereq: 179 or equiv. Student must provide wetsuit (rentals may be available).

**139.03 Backpacking I**

Introduction to basic backpacking techniques, equipment, wilderness travel, emergency procedures, and environmental awareness.

Student must provide sleeping bag and hiking boots.

**139.04 Cycling I**

Introduction to cycle touring with an emphasis on safety, equipment repair, maintenance, and trip planning.

Student must provide bicycle and sleeping bag.

**139.05 Winter Backpacking**

Designed for the experienced backpacker and covers winter camping, clothing, travel techniques, and advanced first aid.

Prereq: 139.03 or previous backpacking experience. Student must provide sleeping bag and hiking boots.

**139.06 Skiing**

Alpine and/or cross country skiing with instruction appropriate to various ski levels.

Prereq: Ski experience desirable. Repeatable to a maximum of 3 cr hrs. Student must provide boots, poles and skis (rentals available).

**139.07 Experimental Sections**

Activities will be announced and publicized whenever an experimental section is deemed worthy of trial.

**139.08 Canoeing II**

Use of canoeing skills on an overnight trip or on several day trips in the area.

Prereq: Small craft 177.02 or equiv. Student must provide sleeping bag on overnight trip.

**139.09 Caving I**

Introduction to basic caving techniques, equipment, trip planning, and safety; cave related ecology, flora, and fauna will also be emphasized.

Student must provide sleeping bag.

**139.10 Lightweight Backpacking**

Advanced backpacking activities including navigation, rope handling skills, and survival techniques.

Prereq: 139.03 or previous backpacking experience. Not open to students with credit for 140.05. Student must provide sleeping bag and hiking boots.

**139.11 Rock Climbing**

Basic rock climbing techniques, rope handling, and safety systems will be covered.

Prereq: Good physical condition. Students must provide sleeping bag, appropriate footgear for the climbing trip and a 20' length of new 1" nylon webbing.

**139.12 Beginning Trap Shooting**

An introductory course covering equipment selection and maintenance, shooting techniques, scoring, safety, and the opportunities for lifetime involvement.

Cost of ammunition and targets must be borne by the student.

**139.13 Orienteering**

Introduction to the sport of orienteering involving compass skills, map reading, and cross-country travel; cross-country racing in its competitive form.

Student must provide compass and bear transportation costs.

**139.14 The 24-Hour Experience U 1**

A sensory awareness experience with a continuous 24-hour period designed to enhance one's perceptions and relationship with the environment, other people, and one's self.

3 2-hr cl, 24-hr field experience. Participants should be physically fit. A nominal lab fee will be assessed to cover the cost of camping, food, and trip insurance. Students must provide own transportation to field experience.

**139.15 High Ropes Course U 1**

A series of high ropes course experiences on challenging and formidable obstacles 25 to 40 feet above ground.

1 2-hr cl, 4-5 hrs field experience. Participants should be physically fit. A nominal lab fee will be assessed to cover the cost of using the ropes courses and insurance. Students must provide own transportation.

**139.16 Small Bore Outdoor Prone Rifle Shooting U 1**

A continuation of 171.01 and 171.02 in the sport of outdoor prone shooting as practiced locally and nationally.

Arr. Prereq: 171.01 or 171.02 or permission of instructor. Repeatable to a maximum of 2 cr hrs. Fee for supplies required. This course is graded S/U.

**140 Outdoor Pursuits Program U 3**

A study of and participation in the skills and knowledge of various sports and outdoor recreational activities in a natural setting.

Minimum of 5 3-hr training sessions; minimum of eight trip days. Repeatable to a maximum of 12 cr hrs; subdivisions may not be repeated. Preregistration with dept is required.

**140.03 Backpacking II**

Opportunity for practice in advanced camping and outing skills on an extended trip.

Prereq: Backpacking I or prior backpacking experience.

**140.04 Cycling II**

For the intermediate cyclist who is interested in cycle touring in all types of terrain; cycle maintenance and safety.

Prereq: Cycling I or previous cycling experience.

**140.05 Wilderness Exploration and Survival Techniques**

Study of living in nature under controlled, stress conditions: caving, rappelling, and mountain climbing.

**140.06 Skiing**

Alpine and/or cross country skiing trips with instruction appropriate to individual skill levels.

Prereq: Ski experience desirable.

**140.07 Experimental Sections**

Activities deemed worthy of developing on an experimental basis; activities will be announced and published when course is offered.

**140.08 Sailing**

An introduction to deep water sailing and experience in handling and crewing a large sailing craft.

Prereq: Ability to swim 100 yards and tread water 5 minutes; previous sailing experience recommended. Student must provide sleeping bag and obtain certified birth certificate or passport for trips on international waters. Travel and subsistence costs for activities will be borne by the student.

**141 Adapted Physical Education Activities U 1**

Special sections of conditioning and sport activities open only to students with temporary or permanent physical disabilities which would prevent their participation in regular classes.

2 lab hrs arr. Repeatable to a maximum of 12 cr hrs. Offerings to be announced quarterly. Students register for desired section using alphabetical designation.

A— Archery  
B— Badminton  
C— Billiards  
D— Bowling  
E— Special Conditioning  
F— Golf  
G— Riffery  
H— Basic Swimming  
I— Table Tennis  
J— Tennis  
K— Self Defense

**142 Archery**

Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable.

**142.01 Archery I U 1**

Introductory skills and knowledges essential for target shooting.

2 lab hrs arr.

**143 Badminton U 1**

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

**143.01 Badminton I**

Beginning skills and knowledge essential for playing badminton.

**144 Basketball U 1**

Skill and strategy necessary for playing basketball.

Au, Wi Qtrs. 2 lab hrs arr. Prereq: Previous playing experience. Those with varsity experience should elect 631.02.

Registration must include letter designation.

A—Women  
B—Men

**145 Bowling U 1**

2 lab hrs arr. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Students must provide bowling shoes (rentals available) and have ID card.

**145.01 Bowling I**

Introductory skills and knowledge essential for bowling.

**145.02 Bowling II**

Emphasis on improving the average through increased efficiency in the use of the hook ball and spot bowling.

Prereq: 145.01 or ability to average at least 125.

**145.03 Bowling III**

Advanced skills necessary for competitive bowling.

Prereq: 145.02 or ability to average over 150 with a hook ball.

**146 Boxing for Beginners U 1**

Fundamentals of boxing.

2 lab hrs arr.

**147 Conditioning Activities U 2**

Lecture material covering principles of conditioning is applied in the activity section which the student elects.

1 cl, 3 1-hr lab. Register for desired laboratory sections using alphabetical designation.

- A— Circuit Training
- B— Ice Skating
- C— Jogging
- D— Nautilus Training
- E— Posture and Figure Control
- F— Swimming
- G— Weight Training
- H— Diet and Exercise
- I— Prescriptive Exercise
- J— Rhythmic Aerobics

**148 Lifetime Fitness Programs U 1**

Continued application of the principles covered in 147.

3 1-hr labs. Prereq: 147. Repeatable to a maximum of 2 or hrs; subdivisions not repeatable. Register for desired laboratory section using alphabetical designation.

- A— Circuit Training
- B— Ice Skating
- C— Jogging
- D— Nautilus Training
- E— Posture and Figure Control
- F— Swimming
- G— Weight Training
- H— Diet and Exercise
- I— Prescriptive Exercise
- J— Rhythmic Aerobics

**153 Recreational Dance Forms**

Beginning, intermediate, and advanced level courses in social dance and folk/square dance; *women register for "A" sections, men for "B" to insure even pairing.*

VPA Admis Cond course.

**153.01 Social Dance I U 1**

Introduction to basic steps and variations of selected standard social dances including foxtrot, waltz, swing, cha-cha, rumba, and tango.

1 2-hr cl.

**153.02 Social Dance II U 2**

Continuation of 153.01 with emphasis on style and technique; introduction of additional social dance contents.

2 2-hr cl. Prereq: 153.01.

**153.03 Social Dance III U 2**

Advanced social dance skills and techniques with increased emphasis on design and development of steps and variations; a performance project is required.

2 2-hr cl. Prereq: 153.02. Repeatable to a maximum of 4 or hrs.

**153.05 Folk and Square Dance I U 1**

Introduction to basic folk and square dance steps and patterns.

1 2-hr cl.

**153.06 Folk and Square Dance II U 2**

Continuation of 153.05 with additional instruction in New England contra dancing and clogging; rhythmical acuity and correct styling are stressed.

2 2-hr cl. Prereq: 153.05 or equiv.

**153.07 Folk and Square Dance III U 2**

Advanced level square and folk dance focusing on performance and choreography; square dance calling and folk dance choreography are taught; a live performance, designed and performed by students will culminate the quarter's study.

2 2-hr cl. Prereq: 153.05, 153.06, or equivs. Repeatable to a maximum of 4 or hrs.

**154 Fencing**

Repeatable to a maximum of 4 or hrs; subdivisions not repeatable.

**154.01 Fencing I U 1**

Fundamentals of foil fencing.

2 lab hrs arr.

**154.02 Fencing II U 1**

Continuation of 154.01 with emphasis on the bout.

2 lab hrs arr. Prereq: 154.01 or equiv.

**154.03 Fencing III U 2**

Intermediate-advanced skills of foil fencing; introduction to epee and sabre; students will begin specializing in one weapon.

4 lab hrs arr. Prereq: 154.02 or 154.04 or equiv.

**154.05 Stage Fencing U 1**

A study of fencing skills to prepare theatre students to plan and carry out fight scenes.

2 1-hr labs. Open only to theatre majors.

**155 Field Hockey U 1**

2 lab hrs arr.

**156 Football U 1**

Fundamental skills of touch football.

2 lab hrs arr.

**156.03 Flag Football**

Co-ed sections for experienced touch football players.

**157 Golf U 1**

2 lab hrs. Repeatable to a maximum of 2 or hrs; subdivisions not repeatable.

**157.01 Golf I**

Introductory skills and knowledge preparatory to course play with emphasis on irons.

**157.02 Golf II**

Continuation of 157.01 with emphasis on woods and on introduction to course play.

Prereq: 157.01 or equiv. Advanced players should elect 631.06.

**158 Gymnastics U 1**

Development and practice of gymnastic skills.

2 lab hrs arr. Subdivisions 158.01 and 158.04 not repeatable.

**158.01 Women's Gymnastics I**

Introduction to the four Olympic gymnastic events for women: floor exercise, vaulting, beam, and uneven parallel bars.

2 cl.

**158.02 Women's Gymnastics II**

Continuation of 158.01.

2 cl. Prereq: 158.01 or previous experience. Repeatable to a maximum of 2 or hrs.

**158.04 Men's Gymnastics I**

Introduction to the six Olympic gymnastics events for men: floor exercise, side horse, rings, vaulting, parallel bars, and horizontal bar.

2 cl.

**158.05 Men's Gymnastics II**

Continuation of 158.04.

2 cl. Prereq: 158.04 or previous experience. Repeatable to a maximum of 2 or hrs. Advanced students should elect 631.05.

**160 Handball U 1**

Repeatable to a maximum of 2 or hrs; subdivisions not repeatable. Student must provide handball glove.

2 lab hrs arr.

**161 Horseback Riding U 1**

3 lab hrs arr. Repeatable to a maximum of 3 or hrs; subdivisions not repeatable. Travel and stable costs (rental of horse and equipment) for activities must be borne by the student. Offered only when arrangements can be made with local stables. Preregistration with dept required. These courses are graded S/U.

**161.01 Horseback Riding I**

Fundamental skills and knowledge essential for safe riding.

**161.02 Horseback Riding II**

Continuation of 161.01 with emphasis on improved form and control of the horse.

Prereq: 161.01 or knowledge of canter leads and ability to post diagonals.

**161.03 Horseback Riding III**

Introductory skills of jumping with stress on hunt seat and low jumps.

Prereq: 161.02 or equiv.

**162 Ice Skating**

Basic skills of ice skating.

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Students must provide skates (rentals available).

**162.01 Ice Skating I U 1**

Fundamentals of balance, movement, and safety on the ice; forward, backward, and stopping. Guidance in choice, use and care of equipment.

2 lab hrs arr. Open only to beginners. This course is graded S/U.

**162.02 Ice Skating II U 1**

Elementary skating with emphasis on correct technique for basic skills.

2 lab hrs arr. Prereq: 162.01 or ability to skate forward, backward, and stop with no balance problems.

**162.03 Ice Skating III U 2**

Power skating: designed for persons having had more than 30 hrs on ice and who can execute the basic strokes (including back crossovers) with correct techniques.

4 lab hrs. Prereq: 162.02 or 162.04 or equiv skill level.

**162.05 Couple Skating U 1**

Introduction to partner skating; how to lead and partner a variety of stroking patterns to various types of music.

1 2-hr lab. Prereq: 162.01 or equiv. Students must provide skates (rentals available).

**163 Figure Skating**

Figure skating skills and techniques including the elements of free skating and compulsory figures.

Repeatable to a maximum of 5 cr hrs; subdivisions not repeatable. Students must provide figure skates (no rentals). VPA Admis Cond courses.

**163.01 Figure Skating I U 2**

Lectures: survey of figure skating includes history, types of competition, judging, recreational, and show skating. Lab: introduction to free skating, compulsory figures, and dance skating.

1 cl, 3 lab hrs. Prereq: 162.03 or permission of instructor.

**163.02 Figure Skating II U 2**

Intermediate and advanced freestyle; intermediate: all single jumps, basic spins, and advanced footwork; advanced: jump combinations, spin combinations, and double jumps.

3 lab hrs arr. Prereq: 163.01 or permission of instructor.

**163.03 Creative Skating U 2**

Skating as a vehicle of movement exploration and artistic expression; performance skating for individuals and groups.

2 2-hr labs. Prereq: Previous instruction in figure skating or permission of instructor.

**163.05 Competitive Figure Skating U 2**

Compulsory figures and freestyle designed to prepare skater for United States Figure Skating Association tests and competitions.

2 2-hr cl. Prereq: 163.02 or permission of instructor.

**164 Ice Hockey U 1**

Fundamental skills and knowledges essential for playing ice hockey.

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Students must provide hockey skates (rentals available).

**164.01 Ice Hockey I**

Introductory skills and techniques of ice hockey.

Prereq: 162.02 or equiv. Open only to beginners.

**164.03 Ice Hockey II for Men**

Intermediate-advanced play.

Prereq: 164.01 or previous playing experience.

**167 Lacrosse U 1**

Skills and knowledge essential for playing Lacrosse.

2 lab hrs arr.

**167.02 Men's Lacrosse****168 Movement and Self Awareness U 1**

Student's natural movement vocabulary is explored and extended through movement experiences designed to heighten self and social awareness; creative rather than imitative approach is used.

2 lab hrs arr.

**169 Martial Art Forms**

An exploration and orientation to Eastern movement martial art forms.

2 lab hrs arr. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

**169.01 Aikido U 1**

An introduction to a harmonizing martial art, designed to increase physical and mental centeredness; to improve grace, balance, awareness, and general movement abilities; to aid in self defense.

Not open to students with credit for 186.04.

**169.02 Aikido II U 2**

Intermediate skills, techniques, and practice of Aikido; acquaintance with and development of an understanding of rank and examination requirements.

2 2-hr cl. Prereq: 169.01, 6th kyu rank, or permission of instructor.

**169.04 Judo I U 1**

Introductory skills and knowledge essential in throwing techniques and mat work of Judo.

Not open to students with credit for 165.01 or 165.04.

**169.05 Judo II U 2**

Intermediate skills and techniques of Judo as well as an introduction to the skills involved in competitive Judo.

2 2-hr labs. Prereq: 165.04 or equiv or certified Gokyu by National Collegiate Judo Association. Not open to students with credit for 165.02 or 165.05.

**169.06 Judo III U 2**

Advanced skill acquisition in techniques of sport Judo and experience in competitive Judo.

2 2-hr labs. Prereq: 165.05 or equiv or certified Yonkyu by National Collegiate Judo Association. Not open to students with credit for 165.03

**169.07 Karate I U 1**

Introduction of the fundamental forms and techniques of Karate.

2 lab hrs. Not open to students with credit for 166.01

**169.08 Karate II U 2**

The refinement of basic forms and techniques and the introduction of advanced forms; more emphasis on free fighting.

4 lab hrs arr. Prereq: 165.01 or equiv. Not open to students with credit for 166.02.

**169.09 Karate III U 2**

Refinement of intermediate techniques and forms; introduction to advanced forms and free sparring technique.

2 2-hr cl. Prereq: 169.08 or equiv. Repeatable to a maximum of 4 cr hrs.

**169.10 Shuai Chiao U 1**

Introduction to the various forms and techniques of Shuai Chiao—Chinese wrestling, a combination of Karate and Judo. Not open to students with credit for 186.03.

2 lab hrs arr.

**169.11 Shuai Chiao II U 2**

Intermediate forms and techniques of Shuai Chiao as well as an introduction to the skills involved in competitive Shuai Chiao.

2 cl. Prereq: 169.10 or equiv or certified fifth Chieh by International Shuai Chiao Association. Repeatable to a maximum of 4 cr hrs. Not open to students with credit for 186.05.

**169.13 Tae Kwon Do I U 1**

Beginning course in the Korean martial art form; includes etiquette, basic blocking, thrusting and kicking techniques, and self defense.

2 cl. Not open to students with credit for 166.01.

**169.14 Tae Kwon Do II U 2**

Continuation of Tae Kwon Do I, refinement of technique and form; introduction of intermediate forms and skills, breaking, and conditioning techniques.

2 2-hr cl. Prereq: 169.13.

**169.16 T'ai Chi Ch'uan U 1**

An introduction to T'ai Chi Ch'uan with emphasis on an exploration of body/energy awareness.

Not open to students with credit for 186.01.

**169.17 T'ai Chi Ch'uan II U 1**

Intermediate forms and techniques of T'ai Chi Ch'uan and experience in joint hands operation as well as in combat T'ai Chi Ch'uan.

2 lab hrs arr. Prereq: 186.01 or equiv. Not open to students with credit for 186.02.

**169.18 T'ai Chi Ch'uan III U 2**

Further development of the form practiced in T'ai Chi Ch'uan II; principles of breath control, meditation, and self massage are introduced.

2 2-hr cl. Prereq: 169.17. Repeatable to a maximum of 4 cr hrs.

**170 Racquetball**

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

**170.01 Racquetball I U 1**

Beginning skills and knowledge for students with no prior experience in racquetball.

2 lab hrs arr.

**170.02 Racquetball II U 1**

Continuation of 170.01 with emphasis on strategy and the playing of singles.

2 lab hrs arr. Prereq: 170.01 or equiv.

**170.03 Racquetball III U 2**

Participation in both singles and doubles with emphasis on strategy and competition.

4 lab hrs arr. Prereq: 170.02 or equiv.

**171 Riflery U 1**

1 2-hr lab. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

**171.01 Riflery I**

Introduction to target shooting techniques in the prone and standing positions.

**171.02 Riflery II**

A continuation of 171.01 stressing the other shooting positions.

Prereq: 171.01 or Mil Sci 112 or equiv.

**171.03 International Air Pistol Target Shooting**

Introduction to the sport of international air pistol shooting.

1 2-hr cl.

**172 Self Defense U 1**

Skills and understandings essential to defend oneself against an aggressor with emphasis on avoiding attack.

2 lab hrs arr.

**174 Soccer U 1**

Techniques and knowledge essential for playing soccer.

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

**175 Softball U 1**

Skills and knowledge necessary for playing softball.

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

**175.02 Women's Slo Pitch II**

Prereq: 175.01 or 175.03 or intermediate level skills. Not open to students with credit for 175.04.

**175.07 Men's Slo Pitch II**

Prereq: 175.06 or intermediate skills.

**176 Squash U 1**

Introductory skills and knowledge essential for playing squash.

2 lab hrs arr.

**177 Small Craft Operation**

Introduction to the operation of various types of small craft; emphasis on basic skills and safety procedures.

Prereq: Swim a minimum of 100 yards without stopping.

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

**177.02 Canoeing I U 1**

Basic paddling skills.

2 lab hrs arr. Open to students with little or no canoeing experience. See 139 and 140 for additional offerings.

**177.03 Sailing I U 1**

Basic sailing procedure: sailing canoes are used.

2 lab hrs arr.

**177.04 Instructorship in Small Craft U 2**

Designed to lead to certification with the American Red Cross in canoeing.

4 lab hrs arr. Prereq: 177.02 or equiv.

**178 Swimming and Diving U 2**

Fundamental swimming and diving skills with emphasis on personal safety.

4 lab hrs arr. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Student must provide bathing suit. See 147 and 148 for swim conditioning.

**178.01 Swimming I**

Beginning swimming.

Open only to non-swimmers and students with no deep water experience. This course is graded S/U.

**178.02 Swimming II**

Elementary swimming skills for those who can swim in deep water but no farther than 2 pool lengths (50 yards).

**178.03 Swimming III**

Intermediate skills for those who can swim at least 100 yards using the front crawl and at least 2 other strokes.

Prereq: 178.01 or equiv.

**179 Skin and Scuba Diving U 3**

Skills and knowledge essential for safe diving and preparation for open water checkout dives.

2 cl, 2 lab hrs arr. Prereq: Ability to swim ¼-mile in 10 min. Student must provide bathing suit and bear cost of required special scuba medical exam. See 139 and 140 for additional offerings.

**180 Springboard Diving**

Prereq: 178.02 or equiv. Repeatable to a maximum of 3 cr hrs; subdivisions not repeatable. Student must provide bathing suit.

**181 Synchronized Swimming U 1**

2 lab hrs arr. Prereq: 178.03 or equiv. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable. Student must provide bathing suit. VPA Admis Cond courses.

**182 Life Saving and Water Safety**

Repeatable to a maximum of 12 cr hrs; subdivisions are not repeatable. Student must provide bathing suit.

**182.01 Advanced Swimming and Life Saving U 2**

Designed to lead to American Red Cross Advanced Life Saving certification.

4 lab hrs arr. Prereq: 178.03 or equiv.

**182.02 Water Safety Instructors U 2**

Designed to lead to certification as an American Red Cross Water Safety Instructor.

4 lab hrs arr. Prereq: Unexpired advanced lifesaving certificate.

**182.03 Handicapped Swimming Instructor U 2**

Designed to lead to certification as an American Red Cross Handicapped Swimming Instructor.

1 cl, 1 2-hr lab. Prereq: Current ARC Water Safety Instructor's certificate or 662 or permission of the instructor.

**182.04 Pool and Beach Operation U 3**

Operational aspects including office and personnel, budgeting, public relations, recreation and safety, equipment operation and maintenance, water filtration, recirculation, and sanitation.

3 cl. Prereq: Unexpired ARC Water Safety Instructorship or concurrent registration in 182.02.

**182.05 Lifesaving and Water Safety: Lifeguard Training U 2**

Designed to lead to American Red Cross Lifeguard certification.

4 lab hrs, arr. Prereq: Unexpired advanced lifesaving, standard first aid and cardiopulmonary resuscitation certificates. The ability to demonstrate appropriate aquatic skills will be tested early in the course.

**182.06 Lifesaving and Water Safety: Lifeguard Instructor U 1**

Designed to lead to American Red Cross Lifeguard Instructor certification.

1 2-hr lab. Prereq: Unexpired Lifeguarding and Water Safety Instructor certificates. The ability to demonstrate appropriate aquatic skill will be tested early in the course.

**183 Water Polo U 2**

Introductory skills and knowledge essential in the sport of water polo.

4 lab hrs arr. Prereq: 178.03 or equiv. Student must provide bathing suit.

**185 Table Tennis U 1**

2 lab hrs arr. Repeatable to a maximum of 2 cr hrs; subdivisions not repeatable.

**185.01 Table Tennis I**

Beginning skills and knowledge essential for playing table tennis with emphasis on the use of backspin and topspin in the singles game.

**185.02 Table Tennis II**

Continuation of 185.01 with emphasis on advanced strokes and their application in the playing of singles and doubles.

Prereq: 185.01 or the ability to do backspin and topspin serves.

**188 Tennis**

Skills and knowledge essential in playing tennis.

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Student must provide racket and 6 balls; advanced students should elect 631.10.

**188.01 Tennis I U 1**

Beginning skills; forehand, backhand, and serve—singles play.

2 lab hrs arr.

**188.02 Tennis II U 1**

Elementary skills; introduction to doubles play.

2 lab hrs arr. Prereq: 188.01 or equiv.

**188.03 Tennis III U 2**

Continuation of 188.02 with emphasis on playing strategy for both doubles and singles.

4 lab hrs arr. Prereq: 188.02 or 188.04 or equiv.

**190 Acrosport**

Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable.

**190.04 Acrosport I U 1**

Basic skills in tumbling, and hand balancing.

2 lab hrs.

**190.05 Acrosport II U 2**

Continuation of 190.04 with emphasis on routine construction for competition or exhibition.

4 lab hrs arr. Prereq: 190.04.

**191 Volleyball U 2**

4 lab hrs arr. Repeatable to a maximum of 4 cr hrs; subdivisions not repeatable. Advanced students should elect 631.14.

**191.01 Volleyball I**

Introduction to power volleyball.

**191.02 Volleyball II**

Continuation of power volleyball fundamental skill perfection and game strategies woven to produce an intermediate playing experience.

Prereq: 191.01 or equiv.

**195 Yoga**

Introduction to fundamental techniques and basic yogic principles of pranayama (breath control), asana (posture), relaxation, and meditation; emphasis on major postures.

**195.01 Yoga I U 1**

2 lab hrs arr.

**195.02 Yoga II U 1**

Asanas (postures) at the intermediate level of Hatha yoga are introduced; continued development and practice of relaxation and meditative techniques; further exploration of yogic philosophy.

1 2-hr cl. Prereq: 195.01 or equiv.

**196 Varsity Squads U 2**

Participation as a player on a varsity squad.

6 lab hrs. Prereq: Admission by tryout. Repeatable to a maximum of 10 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

**196.01 Baseball****196.02 Basketball****196.03 Cross Country****196.04 Fencing****196.05 Field Hockey****196.06 Football****196.07 Golf****196.08 Gymnastics****196.09 Ice Hockey****196.10 Lacrosse****196.11 Pistol****196.12 Riflery****196.13 Soccer****196.14 Softball****196.15 Swimming and Diving****196.16 Swimming (Synchronized)****196.17 Tennis****196.18 Track****196.19 Volleyball****196.20 Wrestling****208 Orientation to Physical Education U 2**

Consideration of personal competencies essential for effective teaching, research, recreation, coaching; and investigation of areas of concentration; relationships to other disciplines.

Au, Wi, Sp Qtrs. 2 cl.

**209 Orientation to Exercise Science U 2**

A general introduction to exercise science focusing on instrumentation, measurement, and training equipment.

Wi Qtr. 1 cl, 2-hrs clinical. Prereq: EDP in the College of Education. Open only to students admitted to the Exercise Science program.

**211 Physical Education Activities U 1**

Instructions in the techniques of skills, rules, strategies, and the social behavior involved in sports and dance activities.

Au Qtr. 3 lab hrs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 111 or 114.

**212 Physical Education Activities U 1**

Continuation of 211.

Wi Qtr. 3 lab hrs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 112 or 115.

**213 Physical Education Activities U 1**

Continuation of 212.

Sp Qtr. 3 lab hrs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 113 or 116.

**214 Physical Education Activities U 3**

To develop knowledge, understandings, and skills in the basic activities appropriate to the teacher of physical education.

Au Qtr. 5 2-hr. labs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 131.

**215 Physical Education Activities U 3**

Continuation of 214.

Wi Qtr. 5 2-hr labs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 132.

**216 Physical Education Activities U 3**

Continuation of 215.

Sp Qtr. 5-2 hr labs. Open only to students planning to major in physical education or recreation education. Not open to students with credit for 133.

**221 Sports Officiating U 2**

Study of playing rules, rule interpretation, techniques, and mechanics of officiating various interscholastic and intercollegiate athletic sports.

2 cl. Prereq: Satisfactory evidence of playing skill in the elected athletic sport. Repeatable to a maximum of 12 cr hrs, subdivisions not repeatable.

**221.01 Baseball**

Sp Qtr.

**221.02 Basketball**

Au, Wi Qtrs. Students completing the course are eligible for certification to officiate in Ohio schools.

**221.04 Football**

Au Qtr. Students completing the course are eligible for certification to officiate in Ohio schools.

**221.12 Wrestling**

Au Qtr. Students completing the course are eligible for certification to officiate in Ohio schools.

**221.14 Volleyball**

Au Qtr.

**221.15 Softball**

Sp Qtr.

**230 Nature of Human Movement U 3**

The study of human movement, including its organization, significance, and cultural implications. Kleinman and staff.

Wi, Sp Qtrs. 3 2-hr cl and lab.

**231 Physical Education Activities U 1**

Designed to develop knowledge, understandings, and skills in the basic activities appropriate to the teacher of physical education.

Sp Qtr. 3 1-hr labs. Open only to phys ed and recreation education majors.

**232 Physical Education Activities U 1**

Continuation of 231.

Wi Qtr. 3 1-hr labs. Open only to phys ed and recreation education majors.

**233 Physical Education Activities U 1**

Continuation of 232.

Au, Wi, Sp Qtrs. 3 1-hr labs. Open only to phys ed and recreation education majors.

**240 The Wilderness Traveler U 3**

Introduction to wilderness recreation skills and equipment, philosophies of wilderness experience, and wilderness management issues.

Su, Sp Qtrs. 2 1-hr cl, 1 weekend and 1 extended trip. Concur: Comp Std 231. Students must supply hiking boots, sleeping bag, and personal clothing for trips. Travel and subsistence costs must be borne by the student.

**260 Sport in Contemporary America U 3**

A study of the contemporary sport scene in America; the issues, the controversies confronting the athlete, the coach, the administrator, and the general public.

Wi Qtr. 1 1½-hr cl; 1 1½ hr rec.

**262 Coaching the Young Athlete U 3**

Skills and knowledges essential to planning, coaching, and supervising competitive sports programs which are consistent with the needs of children.

Au, Wi, Sp Qtrs. 1 2-hr cl, 1 2-hr lab. Not open to physical education majors. Register for desired lab section using alphabetical designation.

A— Baseball/Softball

B— Basketball

C— Football

D— Swimming

E— Other

**263 Special Issues Affecting Contemporary Student-Athletes U 3**

An exploration of current topics and problems concerning collegiate athletes and the decision-making skills needed to facilitate college adjustment. Powers.

Au, Wi Qtrs. 2 1½-hr cl.

**264 Feldenkrais Movement Education U 1**

Awareness through movement; developmental movement patterns; relaxation; clarity of intention; structural support; functional patterns.

1 2-hr cl. Repeatable to a maximum of 3 cr hrs.

**279 Directed Clinical Experiences in Developmental Motor Activity U 2**

Clinical experience in evaluating the motor status of an individual child and the formulation and execution of a motor program for the child. Herkowitz.

Au, Wi, Sp Qtrs. Minimum of 3 hrs per week. Prereq: Phys ed major or permission of instructor. Repeatable to a maximum of 8 cr hrs with not more than 4 in a single decimal subdivision.

**279.01 Primary School****279.02 Preschool****279.03 Infant/Toddler****289 Directed Field Experience U 2-5**

Pre-registration with department required. Repeatable to a maximum of 20 cr hrs.

**289.01 Introductory Experiences in a School System**

For students seeking admission to professional status in physical education.

Au, Wi, Sp Qtrs.

**289.02 Coaching the Young Athlete**

Au, Wi, Sp Qtrs. Prereq: 262. Not open to students who have been accepted into the physical education major program.

**289.03 Teaching Youth Groups**

Au, Wi, Sp Qtrs. Prereq: 262 or 182.02 or other appropriate skill/methods courses with permission of instructor. Not open to physical education majors.

**293 Individual Studies U 1-4**

For individuals not majoring in physical education who wish to pursue special studies in work not normally offered in courses.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

For groups of students not majoring in physical education who wish to pursue special studies or recreational sports activities.

Au, Wi, Sp Qtrs. Arr. Prereq: Permission of dept required. Repeatable to a maximum of 10 cr hrs.

**323 Creative Physical Education for Elementary Teachers U 3**

Theory of physical activities as a medium for creative self-expression; exploration of rhythmical, individual, and group activities and their relation to development of children.

Au, Wi, Sp Qtrs. 2 2-hr labs. Not open to students with credit for 541.



**360 Kinesiology U 4**

A study of functional anatomy and biomechanics and their application to human movement. Simonian.

Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab.

**414 Science of Development Through Activity U 4**

A systematic study of factors in human movement which affect the physiological development of the organism. Filusch and Kirby.

Au, Wi, Sp Qtrs. 3 cl, 1 2-hr lab. Prereq: Zoology 232.

**441 Motor Development U 3**

Study of the development of fundamental motor skills growth, children's physical fitness, and the influence of sociological and psychological factors on the motor behavior of children. Herkowitz.

Au Qtr. 3 cl. Prereq: Recommended 360, Educ 451, and Zoology 232.

**448 Strategies for Improving Sport Performance U 3**

A study of psych-social factors in sport and active recreation with impact on performance and enhance participation. Nelson

Wi Qtr. 2 1½-hr cl.

**460 Kinesiology for Dancers U 3**

Scientific study of dance movements including functional anatomy; basic mechanics; flexibility and injury prevention. Simonian.

Wi Qtr. 2 1½-hr cl. Prereq: 10 cr hrs in biological sciences.

**489 Advanced Field Experience U 2-5**

Directed teaching experience for advanced undergraduate students in physical education.

Prereq: Permission of instructor or acceptance into physical education program. Repeatable to a maximum of 20 credit hours.

**489.02 Peer Teaching U 2**

Designed to provide advanced undergraduate students with field experience in teaching their peers and to assist students in the analysis of their own and other's teaching capabilities.

Au, Wi, Sp Qtrs. 2 cl.

**489.04 Teaching in Adapted Physical Education U 2**

Experience in assessing and programming of gross motor activities with emphasis on teaching experience with handicapped children.

1 cl, 2 hr arr.

**489.05 Interscholastic Coaching U 2-5**

Su, Au, Wi, Sp Qtrs.

**489.07 Secondary School Programs U 2-5**

Au, Wi, Sp Qtrs.

**489.08 Elementary School Programs U 2-5**

Au, Wi, Sp Qtrs.

**489.09 Teaching of Sport and Dance in College Programs U 2-5**

Su, Au, Wi, Sp Qtrs.

**501 Behavioral Dimensions of Educational Settings: Principles U 3**

Introduction to principles of human behavior as they apply to educational settings.

Au Qtr. Arr. Prereq: Admission to teacher certification program in Phys Ed or ED-HUSER or permission of instructor. Not open to students with credit for ED-HUSER 501.

**502 Behavioral Dimensions of Educational Settings: Applications U 3**

Application of behavioral systems and technologies to the acquisition of maintenance of academic and social behavior in educational settings.

Wi Qtr. Arr. Prereq: 501 or ED-HUSER 501. Not open to students with credit for ED-HUSER 502.

**503 Schools U 1**

Examination of basic concepts in school organization and control, school finance, teachers' organizations, liability, and teachers' rights and responsibilities.

Arr. Prereq: 501 and 502 or ED-HUSER 501 and 502 or permission of instructor. Not open to students with credit for ED-HUSER 503.

**504 Technological Applications for Special and Physical Education Students U 1**

Designed for undergraduate special and physical education students who wish to gain initial orientation with microcomputer applications in education.

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Admission to teacher certification program in Phys Ed or ED-HUSER and permission of instructor. Not open to students with credit for ED-HUSER 504.

**505 Alternative Models for Education U 3**

Examines models for educating children and youth that differ from those experienced by the typical teacher candidate in K-12 public/parochial schools.

Au, Sp Qtrs. 3 cl or 1 2½-hr cl. Prereq: 501 and 502 or ED-HUSER 501 and 502. Not open to students with credit for ED-HUSER 505.

**506 Senior Seminar: Transition to Teaching U 2**

A seminar focusing on problems and prospects for transitioning to professional service with specific focus on problems encountered in the induction period.

1 2-hr cl. Prereq or concur: Student teaching. Not open to students with credit for ED-HUSER 506.

**540 Introduction to Teaching and Classroom Management in Physical Education U 5**

Introduction to generic teaching and classroom management skills for effective teaching. Siedentop.

Au Qtr. 2 cl, 2 2-hr lab. Prereq: Admission to certification program in Phys Ed.

**541 Physical Education and the Elementary School Child U 5**

The study of content, program design, and teaching techniques appropriate to the elementary school child.

Sp Qtr. 2 cl, 3 2-hr labs. Prereq: 230, 489.02 and Educ 451. 489.08 must be scheduled concur for 2 cr.

**586 Student Teaching in Physical Education in Elementary Schools U 7**

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: 489.08, 541, and 4th yr standing in educ. 15 cr hrs of student teaching is required. Students desiring state certification in grades K-6 must elect 7 cr hrs of 586 and 8 cr hrs of 587. This course is graded S/U.

**587 Student Teaching in Physical Education in Secondary Schools U 8 or 15**

Observation, participation, and responsible teaching in a public school; individual and group conferences or seminars.

Au, Wi, Sp Qtrs. Prereq: 647, 489.07 and 4th yr standing in educ. 15 cr hrs of student teaching are required. Students desiring state certification in grades 7-12 only may elect all 15 cr hrs in 587; others will combine 8 cr hrs of 587 with 7 cr hrs of 586. This course is graded S/U.

**589 Internship in Exercise Science U 8 or 15**

Clinical experience in exercise testing; evaluation and implementation in an exercise/fitness setting. Filusch.

Su, Au, Wi, Sp Qtrs. 30 hrs/wk. Prereq: Admission to exercise science option. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**General Prerequisite for Courses Numbered 600 or 700**

*The minimal requirement for 600- and 700-level courses is junior standing.*

**610\* Women's Sport History U G 4**

Examines women's sporting experiences from primitive cultures to contemporary societies; investigates influence of class, economics, power relationships, education, and views of the body.

Sp Qtr. 4 cl.

**620 Coaching of Athletic Sports**

Study in the theory, strategy, and mechanics of coaching various interscholastic, intercollegiate athletic sports.

2 cl, 2 lab hrs. Prereq: Advanced skill level in the elected sport, jr standing and permission of instructor. Repeatable to a maximum of 18 cr hrs; subdivisions not repeatable, except 620.09.

**620.01 Baseball U G 3**

Wi Qtr.

**620.02 Basketball U G 3**

Au, Sp Qtrs.

**620.04 Football U G 3**

Sp Qtr.

**620.06\* Golf U G 2**

Au Qtr.

**620.08\* Soccer U G 3**

Sp Qtr.

**620.10 Tennis U G 2**

Wi Qtr.

**620.11 Track and Field U G 3**

Wi Qtr.

**620.12 Wrestling U G 2**

Sp Qtr.

**620.14 Volleyball U G 2**

Sp Qtr.

**621 Principles of Physical Education U G 5**

Origins and nature of modern physical education as developmental experience and medium of education; contributions to organic growth, personal resources, and growth in social relationships. Nelson.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Major or minor in phys ed, or permission of instructor.

**622 History of Physical Education and Sports from Ancient Times to 19th-Century Europe U G 3**

A history of physical education and sports which includes primitive societies, Greek and Roman civilizations, the medieval period, and European countries in the 18th and 19th centuries.

Au Qtr. 3 1-hr cl.

**623 History of Physical Education and Sports in the United States U G 3**

The development of physical education and sports in the United States from colonial times to the present and the factors which have affected their growth.

Wi Qtr. 3 1-hr cl.

**625 Movement Awareness, Observation, and Description U G 3**

The use of effort-shape and its relationship to movement observation, description, and analysis.

Sp Qtr. 1 2-hr cl. Prereq: 230 or equiv. Not open to students with credit for 430.

**628 Designing a Movement Arts Curriculum for Children U G 3**

Movement arts education and strategies for designing and implementing a movement arts curriculum for children.

Su, Au Qtrs. 1 2½-hr cl, and 5 8-hr cl during Su Qtr. Students may concurrently and in ensuing quarters enroll in 693 and/or 889 to continue developing and field testing a 4M program in schools under University supervision.

**630 Problems in Intramural Sports U G 2**

A critical analysis of intramural sports programs; problems of policy and administration of programs on the elementary, secondary, and college levels will be studied. Beekman and Bailey.

Au, Sp Qtrs. 1 2-hr cl.

**631 Advanced Skill Techniques U G 2**

Advanced techniques of performance and a specialized and intense study of appropriate technical literature.

4 1-hr labs. Prereq: Advanced skill level, jr standing and permission of instructor. Repeatable to a maximum of 10 cr hrs. Subdivisions not repeatable except 631.20.

**631.06\* Golf**

Au Qtr.

**631.14 Volleyball**

Sp Qtr.

**631.20 Special Offerings**

Su, Au, Wi, Sp Qtrs.

**642 Organization and Administration of Physical Education and Athletics U G 3**

Study of policies and procedures in the organization and administration of the physical education and athletic programs.

Au, Sp Qtrs. 3 cl.

**647 Physical Education for Secondary School Youth U 5**

Emphasis on the study of needs, interests, and abilities of secondary school youth and teaching and curriculum strategies for the conduct of effective. O'Sullivan.

Wi Qtr. 5 cl, 5-hr field experience, 1 2-hr lab. Prereq: 540 or equiv. Concur: 489.07.

**648 The Group and Individual in Sport G 3**

An overview of psycho-social factors as they interact with the sport participation of individuals and groups.

Au Qtr. 2 1½-hr cl.

**650 Evaluation in Physical Education U G 3**

A critical study of methods in evaluating biological, social, and psychological outcomes for physical education. Simonian.

Au, Wi, Sp Qtrs. 2 1½-hr cl.

**653 Elementary Physical Education for Special Educators U G 3**

Survey of elementary physical education with a focus on handicapped pupils; practice related to theories and research.

Sp Qtr. 2 cl, 1 2-hr lab. Prereq: Ed-Excep 251 or permission of instructor. Students with credit for 323 must obtain permission of instructor. Cross-listed in Education for Exceptional Children. Not open to students with credit for Ed-Excep 653.

**660 Laboratories in Exercise Physiology U G 1**

Selected laboratory experiences in the field of exercise science.

1 2-hr lab. Prereq: Grad standing in exer sci or permission of instructor. Subdivisions are not repeatable.

**660.01 Introductory Labs in Exercise Physiology**

Selected laboratory experiences to include cardiovascular and muscle function testing.

Su, Au, Wi Qtrs.

**660.02 Intermediate Laboratories in Exercise Physiology**

Selected laboratory experiences to include cardiovascular and muscle function testing.

Wi Qtr. Prereq: 660.01 or equiv.

**660.03 Advanced Laboratories in Exercise Physiology**

Selected laboratory experiences to include cardiovascular and muscle function testing.

Sp Qtr. Prereq: 660.02 or equiv.

**661 Care and Prevention of Athletic Injuries U G 5**

A consideration of the methods of prevention and care of injuries, conditioning of athletes and safety provisions for the conduct of physical education. Bordner, Daniel, and Hill.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: 360 or equiv. Open only to students in phys ed, hlth edu and physiotherapy, or permission of instructor.

**662 Adapted Physical Education U G 3**

The organization and administration of individual physical education for typical and atypical students including the child with a physical or learning disability; laboratory experience with the atypical. Jansma.

Au, Wi, Sp Qtrs. 2 cl, 1 3-hr lab. Prereq: 360, 541, and 647.

**664 Science of Preparing People for Competitive Sports U G 5**

Direct application of broad principles of anatomy, physiology, and kinesiology to sports and activities of the individual's interest; emphasis on understanding sports injuries and planning progressive conditioning systems.

Wi Qtr. 5 cl. Prereq: 5 hrs in biological sciences. Not open to phys ed majors.

**665 Adult Exercise Program — Implementation U G 3**

Introduction to adult exercise training and evaluation methods; emphasis on the implementation of programs for the normal healthy adult. Kirby.

Su, Wi Qtrs. 3 cl. Prereq: 414 or equiv. To be taken concurrently with 660.01.

**666 Exercise Training for Fitness and Cardiac Rehabilitation U G 3**

Continuation of 665; exercise testing for special populations; cardiac rehabilitation procedures; preventive exercise training programs. Kirby.

Sp Qtr. 3 cl. Prereq: 665.

**676 Programming for Severe Physical Impairments U G 3**

Background information and survey of programmatic considerations related to physical, motor, and fitness training of the severely handicapped.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: Ed-Excep 651 or permission of instructor. Not open to students with credit for Ed-Excep 676. Cross-listed in Educational Services and Research.

**692 Workshop U G 1-8**

Intensive study of a physical education topic of interest to the participant for the purpose of developing sound principles and practices relating to it.

Su, Au, Wi, Sp Qtrs. Cl arr. Prereq: Teaching experience or written permission of workshop director. Repeatable to a maximum of 12 cr hrs with not more than 4 workshops.

**693 Individual Studies in Physical Education U G 1-4**

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Prereq: Grad or sr standing, and permission of adviser. A total of not more than 30 cr hours of individual study (any 693) will apply toward graduation for undergrad students, 15 cr hours for the master's degree and 30 cr hours for the doctoral degree. This course is graded S/U.

**694 Group Studies in Physical Education U G 1-5**

Group studies on special problems in physical education.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 cr hrs, including cr hrs in ED-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions are not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work and theology. Cross-listed in Ed Policy & Leadership, Ed. Theory & Practice, Human Services Ed, Health Education, and Recreation Education.

**700.01 Seminar of Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology; euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility of the professions.

**700.04 Interprofessional Practicum in Clinical Settings U G 3 or 5**

Interprofessional teamwork in clinical settings.

Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally to history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**731 Concepts of the Body in Physical Education U G 3**

Study of the conceptions of the body that have influenced contemporary views of physical education and its practice. Kleinman.

Wi Qtr. 1 2½-hr cl.

**751 Physical Growth and Motor Development U G 3**

Study of growth in phylogenetic and ontogenetic sequence; motor development; critical analysis of research in motor ability, fitness, and athletics, as related to growth and development. Herkowitz.

Au Qtr. 3 cl. Prereq: Grad standing, or permission of instructor.

**760 Mechanical Analysis of Motor Skills U G 3**

The application of mechanical laws, principles, and formulae to motor skills. Simonian.

Au Qtr. 3 cl. Prereq: 360 or equiv, and Physics 111, or permission of instructor.

**762 Motor and Physical Assessment of Children with Handicapping Conditions U G 3**

Survey of validity data on the most used assessment tools and practices in collecting motor and physical performance data on children with handicapping conditions.

Wi Qtr. 1 3-hr cl. Prereq: 650, and 662 or Ed-Excep 651.

**800 Introduction to Exercise Physiology G 4**

Introduction to the field of exercise physiology with emphasis on energy liberation factors affecting performance, health, and fitness and physical training. Lamb and Sherman.

Au Qtr. 2 2-hr cl. Prereq: Physiol 602 or equiv.

**801 Exercise Physiology: Metabolism, Temperature, Water, and Electrolyte Balances G 4**

Continuation of 800; discussion of metabolism, temperature, water, and electrolyte balances during exercise and of the effects of physical training. Kirby and Lamb.

Wi Qtr. 2 2-hr cl. Prereq: 800 and permission of instructor.

**802 Exercise Physiology: Cardio-Respiratory System, Physical Training, and Muscular Strength Training G 4**

Continuation of 801; discussion of cardio-respiratory system during exercise and effects of physical training. Lamb and Sherman.

Sp Qtr. 2 2-hr cl. Prereq: 801 and permission of instructor.

**803\* Carbohydrate Metabolism During Exercise G 3**

Examination of the factors regulating carbohydrate metabolism as they relate to human performance. Sherman.

Sp Qtr. 1 3-hr cl. Prereq: 800, 801, 802 or permission of instructor.

**805 Contemporary Issues in Recreational Sports Administration G 3**

A study of current issues, management techniques, and programming concepts associated with the administration of campus recreation programs.

Wi Qtr. 2 1½-hr cl. Prereq: 630 or equiv.

**806 Sport Management and Administration G 3**

The various aspects of athletic, intramural, and recreation administration.

Sp Qtr. 2 1½-hr cl. Prereq: At least 2 qtrs in sports administration program or phys ed PhD candidate with minor area of athletic administration.

**807 Legal Issues Affecting Sport G 3**

A study of legal issues affecting the delivery of sport services; focus on liability in sport activities.

Au Qtr. 2 1½-hour cl.

**808 Effective Management of Sport Delivery Systems G 3**

Application of contemporary management techniques used in the design and operation of sport delivery systems.

Sp Qtr. 2 1½-hr cl. Prereq: 3 hrs of management sci, Ed-P&L 806, or permission of instructor.

**809 Sport Marketing G 3**

Examination and utilization of basic marketing principles in the areas of sport (collegiate and professional) recreation. Sutton.

Su, Au Qtrs. 2 1½-hr cl. Prereq: Bus-Mktg 650.

**810 Comparative Physical Education G 3**

The current status and practice of physical education in a variety of countries throughout the world with emphasis on schools, universities, and sports clubs.

Sp Qtr. 2 1½-hr cl.

**811 International Sport G 3**

A study of the content and structure of international sports competition and an analysis of the various factors which affect its development.

Wi Qtr. 2 1½-hr cl.

**812 Professional Sport in 20th-Century America G 3**

Examination of the development of professional sport; its economic structure and relationship to mass media; the nature and problems of professional athletes.

Au Qtr. 2 1½-hr cl. Prereq: Enrollment in Sports Management Program, or permission of instructor.

**830 Problems in Interscholastic and Intercollegiate Athletics G 3**

The relation of athletics to education; problems of athletic organization; eligibility; finance, current trends, and developments in management and purpose; public relations. Nelson.

Wi Qtr. 1 2½-hr cl.

**831 Instructional Design for Teacher Educators in Physical Education G 3**

Classification and analysis of learner outcomes in activity settings; emphasis on empirical methods for analyzing outcomes and alternatives for achieving outcomes in teacher education programs in physical education. Siedentop.

Sp Qtr. 1 2½-hr cl.

**832 Human Movement Theory in Physical Education G 3**

A study of the several theoretical conceptions of human movement and their implications for physical education and dance. Kleinman.

Sp Qtr. 2 1½-hr cl.

**841 Physical Education in School and College G 3**

An overview of the contemporary scene in physical education and an analysis of trends and events affecting it. Kleinman.

Au Qtr. 1 2½-hr cl.

**842 Seminar in the Role of Sports in Society G 3**

Study of the significance of sports in society; and examination of the extent to which sports contribute to human welfare. Nelson.

Sp Qtr. 2 1½-hr cl. Prereq: Sociol 465, or equiv.

**845 Statistics for Physical Education and Health Education G 3**

A study of techniques for interpreting research publications in the field, and of statistical procedures useful in analyzing data.

Au, Wi Qtrs. 3 cl. Prereq: 650; Math 116, 121, or 125; and permission of instructor.

**851 Motor Learning G 3**

Critical consideration of research and theory in the acquisition of skill; special attention is given to major trends in the field. Herkowitz.

Wi Qtr. 2 1½-hr cl. Prereq: 441 or equiv, Psych 600, or permission of instructor.

**860 Organic Science as Applied to Physical Education and Health Education G 5**

A study of the integration of chemistry, biology, anatomy, and physiology to the field of physical education and health education. Filusch, Kirby, Lamb, and Sherman.

Au Qtr. Prereq: 10 cr hrs physiol, 10 cr hrs chem, and 10 cr hrs biology, or equiv.

**864 Naturalistic Inquiry in Physical Education G 4**

Consideration of design and methods of inquiry for naturalistic field studies in physical education, sport, play, health, and dance; review of research results.

Au Qtr. 1 2½-hr cl, 1 hr arr. Prereq: A grad course in research methods.

**867 Biochemical Methods for the Assessment of Human Performance G 4**

Development of laboratory procedures used to evaluate physiological responses and adaptations of blood and muscle exercise.

Wi Qtr. 2 cl, 3 hrs lab. Prereq: 860 or equiv and permission of instructor.

**870 Analysis of Teaching in Physical Education G 3**

Analysis of teachers and teaching in physical activity environments; emphasis on critical analysis of research completed and design of future research.

Au Qtr. 2 1½-hr cl. Prereq: Ed-F&R 864. Not open to students with credit for 894.03 or 994.03.

**871 Behavioral Research Methods for Physical Education and Recreation G 3**

Methods of individual organism research as applied to behavioral research problems in physical education and recreation; focus on developing observational competencies and research design skills. Siedentop.

Wi Qtr. 1 2½-hr cl. Prereq: 10 hrs of applied behavior analysis, behavior modification or equivs with written permission of instructor.

**872 Advanced Studies in Adapted Physical Education G 3**

Examination and assessment of developmental aspects as they relate to physical and motor performance behavior of children with developmental disabilities, mental retardation, and learning disabilities. Jansma.

Wi Qtr. 2 1½-hr cl. Prereq: 662 or equiv. Not open to students with credit for 894.02 or 994.02.

**873 Problems of Physical Education in Higher Education G 3**

A study of the philosophy, purposes, organization, and scope of the program of physical education in the college instructional program.

Au Qtr. 2 1½-hr cl. Prereq: BA or BS degree with major or minor in physical education. Designed for students planning to teach physical education in college.

**874 Physical Education in Secondary Education G 3**

A presentation of new methods and curricula in physical education that are used in exemplary programs at the secondary school level; the process of developing plans and guides in physical education for secondary schools.

Sp Qtr. 1 2½-hr cl. Prereq: Experience in teaching in school or college.

**875 Administrative Problems in Physical Education G 3**

A study of administrative problems currently confronting chairpersons, directors, and deans of organizations involving physical education.

Wi Qtr. 1 2½-hr cl. Prereq: Experience in teaching in school or college.

**876 Physical Education in Elementary Education G 3**

Study of factors influencing decision making processes in elementary physical education; natures of children, society, knowledge, and learning; roles and responsibilities of teachers; resources and school organization currently available.

Sp Qtr. 2 1½-hr cl. Prereq: 323 or 541 or permission of instructor.

**880 Supervision for Teacher Education in Physical Education G 3**

Examines clinical models for supervision in physical education with emphasis on data collection techniques to provide feedback to teaching interns.

Au Qtr. 1 2½-hr cl. Prereq: 870.

**881 Planning Facilities for Athletics, Physical Education, and Recreation G 3**

Principles and techniques in determining facility needs, evaluating facilities, planning for new construction, and remodeling the areas and facilities for athletics, physical education, and recreation.

Au, Sp Qtrs. 2 1½-hr cl, 3 field trips.

**881.01 Outdoor Facilities****881.02 Indoor Facilities****885 Methods of Research in Health Education and Physical Education G 3**

To develop some competency in professional writing and in the use of various research methods applied to health education and physical education.

Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 845.

**886 Colloquium in Exercise Science G 1**

Discussion of current research in exercise science.

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in Phys Ed or permission of instructor. Repeatable to a maximum of 15 cr hrs. Required every qtr for registered grad students in exercise science. This course is graded S/U.

**889 Practicum in Physical Education and Recreation G 2-6**

Opportunity is provided for putting educational research and theory into practice by teaching, administration, and agency experience under supervision in university, school, and agency situations.

Au, Wi, Sp Qtrs. 1 arr conf and arr field experience. Prereq: Permission of instructor and departmental advisor based upon submitted evidence of appropriate knowledge and skill in the selected course. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Problems in Physical Education G 1-5**

Advanced problems in physical education, individual or group participation.

Prereq: Permission of instructor.

**995 Seminar in Physical Education G 2**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 12 cr hrs.

- A— Adapted Physical Education
- B— Administration and/or Management
- C— Curriculum and/or School Programs
- D— Exercise Science
- E— Historical and/or Philosophical Foundations
- F— Movement Arts
- G— Outdoor Pursuits
- I— Professional Preparation
- J— Psychological/Sociological Aspects
- K— Sports, Athletics, and/or Intramurals
- L— Special Offerings
- M— Exercise Science Research

**999 Research in Physical Education G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Physical Medicine

1012 Dodd Hall, 471 Dodd Drive, 293-3801

**736 Clinical and Physiologic Bases of Physical Treatment P G 3**

The indications for, and choice of, physical modalities. Johnson and staff.

Au Qtr. Prereq: Written permission of instructor.

**745 Biophysical Basis of Physical Treatment P 6, 12, 18**

The student will design and complete a laboratory or library research problem involving the biophysical aspects of physical diagnosis or treatment. Johnson and staff.

1, 2, or 3 months; offered all months. Prereq: Permission of instructor. This course is graded S/U.

**750†\* Natural History of Disability P G 3**

An analysis of the nature, patterns and evaluation of disability, the processes involved, and the factors influencing its course. Johnson and staff.

Su Qtr. 3 1-hr cl. Prereq: Grad or professional registration and written permission of instructor.

**760 Basic Prosthetics and Orthotics P G 3**

In-depth study of prosthetics and orthotics including evaluation of the patient, indications for fitting or specific devices, components of parts, fabrication techniques, and follow-up. Bowyer and staff.

Sp Qtr. 2 1½-hr cl. Prereq: Grad or professional standing.

**770 Instrumentation, Neurophysiology, Clinical Aspects of Electromyography P G 3**

In-depth study of the instrumentation and correlation of neurophysiology and clinical aspects of electromyography, including excitable membranes, biological potentials, and nerve stimulation in clinical disorders. Pease and staff.

Wi Qtr. Prereq: Resident standing or permission of dept chairperson.

**780\* Psychological Aspects of Physical Disability and its Management by Physicians P G 3**

Designed to synthesize and summarize various aspects of advances in the behavioral sciences which have practical application to the rehabilitation of physical disabilities. Corrigan and staff.

Su Qtr. 2 1½-hr cl. Prereq: Resident physician or medical student standing or permission of instructor.

**993 Individual Studies in Physical Medicine G 3-5**

Minor investigations using electrodiagnostic techniques; biophysical, physiologic, and therapeutic effects of physical agents, and other medical rehabilitation techniques. Johnson and staff.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to 15 cr hrs. This course is graded S/U.

**999 Research in Physical Medicine and Rehabilitation G Arr**

Research for thesis purposes only. Johnson and staff.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Physical Sciences, College of Mathematical and

154 Denney Hall, 164 West 17th Avenue, 292-2874

**180† Uses of Science in Solving Problems of Society U 5**

Using examples, it is shown how the methods of science can be used to analyze problems which are of interest to the general public.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Math Placement S or higher; 1 5-hr 100-level course in either astronomy, biological sciences, chem, geol&min, or physics; English 110 or 111 or equiv. Not intended for ASC BS students. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course.

## Physical Therapy

School of Allied Medical Professions

306 School of Allied Medical Professions Building, 1583 Perry Street, 292-5921

**480 Procedures I U 5**

Professional orientation: introduction to the hospital setting and patient care; principles and techniques of basic body mechanics; bandaging and therapeutic massage.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

**481 Procedures II U 6**

Agents used in physical therapy: mechanical and physical properties; therapeutic application and physiological effects related to patients.

Au Qtr. 4 cl, 2 2-hr lab. Prereq: Permission of instructor.

**495 Medical Kinesiology U 5**

Biomechanics and pathomechanics in the analysis of human motion; emphasis on clinical relationships.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: Permission of instructor.

**541 Therapeutic Exercise I U 6**

Basic principles and techniques of therapeutic exercise related to physical and medical sciences.

Au Qtr. 4 cl, 2 2-hr labs. Prereq: Permission of instructor.

**542 Therapeutic Exercise II U 6**

Rehabilitation procedures for maximum restoration of the disabled; functional relationships and principles associated with functional exercise and specialized equipment.

Wi Qtr. 4 cl, 2 2-hr labs. Prereq: Permission of instructor.

**543 Therapeutic Exercise III U 5**

Theory and technique of exercise for the neurologically handicapped with carry-over into all areas of disability; integration and correlation of therapeutic exercise approaches.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: Permission of instructor.

**551 Anatomical Clinical Presentations U 2**

Integration of anatomical, neuroanatomical, and kinesiological information obtained in previous courses to review, discuss, and problem solve clinical presentations or case studies.

Au, Sp Qtrs. 2 1-hr cl. Prereq: Sr standing in division and permission of instructor. This course is graded S/U.

**560 Aspects of Human Performance and their Management by Physical Therapist U 3**

Emphasis on health as a continuum, the physiology and benefits of aerobic exercise, and an introduction to cardiac rehabilitation.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**585 Physical Therapy Clinical Coordination****585.01 Planning and Coordinating Clinical Education U 1-3**

Coordination of physical therapy procedures; examination of evaluation and reporting methods; medical-legal and ethical problems; planning for clinical experiences.

Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Admission to Physical Therapy Division. Repeatable to a maximum of 6 cr hrs.

**585.02 Clinical Experience in Physical Therapy I U 1 or 2**

Supervised experiences in first level physical therapy skills at selected health care facilities.

Au, Wi, Sp Qtrs. 2-hrs of clinical experience. Prereq: Admission to Physical Therapy Division. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**585.03 Clinical Experience in Physical Therapy II U 4**

Extended summer experience in affiliating clinical settings, applying principles of physical therapy in the treatment of a variety of cases.

Su Qtr. 6 wks of clinical experience. Prereq: 585.02 and permission of clinical coordinator. This course is graded S/U.

**585.04 Clinical Experience in Physical Therapy III U 2-4**

Supervised experiences for senior physical therapy students in clinical settings requiring higher level patient evaluation and management skills.

Au, Wi, Sp Qtrs. 4-8 hrs of clinical experience. Prereq: 585.03, sr standing, and permission of clinical coordinator. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**588 Professional Administration in Physical Therapy U 5**

Integration of theory and professional practice involving administration and supervision skills including interpersonal relationship concepts, oral, and written communication analysis, and professional responsibilities.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

**589 Management of Private Physical Therapy Services U 3**

Presentation and discussion of business, administrative, and environmental factors affecting the establishment of a physical therapy practice by self-employed physical therapists.

Au, Wi Qtrs. 1 2½-hr cl. Prereq: Sr standing in division and permission of instructor. This course is graded S/U.

**595 Seminar U 1-3**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

**596 Clinical Education U 6**

Clinical experience in the application of physical therapy techniques under supervision of physical therapists in hospital, community, and other selected facilities.

Su, Au, Wi, Sp Qtrs. 8 hrs per day; 5 days per wk, for a minimum of 12 wks. Prereq: Permission of instructor and completion of all required physical therapy professional courses in the curriculum. This course is graded S/U.

**620 Integrative Approach to Musculo-skeletal Evaluation U G 5**

Musculo-skeletal evaluation procedures and techniques, their integration, interpretation, and application as a foundation for program planning in physical theory.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 495, Anatomy 201 or equiv; or permission of instructor.

**630 Neuroscientific Basis of Rehabilitation in Physical Therapy U G 4**

The neuroanatomical, physiological, and developmental basis of rehabilitation procedures used in physical therapy for the management of neurologically impaired persons.

Au Qtr. 4 cl. Prereq: 2nd yr standing in phys ther or permission of instructor.

**637 Pediatric Neurologic Physical Therapy U G 3**

Physical therapy management of the child with neurologic dysfunction.

Sp Qtr. 3 cl. Prereq: Sr standing in phys ther or grad standing in all med and permission of instructor.

**Programming for Severe Physical Impairments**

See ED-HUSER 676—Background information and survey of programmatic considerations related to physical, motor, and fitness training of the severely handicapped.

**The Parent/Professional Partnership**

See ED-HUSER 677—Designed to help educators acquire knowledge and skills necessary to assist parents in facilitating the development, education, and socialization of severely handicapped children.

**720 Advanced Techniques of Manual Therapy G 4**

A comprehensive study of the normal anatomy and function of the lumbo pelvic region and techniques of managing pathologic conditions associated with this area.

Au, Wi Qtrs. 2 cl, 2 2-hr lab. Prereq: Permission of instructor.

**795 Seminar G 1-3**

Discussion of selected topics.

Wi Qtr. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**Reactions and Adjustment to Disability**

See ED-HUSER 864—A study of individual reactions to various disabling conditions, the adjustment process, cultural norms and expectations, and responses to the rehabilitation process.

**Consultation in the Human Services Profession**

See ED-HUSER 875—The consultation process, models, roles, skills, and outcomes for human services personnel will be addressed; emphasis is placed on extending theoretical and practical knowledge.

**889 Advanced Clinical Practicum G 2-4**

Advanced clinical experiences in specialized areas of physical therapy practice.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

## Physics

1012 Smith Laboratory, 174 West 18th Avenue, 292-5713

**100 Physics and Man U 5**

An introduction to the physics of the world of everyday experience through study of selected topics.

Su, Au, Wi, Sp Qtrs. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond courses.

**100.01 Vibrations and Waves**

1 lec; 2 2-hr disc. Not open to students with credit for the vibrations and waves option of Physics 100.

**100.02 Energy**

1 lec; 2 2-hr disc. Not open to students with credit for the energy option of Physics 100.

**101 Nature of the Physical World U 5**

An elementary description of the physical world emphasizing scientific method and contemporary viewpoints; laboratory work and demonstrations.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: Math 075 or 076 or 102 or placement in math course code R. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**102 Nature of the Physical World U 5**

Continuation of 101.

Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 101. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**111 General Physics: Mechanics and Heat U 5**

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Eligibility for Math 150. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**112 General Physics: Electricity, Magnetism, and Light U 5**

Su, Au, Wi Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 111. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**113 General Physics: Modern Physics U 5**

Su, Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 112. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**131 Introductory Physics: Particles and Motion U 5**

A presentation of the major concepts of physics from a contemporary point of view, for students majoring in physical sciences, mathematics, or engineering.

Su, Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H131 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: 1 entrance unit of physics or chem, and prereq or concur: Math 151. Not open to students with credit for 231. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**132 Introductory Physics: Thermal Physics and Electrostatics U 5**

Continuation of 131.

Su, Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H132 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: 131 and prereq or concur: Math 152. Not open to students with credit for 232. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**133 Introductory Physics: Electrodynamics and Quanta U 5**

Continuation of 132.

Su, Au, Wi, Sp Qtrs. 5 cl, 1 2-hr lab. H133 (honors) may be available to students enrolled in an honors program or by written permission of dept. Prereq: 132 and prereq or concur: Math 153; or written permission of instructor. Not open to students with credit for 233. This course is available for EM credit. BER/LAC/LAR course.

**261 Dynamics of Particles and Waves I U 4**

Vectors and kinematics; foundations of Newtonian mechanics; momentum, work, and energy; conservative and nonconservative forces; potentials; angular momentum; rotation about a fixed axis.

Au, Sp Qtrs. 4 cl. Prereq or concur: 132. Not open to students with credit for 525.

**262 Dynamics of Particles and Waves II U 4**

Rigid body motion; noninertial systems and fictitious forces; central force motion; the special theory of relativity; relativistic kinematics; relativistic momentum and energy.

Su, Wi Qtrs. 4 cl. Prereq: 261 prereq or concur: 133. Not open to students with credit for 525.

**263 Dynamics of Particles and Waves III U 4**

Free oscillations of simple and complex systems; forced oscillations; travelling waves; pulses and wave packets; phase and group velocities; Fourier analysis.

Su, Sp Qtrs. 4 cl. Prereq: 262 and prereq or concur: Math 254.

**294 Group Studies U 1-6**

Designed to permit groups of students the opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**295 Introductory Seminar U 1**

Introduction to departmental research programs and to selected topics of interest in contemporary physics.

Au Qtr. 1 2-hr cl. Prereq or concur: 131. This course is graded S/U.

**501 Descriptive Acoustics U G 3**

Descriptive treatment of acoustics with applications to music and speech including sources, propagation, reception, characteristics of sound; room acoustics; hearing; and apparatus.

Au Qtr. 3 cl. Prereq: Jr standing or permission of instructor. Not intended for ASC BS students. Not open to physics majors. BER/LAC/LAR course.

**503 General Meteorology U G 5**

A description of weather phenomena and the physical processes underlying them; intended primarily for nonphysics majors.

Sp Qtr. Prereq: 111 or 131 or permission of instructor. Not open to students with credit for 120. BER/LAC/LAR course.

**516 Intermediate Physics Laboratory U G 4**

Selected intermediate level experiments from basic areas of physics.

Su, Au, Wi, Sp Qtrs. 2 3-hr labs. Prereq: 113 or 133 or permission of instructor. Not open to grad students majoring in physics. Repeatable to a maximum of 12 cr hrs.

**517 Introductory Electronics for Physicists U 4**

Intermediate level introduction to electronic circuits, devices, and instrumentation with emphasis on laboratory experience.

Au, Wi, Sp Qtrs. 1 2-hr cl, 2 3-hr labs. Prereq: 133 or permission of instructor. Not open to students with credit for 617; not open to grad students majoring in physics.

**525 Dynamical Models U G 4**

Dynamical models of particle motion; behavior of linear systems; periodic and transient phenomena in mechanical and electrical systems; central force problems; frames of reference.

Su, Sp Qtrs. 4 cl. Prereq: 133 and Math 255 or equiv. Not open to students with credit for 262.

**531 Introduction to Quantum Physics I U G 4**

Comprehensive survey of modern physics: Schrodinger wave mechanics, Planck and De Broglie postulates, Bohr theory.

Au Qtr. 4 cl. Prereq: 133 and prereq or concur: 261, and Math 254.

**532 Introduction to Quantum Physics II U G 4**

Comprehensive survey of modern physics: one electron atoms, magnetic dipole moments, spin, multi-electron atoms.

Wi Qtr. 4 cl. Prereq: 531 and prereq or concur: 262.

**533 Introduction to Quantum Physics III U G 4**

Comprehensive survey of modern physics: Molecules nuclear models, nuclear decay and reactions, elementary particles.

Sp Qtr. 4 cl. Prereq: 532 and prereq or concur: 263.

**555 Fields and Waves I U G 4**

Introduction to the description of electrostatic fields; dielectrics; boundary-value problems.

Au Qtr. 4 cl. Prereq: 525 or equiv, and prereq or concur: Math 551.

**593 Individual Studies U G 2-5**

Independent reading, study, or laboratory work at an intermediate level.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**595 Seminar U 1**

Discussion of special topics with student participation in the presentation of material.

Au, Wi, Sp Qtrs. Prereq: 133 and Math 254 or equiv. Repeatable to a maximum of 6 cr hrs.

**616 Advanced Physics Laboratory U G 4**

Experiments selected from all areas of physics; independent work emphasized.

Su, Au, Wi, Sp Qtrs. 2 3-hr labs. Prereq: 262, 531, and 555; or permission of instructor. Repeatable to a maximum of 24 cr hrs.

**617 Electronics for Physicists U G 5**

An intensive introduction to electronic circuits, devices, and instrumentation with emphasis on laboratory experience.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl, 2 3-hr labs. Prereq: 263 or 525.

**621 Statistical Physics I U G 4**

Thermodynamics and statistical mechanics; applications to noninteracting classical and quantum systems.

Au Qtr. 4 cl. Prereq: 263, 656, and Math 255.

**622 Statistical Physics II U G 4**

Interacting systems, special states of matter, critical phenomena and phase transitions.

Wi Qtr. 4 cl. Prereq: 621 or equiv.

**656 Fields and Waves II U G 4**

Continuation of 555; magnetic fields of steady currents; induction; Maxwell's equations; plane waves; special relativity.

Wi Qtr. 4 cl. Prereq: 555 or equiv.

**657 Fields and Waves III U G 4**

Continuation of 656; plane waves in matter; physical optics; coherence, interference, diffraction, and dispersion.

Sp Qtr. 4 cl. Prereq: 656 or equiv. Not open to students with credit for 636.

**664 Theoretical Mechanics U G 4**

Development of Lagrangian mechanics, inertia and stress tensors, rigid body rotations and introduction to the mechanics of continuous media.

Sp Qtr. 4 cl. Prereq: 263 and Math 255, concur Math 551. Not open to students with credit for 626.



**670 Physics for In-Service Teachers U G 1-15**

Designed to deepen teachers' understanding of basic physical concepts and methods of treatment of selected topics; includes lectures, discussions, demonstrations, and individualized laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: 15 or hrs in physics, teaching experience, and permission of instructor. Intended for secondary school science teachers. Repeatable to a maximum of 30 or hrs.

**693 Individual Studies U G 1-15**

Designed to give a properly qualified student opportunity for independent reading, study, or laboratory work in a specialized field of interest.

Su, Au, Wi, Sp Qtrs. Prereq: Satisfactory advanced courses in experimental and theoretical physics and permission of instructor. Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**694 Group Studies U G 1-6**

Gives groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Satisfactory advanced courses in experimental and theoretical physics and permission of instructor. Repeatable to a maximum of 15 or hrs.

**705 Structure of Matter I U G 4**

Quantum phenomenology; Schrodinger formulation of quantum mechanics; applications to simple systems.

Au Qtr. 4 cl. Prereq: 263, 532, 656, or equivalents; and Math 255 and 551.

**706 Structure of Matter II U G 4**

Continuation of 705, emphasizing the one-electron atom, orbital and spin angular momentum perturbations, and electromagnetic transitions.

Wi Qtr. 4 cl. Prereq: 705 or equiv.

**730 Methods of Theoretical Physics I U G 4**

The use of analytic techniques in the analysis of physical phenomena; application of differential equations, Sturm-Liouville theory, and special functions.

Su Qtr. 4 cl. Prereq: Math 601, 602, and 701 or equiv.

**731 Methods of Theoretical Physics II U G 4**

The use of analytic techniques in the description and analysis of physical phenomena; linear and matrix algebra, complex variables.

Au Qtr. 4 cl. Prereq: Math 601, 602, and 701 or equiv.

**780 Topics in Contemporary Physics U G 4**

Experimental and theoretical aspects of areas of current interest in physics.

3 cl. Prereq: 705 or equiv.

**780.02 Elementary Particle Physics**

Sp Qtr.

**780.04 Atomic and Molecular Physics**

Wi Qtr. Not open to students with credit for 751 or 757.

**780.05 Nuclear Physics**

Wi Qtr. Not open to students with credit for 771.

**780.06 Condensed Matter Physics**

Sp Qtr. Not open to students with credit for 761.

**780.20† Special Topics****H783 Honors Research U 3-5**

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**795 Special Topics Seminar U G 1**

A survey of current research problems in physics.

Au, Wi Qtrs. Prereq or concur: 705. Repeatable to a maximum of 3 or hrs. This course is graded S/U.

**801 Seminar in Physics G 1**

Seminars will be conducted by various members of the staff on topics of current interest in their fields of specialization; students will participate in the presentation and discussion of material.

Su, Au, Wi, Sp Qtrs. Prereq: Acceptable specialized courses and permission of instructor. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

**816 Topics in Physics G 3-6**

Laboratory and/or theoretical work on an individual basis on topics of current interest.

Su, Au, Wi, Sp Qtrs. Prereq: 616 or equiv and permission of instructor. Repeatable to a maximum of 30 or hrs. This course is graded S/U.

**821 Classical Dynamics G 4**

Lagrangian dynamics, variational principles, Hamilton's equations canonical transformations, symmetries and conservation laws, small oscillations, normal coordinates, and classical fields.

Au Qtr. 4 cl. Prereq: 664 or equiv.

**822 Advanced Classical Dynamics G 4**

Applications to particle dynamics of tensor algebra and Riemannian spaces; elasticity and hydrodynamics.

Wi Qtr. 4 cl. Prereq: 821.

**827 Quantum Mechanics I G 5**

Systematic treatment of wave mechanics; symmetries and conservation laws, eigenvalues and eigenfunctions of linear operators, separation of variables, soluble examples, central field problem, angular momentum.

Wi Qtr. 4 cl. Prereq: 706 or equiv.

**828 Quantum Mechanics II G 5**

Theory of scattering, Born approximation; stationary state perturbation theory, WKB approximation, variational method and applications; linear vector spaces, transformations, symmetries.

Sp Qtr. 4 cl. Prereq: 827.

**829 Quantum Mechanics III G 5**

Time dependent perturbations; applications to scattering and electromagnetic transitions; Pauli spin theory; applications to hydrogen; addition of angular momenta; reflections in space and time.

Au Qtr. 4 cl. Prereq: 828.

**830 Quantum Mechanics IV G 4**

Systems with several electrons, exclusion principle; applications to atoms and molecules, and to scattering; Hartree-Fock approximation; Dirac equation for free electrons and for hydrogen.

Wi Qtr. 4 cl. Prereq: 829.

**831 Advanced Quantum Mechanics G 4**

Symmetry groups; Lorentz transformations; field quantization; S-matrix theory; general perturbation theory.

Sp Qtr. 4 cl. Prereq: 830.

**834 Electromagnetic Field Theory I G 4**

Static electric fields, static and stationary magnetic fields, dielectrics, magnetized bodies; boundary value problems, vector and scalar potential functions; and energy in electric and magnetic fields.

Au Qtr. 4 cl. Prereq: 656 or equiv.

**835 Electromagnetic Field Theory II G 4**

Maxwell's equations, gauge transformations; superposition, polarization, dispersion and refraction of plane electromagnetic waves; special relativity, covariant formulation of particles and fields, and conservation laws.

Wi Qtr. 4 cl. Prereq: 834 or permission of instructor.

**836 Electromagnetic Field Theory III G 4**

Radiating systems and diffraction; radiation by moving charges, bremsstrahlung; multipole fields, radiation damping, and scattering and absorption of charged particles.

Sp Qtr. 4 cl. Prereq: 835 or permission of instructor.

**846 Statistical Physics I G 4**

Physical thermodynamics and introduction to statistical physics; fundamental postulates, entropy, thermodynamic potentials and changes of phase; microscopic expression for entropy and basis of classical ensemble theory.

Au Qtr. 4 cl. Prereq: 622 and 664 or equiv. Not open to students with credit for 743.

**847 Statistical Physics II G 4**

Canonical and grand ensembles; Quantum statistical mechanics; density matrices, partition functions, Bose and Fermi gases; Debye specific heat; black-body radiation; Bose-Einstein condensation; interacting systems.

Wi Qtr. 4 cl. Prereq: 846 and 828.

**848 Advanced Statistical Physics G 4**

Interacting systems; Ising and Heisenberg models of magnetism, theory of dense gases and liquids, phase transitions and critical phenomena; non-equilibrium statistical physics, Boltzmann equation.

Sp Qtr. 4 cl.

**880 Advanced Topics G 3**

A systematic advanced treatment of areas of current interest in physics; topics will be announced each quarter.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 828 or permission of instructor. Repeatable to a maximum of 9 or hrs in each decimal subdivision.

**880.02 Elementary Particle Physics**

**880.03 Low-Temperature Physics**

**880.05 Nuclear Physics**

**880.06 Condensed Matter Physics**

**880.08 Theory of Quantized Fields**

**880.20 Special Topics**

**999 Research in Physics G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Physiological Chemistry

5170 Graves Hall, 333 West 10th Avenue, 292-5451

**311 Physiological Chemistry U 4**

Human biochemistry with emphasis on metabolism and applications to clinical chemistry and human nutrition; pertinent organic chemistry will be included. Pyant.

Au Qtr. 4 cl. Prereq: Chem 102 or 122 and enrollment or intended enrollment in a program of the School of Allied Medical Professions.

**312 Physiological Chemistry U 4**

A continuation of 311. Pyant.

Wi Qtr. 4 cl. Prereq: 311.

**601 Medical Biochemistry I G 4**

A three-quarter sequence of basic biochemistry with particular emphasis on applications to medicine; biochemical structures, metabolic pathways, and their relationships to metabolic diseases.

Au Qtr. 5 cl. Prereq: Chem 242 and 244 or 253 and 254 or equivalents, and grad standing in a dept in the College of Medicine and permission of instructor.

**602 Medical Biochemistry II G 4**

Continuation of 601.

Wi Qtr. 5 cl. Prereq: 601.

**603 Medical Biochemistry III G 4**

Continuation of 602.

Sp Qtr. 5 cl. Prereq: 602.

**611 Physiological Chemistry U G 3**

Chemistry and metabolism of carbohydrates, proteins, lipids, and nucleic acids; basic principles of enzymes, control mechanisms, digestion, and absorption. Merola and Richardson.

Wi Qtr. 3 cl. Prereq: Chem 242, 244, or 253, 254 or equiv; open to undergrads with permission of instructor. Designed primarily for grad students in medical and biological sciences.

**612 Physiological Chemistry U G 3**

Continuation of 611. Merola and Richardson.

Sp Qtr. 3 cl. Prereq: 611.

**636† Quantitative Problems in Biochemistry U G 3**

Application of elementary physical chemical concepts to the quantitative analysis of biochemical data.

Wi Qtr. 3 cl. Prereq: Elementary physical chemistry and biochemistry, or permission of instructor.

**641 Dental Biochemistry P 4**

Chemistry and metabolism of carbohydrates, lipids, and proteins; digestion and absorption; elements of nutrition as they relate to dentistry, especially mineral and bone metabolism. Nuenke and Richardson.

Au Qtr. 3 cl, 1 conf. Prereq: Enrollment in College of Dentistry, Chem 242, and Chem 244 or 246.

**642 Dental Biochemistry P 4**

Continuation of 641. Nuenke, Panganamala, and Richardson.

Wi Qtr. 3 cl, 1 conf. Prereq: 641 and enrollment in College of Dentistry.

**761 Advanced Biochemistry: Proteins U G 3**

An advanced treatment of protein biochemistry.

Au Qtr. 3 cl. Prereq: Biochem 614 and Chem 253, 255 and 521; or equivs. Not open to students with credit for 705, Biochem 761, or Chem 761. Cross-listed in Biochemistry and Chemistry. Register under Chemistry.

**762 Advanced Biochemistry: Enzymes U G 2**

An advanced treatment of enzymology.

Au Qtr. 2 cl. Prereq: Biochem 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for 705, Biochem 705 or 762, or Chem 762. Cross-listed in Biochemistry and Chemistry. Register under Chemistry.

**763 Advanced Biochemistry: Membranes and Bioenergetics U G 2**

An advanced treatment of membranes and bioenergetics.

Sp Qtr. 2 cl. Prereq: Biochem 615 and Chem 253, 255, and 521; or equivs. Not open to students with credit for 705, Biochem 705 or 763, or Chem 763. Cross-listed in Biochemistry and Chemistry. Register under Biochemistry.

**764 Advanced Biochemistry; Integration of Metabolism U G 3**

An advanced treatment of the regulation and integration of mammalian biochemical systems.

Sp Qtr. 3 cl. Prereq: Chem 253, 255, 521 and Biochem 615 or equivs. Not open to students with credit for Biochem 764 or Chem 764. Cross-listed with Biochemistry and Chemistry.

**765 Advanced Biochemistry: Physical Biochemistry U G 2**

Diffusion, electrophoresis, sedimentation, light and x-ray scattering, x-ray and neutron diffraction, fluorescence, polarimetry, mass spectroscopy, and nuclear magnetic resonance.

Wi Qtr. 2 cl. Prereq: Chem 253, 255, 521 and Biochem 615; or equivs. Not open to students with credit for Biochem 765 or Chem 765. Cross-listed with Biochemistry and Chemistry. Register under Biochemistry.

**766 Advanced Biochemistry: Nucleic Acid Chemistry and Structure U G 2**

Reactions, synthesis, and conformations of nucleosides, nucleotides, oligonucleotides, and polynucleotides.

Sp Qtr. 2 cl. Prereq: Chem 253, 255, 521, and Biochem 615; or equivs. Not open to students with credit for Biochem 766 or Chem 766. Cross-listed with Biochemistry and Chemistry. Register under Biochemistry or Chemistry.

**793 Individual Studies in Physiological Chemistry P 8,16, or 24 G 2-15**

Qualified students may avail themselves of the facilities of the department for conducting a minor investigation under the direction of a senior staff member.

Su, Au, Wi, Sp Qtrs. 1 or more months for professional credit; offered all months. Prereq: 612 or equiv with written permission of instructor. Repeatable to a maximum of 15 or hrs for grad credit or to 24 or hrs for professional credit. This course is graded S/U.

**821†\* Physical Biochemistry of Proteins G 3**

Protein structure (primary, secondary, tertiary, and quaternary) in the crystal state and in solution and their relationship to function. Alben.

Wi Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**822†\* Bioenergetics G 3**

Flow of energy in biological systems; photosynthesis; oxidative phosphorylation; methods of studying mitochondria, chloroplasts, and other organelles. Brierley.

Au Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**823\* Metabolic Control Mechanisms G 3**

A study of selected normal aberrant biochemical controls with emphasis on hormones or other modulators, development, detoxification, and neoplasia or other relevant diseases. Webb.

Au Qtr. 2 1½-hr cl. Prereq: 1 yr of grad biochem or permission of instructor.

**824\* Enzymology G 3**

Selected topics in structure/function relationships, mechanisms of catalysis, kinetics, and metabolic interrelations of enzyme systems. Richardson.

Sp Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**825\* Neurochemistry G 3**

Biochemistry and metabolism of the nervous system with discussion of synaptic transmission, memory theories, genetic defects, and associated diseases. Horrocks.

Wi Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**826†\* Current Topics in Lipid Biochemistry G 3**

Discussion of recent developments in one or more areas of lipid biochemistry; membranes, prostaglandins, and peroxidation; topics to be announced. Panganamala.

Sp Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**827\* Biochemical Mechanisms of Carcinogenesis G 3**

Mechanisms of carcinogenesis caused by radiation, polycyclic hydrocarbons, halogenated organics, and RNA and DNA viruses. Schumm and Milo.

Wi Qtr. 3 cl. Prereq: 1 yr of grad biochem or permission of instructor.

**Viral Oncology**

See Med Micr 841—The immunological, virological, epidemiological, and molecular aspects of DNA and RNA tumor diseases.

**850 Seminar G 2**

Au, Wi, Sp Qtrs. Prereq or concur: One yr of biochem. Repeatable. This course is graded S/U.

**999 Research in Physiological Chemistry G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Physiological Optics

A400 Starling Loving, 338 West 10th Avenue, 292-2647

**501 Geometrical Optics U P 5**

Paraxial optics, primary optical aberrations, thick lens and mirror systems, ray tracing, field and aperture stops, and prisms.

Au Qtr. 3 cl, 1 4-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

**502 Physical Optics U P 5**

Light sources and spectra; light waves and their interference, diffraction, dispersion, and polarization.

Sp Qtr. 3 cl, 1 4-hr lab. Prereq: 501.

**511 Introduction to Physiological Optics I U P G 5**

The eye as an optical instrument; the refracting mechanism; the mechanism of accommodation and pupillary contraction; blur of the retinal image; stray light in the eye.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 501 and 608. Not for grad credit to students majoring in phys opt.

**512 Introduction to Physiological Optics II U P G 5**

The motility of the eye; the structure and innervation of the extraocular muscles; the center of rotation; and analysis and description of eye movements.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 511. Not for grad credit to students majoring in phys opt.

**520 Measurement and Specification of Visual Stimuli U P G 5**

Light sources; diffusely transmitting and reflecting surfaces; light scatter; principles of photometry and colorimetry; selection and arrangement of light sources.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: Optomtry 2nd yr standing and 511. Not for grad credit to students majoring in phys opt.

**531 Basic Human Anatomy U P 5**

Basic human developmental, neural, and gross anatomy, using models and films, supplemented with prepared specimens.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

**535 Microscopic Anatomy U P 5**

Microscopic anatomy of cells and tissues, and special histology of the organ systems.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: Optomtry 1st yr standing or major in phys opt.

**608 Anatomy of the Eye U P G 5**

Human gross anatomy of the head and neck with special emphasis on the eye and orbit; histology and embryology of the eye and associated structures.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 1st yr optomtry or permission of instructor.

**613 Intermediate Physiological Optics I U P G 5**

Monocular sensory mechanisms of vision; analysis and specification of visual stimuli; photoreception and retinocortical transmission; adaptation of photoreceptors; flicker; brightness discrimination; and color vision.

Wi Qtr. 4 cl, 1 2-hr lab. Prereq: 512.

**614 Intermediate Physiological Optics II U P G 3**

Circulation and metabolism of the eye; intra-ocular pressure; lacrimal system; movements and functions of the eyelids.

Wi Qtr. 3 cl. Prereq: 512.

**693 Individual Studies in Physiological Optics P G 1-15**

A properly qualified student may perform a minor investigation or add to his knowledge and technique.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dean. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**715 Intermediate Physiological Optics III P G 5**

Projection of visual impressions; the horopter, retinal correspondence; binocular integration of hue and brilliance.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: Optometry 2nd yr standing and 613.

**716 Intermediate Physiological Optics IV P G 5**

Visual perception of color, illumination, figure-ground relations, size, shape, direction, distance, motion, time, and complex patterns.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 715.

**731 Occupational and Environmental Vision P G 5**

Visual testing in industry; relation of vision to performance, comfort, and safety; visual requirements for licenses; eye hazards and protection; compensation for vision loss.

Wi Qtr. 3 cl, 1 4-hr lab. Prereq: 520. Optometry 4th yr standing, or major in phys opt.

**732 Vision of Children P G 5**

Visual-survey methods; the prevalence of visual anomalies and eye diseases in children; basic visual skills required in school and methods for their improvement.

Au Qtr. 3 cl, 1 4-hr lab. Prereq: Optometry 4th yr standing or major in phys opt.

**733 Optometric Gerontology P G 5**

A survey of visual and systemic changes associated with aging, with emphasis on ophthalmic examination and rehabilitative techniques.

Sp qtr. 3 cl, 2 2-hr lab. Prereq: Optometry 4th yr standing or major in phys opt.

**780 Topics in Physiological Optics P G 1-5**

Experimental and theoretical aspects of areas of current interest in physiological optics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Enrollment in College of Optometry or grad standing in phys opt and permission of dean. Repeatable to a maximum of 30 cr hrs with not more than 20 cr hrs in any one subdivision.

- 780.01 Ocular Anatomy
- 780.02 Ocular Physiology
- 780.03 Corneal Physiology
- 780.04 Microbiology of the Eye
- 780.05 Experimental Design
- 780.06 Psychophysics of Vision
- 780.07 Paradigm of Physiological Optics
- 780.08 Ocular Biometrics
- 780.09 Visual Optics
- 780.10 Environmental Vision
- 780.11 Image Evaluation
- 780.12 Geometrical Optics
- 780.13 Physical Optics
- 780.14 Oculomotor Systems
- 780.15 Binocular Visual Processes
- 780.16 Monocular Visual Processes
- 780.17 Photochemistry of Vision
- 780.18 Color Vision
- 780.19 Stimulus Specification
- 780.20 Neurophysiology of Vision
- 780.21 Visual Electrometrics
- 780.22 Physiological Optics

**795 Seminar P G 1-5**

A series of seminars dealing with new developments in the various phases of physiological optics.

Su, Au, Wi, Sp Qtrs. 1-5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**801 Advanced Physiological Optics I G 5**

The ocular image-forming mechanism; accommodation and pupil contraction, aberrations, stray light entopic phenomena; shape, size, distortion; retinal illuminance and blur.

Au Qtr. 3 cl, 2 2-hr lab. Prereq: 716.

**802 Advanced Physiological Optics II G 5**

Fixation disparity; photochemistry and electrophysiology of photo-receptors; luminosity; color mixture; retinal-cortical transmission; simultaneous contrast; visibility; adaptation; after images.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 801.

**803 Advanced Physiological Optics III G 5**

Binocular integration of hue and brilliance, fusional movements, fixation, retinal correspondence, visual perception of figure-ground relations, light, color, illumination, size, shape, direction, distance, and motion.

Sp Qtr. 3 cl, 2 2-hr lab. Prereq: 802.

**808 Advanced Functional Neuroanatomy of the Visual System G 5**

Intense study of the neuroanatomy of the visual system.

Sp Qtr. 3 cl and 2 2-hr lab. Prereq: Enrollment in the College of Optometry or graduate status in phys opt and permission of the dean.

**810 Image Evaluation G 5**

An analysis of the causes of image impairment in the human eye and other optical systems; objective methods of assessing aberrations and blur; methods of image enhancement.

Au Qtr. 5 cl. Prereq: 502 and 613.

**811 Mechanisms Subservicing Color Vision G 5**

Theoretical basis for chromatic adaptation, chromatic contrast and induction, color blindness, and other color phenomena; theory of the laws of color mixture.

Wi Qtr. 5 cl. Prereq: 613.

**812 Advanced Neurophysiology of the Visual System G 5**

The coding and transmission of visual information in the direct and accessory pathways of vertebrates and invertebrates.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 613, 614, 715, and 716.

**813 Advanced Physiology of the Eye G 5**

Recent developments in the respiration, metabolism, and mechanics of ocular tissues, and the aqueous dynamics of the eye.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: 613 and 614.

**815 Binocular Vision and Perception G 5**

Visual perception: direction, space, and motion; perceptual adaptation; binocular vision and fusion.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: 803.

**820 Specification of Visual Stimuli G 5**

Study of visual stimuli and apparatus to control parameters such as intensity, spectral composition, retinal location, and pupil size and location; calibration and practical application.

Sp Qtr. 3 cl, 4-hr lab. Prereq: 801 or permission of instructor.

**994 Group Studies in Physiological Optics G 1-5**

Group studies on special problems in physiological optics.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in phys opt. Repeatable to a maximum of 30 cr hrs.

**999 Research in Physiological Optics G Arr**

Research for thesis on dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Physiology

4196 Graves Hall, 333 West 10th Avenue, 292-5448

## 311 Principles of Human Physiology I U 5

First of a two-quarter sequence covering the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

Au, Wi Qtrs. 4 cl, 1 2-hr lab. Prereq: 2 qtrs chem, Anatomy 200 or equiv; or permission of instructor. Open only to students in College of Medicine or College of Nursing or College of Pharmacy or permission of instructor.

## 312 Principles of Human Physiology II U 5

Continuation of 311.

Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 311 or permission of instructor. Open only to students in College of Medicine or College of Nursing or College of Pharmacy or permission of instructor.

## 494 Group Studies in Physiology U 1-5

Group studies for students in specialized programs.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

## 601 Organ System Physiology I U P G 5

First of a two-quarter sequence presenting the following areas of physiology: neuromuscular, heart and circulation, endocrine, brain and special senses, body fluids and kidney, respiration, digestion, temperature control, and metabolism.

Au Qtr. 5 cl. Prereq: Inorganic and organic chem, Physics 111, 112, 113 or equiv, and 1 yr biological sciences, and permission of instructor for undergrads.

## 602 Organ System Physiology II U P G 5

Continuation of 601.

Wi Qtr. 5 cl. Prereq: 601. Normally to be taken directly following 601.

## 604 Advanced Physiology I P 4

First of a 2-qr sequence covering these physiological areas; neuromuscular central nervous system and special senses, endocrinology and reproduction, cardiovascular, digestion, respiration, body fluids, and kidney.

Au Qtr. 4 cl. Prereq: Open only to students enrolled in the College of Dentistry.

## 605 Advanced Physiology II P 4

Continuation of 604.

Wi Qtr. 4 cl. Prereq: 604 or permission of instructor.

## 607 Medical Organ System Physiology I G 4-6

First of a three quarter sequence presenting physiology from an organ system perspective.

Sp Qtr. 4-6 cl. Prereq: Inorganic and organic chemistry, Physics 111, 112, 113 or equiv and 1 yr of biological sciences and grad standing in physiol or grad standing in a dept in College of Medicine and permission of instructor. A total of 15 cr hrs will be given for the 607-608-609 sequence with a distribution of 4-6 cr hrs each qtr as determined by the instructor.

## 608 Medical Organ System Physiology II G 4-6

Continuation of 607.

Sp Qtr. 4-6 cl. Prereq: 607. Normally to be taken directly following 607.

## 609 Medical Organ System Physiology III G 4-6

Continuation of 608.

Sp Qtr. 4-6 cl. Prereq: 608. Normally to be taken directly following 608.

## 617 Experimental Procedures in Physiology I G 1

First of a three-quarter sequence of experimental physiology with emphasis on experimental demonstration of physiological principles.

Au Qtr. 1 4-hr lab and 1 cl every other week. Prereq or concur: 607. Open only to grad students in dept or by permission of instructor. Enrollment limited to 10. This course is graded S/U.

## 618 Experimental Procedures in Physiology II G 1

Continuation of 617.

Wi Qtr. 1 4-hr lab and 1 cl every other week. Prereq or concur: 607 and 608. Open only to grad students in dept or by permission of instructor. Enrollment limited to 10. This course is graded S/U.

## 619 Experimental Procedures in Physiology III G 1

Continuation of 618.

Sp Qtr. 1 4-hr lab and 1 cl every other week. Prereq or concur: 607, 608 and 609. Open only to grad students in dept, or by permission of instructor. Enrollment limited to 10. This course is graded S/U.

## 730† Endocrinology P G 5

A study of functions of the thyroid, parathyroid, pituitary, adrenal, pancreas, gonads, and other organs with possible endocrine functions.

Au Qtr. 4 cl, 1 lab. Prereq: 312 or equiv, organic chem, and permission of instructor. Not open to students with credit for Vet Phys 730. Cross-listed in Veterinary Physiology and Pharmacology.

## 748 Electronic Instrumentation for Physiology U P G 2

Basic concepts in semiconductor electronics; representative small signal, digital, and integrated circuits, input and output transducers, recording, storage and elementary information processing techniques are studied in the laboratory; emphasis is on representative examples rather than on a comprehensive survey of instruments.

Sp Qtr. 1 cl, 1 3-hr lab. Prereq: Grad standing in physiology or permission of instructor.

## 793 Individual Studies in Physiology U P G 2-18

Reading, conferences, and laboratory work by individual arrangement with qualified students who desire more intensive and specialized study than is available in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. This course is graded S/U.

## 801 Seminar in Physiological Research Topics G 1

Formal lectures, seminars, and demonstrations by Physiology graduate faculty and visiting scientists, describing and explaining the pertinence of current physiological research.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad 1st yr standing in physiol or permission of instructor. Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

## 850 Seminar in Physiology G 2

Su, Au, Wi, Sp Qtrs. Repeatable.

## 911 Advanced Studies in Physiology G 3 or 5

Su, Au, Wi, Sp Qtrs. Prereq: 601, 602 or 607, and 608; or equivs with written permission of instructor. Quarter schedule of topics to be announced.

### 911.03 Hemodynamics

Dujardin.

### 911.08 Comparative—Avian

Weiss.

### 911.15 Gastrointestinal Physiology

Hanson.

### 911.16 Physiological Control Systems

Kunz.

### 911.24 Muscle Contraction G 3

In-depth examination of molecular mechanisms of activation and contraction in muscle. Rall.

### 911.25 Membrane Transport G 3

In depth presentation of the theoretical basis of membrane biophysics and its practical application to the homeostatic control of intracellular volume and composition.

2 1½-hr cl. Prereq: 600-level course in physiol and permission of instructor.

**999 Research in Physiology G Arr**

Research for thesis or dissertation purposes only. This course is graded S/U.

## Plant Pathology

201 Kottman Hall, 2021 Coffey Road, 292-1375

### General Prerequisites for Courses Numbered 400

*Unless otherwise indicated, the prerequisites for 400-level courses are 90 cr hrs in collegiate courses, exclusive of ROTC and phys ed; or specified course(s) numbered 100-399.*

**401 General Plant Pathology U 5**

An introduction to diseases of plants. Rhodes.  
Au Qtr. 3 cl, 2 2-hr lab. Prereq: Botany 112.

**489 Work Experience in Plant Pathology U 1-3**

Supervised practical experience during employment with an approved organization; work will deal with certain aspects of plant disease control; a final written report is required.  
Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs. Open only to dept majors.

**510 Forest Pathology U G 3**

Major types of forest tree diseases with emphasis on diagnosis, etiology, epidemiology, and control. Rhodes.  
Sp Qtr. 2 cl, 1 2-hr lab. Prereq: Botany 112.

**596 Plant Protection Seminar U G 1**

Current topics relative to plant pest management research, technology, and employment.

Wi Qtr. Arr. Not open to students with 2 cr hrs of 596 in agronomy, entomol, or hort. Repeatable to a maximum of 2 cr hrs. Cross-listed in Agronomy, Entomology, and Horticulture. This course is graded S/U.

### General Prerequisites for Courses Numbered 600

*Unless otherwise indicated, the prerequisites for 600-level courses are 15 cr hrs in courses in the same discipline numbered 300 or higher, or 10 cr hrs in courses numbered 300 or higher, in the same discipline, plus 10 cr hrs in courses numbered 300 or higher in specified allied disciplines.*

**600 Introduction of Bacterial and Viral Pathogens of Plants U G 5**

Introduction to bacterial and viral pathogens and the diseases they cause in plants. Coplin and Nameth.  
Au Qtr. 3 cl, 2 2-hr labs. Prereq: 401 or Micrbiol 521 or permission of instructor.

**601 Fungal Pathogens of Plants U G 5**

An in-depth study of the nature of plant pathogenic fungi and the diseases they cause. Deep.  
Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 401.

**602 Plant Disease Epidemiology U G 3**

Disease development in plant populations with emphasis on monitoring, modeling, and predicting rates of development. Madden.  
Sp Qtr. 2 2-hr cl. Prereq: 401, Math 116, and elementary statistics; or permission of instructor.

**603 Plant Disease Management U G 4**

Theory and practice of plant disease management; emphasis on integration of cultural, biological, chemical, and plant breeding techniques.  
Sp Qtr. 2 2-hr cl. Prereq: 401 or equiv, or permission of instructor.

**610 Diseases of Ornamentals U G 3**

A detailed study of important diseases of floral and woody ornamental plants; their cause, distribution, severity, importance, and specific control measures. Powell.  
Sp Qtr. 2 2-hr cl. Prereq: 401.

**612†\* Turfgrass Diseases U G 3**

A detailed study of the diseases of turf grasses, factors influencing disease severity, specific measures for disease control. Shane.

Au Qtr. 2 2-hr cl. Prereq: 401.

**615 Economic Plant Pathology U G 3**

Major diseases of field, fruit, and vegetable crops with emphasis on etiology, epidemiology, and control.

**615.01 Fruit and Vegetable Crop Diseases**

Ellis and Rowe.

Wi Qtr. 2 2-hr cl. Prereq: 401 or equiv. Not open to students with credit for 671, 672, or 675.

**615.02 Field Crop Diseases**

Deep.

Au Qtr. 2 2-hr cl. Prereq: 401 or equiv. Not open to students with credit for 671.

**636†\* Plant Nematology U G 3**

Bionomics and control of plant-parasitic nematodes. Riedel.

Wi Qtr. 3 cl. Several field trips. Prereq: 401. Not open to students with credit for 836.

**H683 Honors Projects U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr H590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, H599, 693, or H693. This course is graded S/U.

**685 Field Plant Pathology U G 2**

Study of plant diseases in the field with emphasis on diagnosis and epidemiology; supplementary laboratory work. Nameth.  
Su Qtr. 1 4-hr cl arr. Prereq: 401 or 615, and permission of instructor.

**693 Individual Studies U G 1-5**

Problems may be selected in the various areas of plant pathology.

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**694 Group Studies U G 2, 3, or 5**

Special group studies of a selected area in plant pathology not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: Sr or grad standing. Repeatable to a maximum of 10 cr hrs.

### General Prerequisites for Courses Numbered 800 and 900

*Unless otherwise indicated, the prerequisites for 800- and 900-level courses are 30 cr hrs in courses in the same discipline, or 20 cr hrs in the same discipline, plus 25 cr hrs in specified allied disciplines.*

**830†\* Physiology of Parasitism G 5**

Analysis of physiological and biochemical processes associated with penetration, development of host-parasite relations, and disease development; molecular basis for disease resistance. Garraway.

Wi Qtr. 3 cl, 2 2-hr lab. Prereq: 601 and Biochem 511.

**832\* Bacterial Plant Pathogens G 5**

Representative types of bacterial plant diseases and factors affecting their control, severity, distribution, and economic importance; methods used in studying plant pathogenic bacteria. Coplin.

Sp Qtr. 3 2-hr. cl. Prereq: 401, Micrbiol 601, and 25 additional or hrs biological sciences. Not open to students with credit for 872.

**838†\* Plant Virology G 5**

Plant virus detection, identification, structure, purification, serology, replication, transmission, vector relationships, variability, nomenclature and classification, and virus disease symptoms, physiological effects, epidemiology, economic importance, and control. Gordon.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 401 and Micrbiol 509 or 601 or equiv, or permission of instructor.

**842\* Biochemistry of Plant Responses to Infection G 3**

Introduction to the molecular and genetic basis of plant responses to microbial infection and symbiosis. Graham.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Biochem 511 and 521 or equivs, one 600-level course in plant physiology or plant biochemistry, or written permission of instructor. Biochem 631 or Botany 630 or 631 recommended.

**861\* Physiology of Fungi G 5**

The physiology of the nutrition, growth, and reproduction of fungi. Garraway.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Botany 630, 631 and 660. Not open to students with credit for Botany 861. Cross-listed in Botany.

**995 Seminar G 1**

Au, Wi, Sp Qtr. Prereq: Permission of instructor. Repeatable.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Polish

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101 Elementary Polish I**

Introduction to Polish; development of listening, reading, speaking, and writing skills.

Not open to students with credit for 101; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

5 cl. Students must register for and complete 5 cr hrs during the qtr.

**101.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**102 Elementary Polish II**

Continued study of Polish; development of listening, reading, speaking, and writing skills.

Not open to students with credit for 102; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

5 cl. Prereq: 101 or 101.01 or 5 cr hrs of 101.51 or permission of instructor. Students must register for and complete 5 cr hrs during the qtr.

**102.51 Individualized Track U 1-5**

Prereq: Grade of B— or above in 101.01 or 5 cr hrs of 101.51 or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**103 Intermediate Polish I**

Continued study of Polish; development of listening, reading, speaking, and writing skills.

Not open to students with credit for 103; or to native speakers of this language through regular course enrollment or EM credit.

**103.01 Classroom Track U 5**

5 cl. Prereq: 102 or 102.01 or 5 cr hrs of 102.51 or permission of instructor. Students must register for and complete 5 cr hrs during the qtr.

**103.51 Individualized Track U 1-5**

Prereq: Grade of B— or above in 102.01 or 5 cr hrs of 102.51 or permission of instructor. Students may register for 102.51 and 103.51 concurrently with permission of instructor. Students who complete 5 cr hrs before the end of the qtr may proceed to 104.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**104 Intermediate Polish II**

Readings, oral and written practice, and grammar review.

Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit.

**104.01 Classroom Track U 5**

5 cl. Prereq: 103 or 103.01 or 5 cr hrs of 103.51 or permission of instructor. Students must register for and complete 5 cr hrs during the qtr.

**104.51 Individualized Track U 1-5**

Prereq: Grade of B— or above in 103.01 or 5 cr hrs of 103.51 or permission of instructor. Students may register for 103.51 and 104.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hr during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**111† Intensive Intermediate Polish U 5 or 10**

An intensive course that combines the content of 103 and 104; balanced use of the four basic skills: reading, oral comprehension, speaking, and writing.

Sp Qtr. 5 2-hr cl. Prereq: 102. Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 103 or 112 may not register for more than 5 cr hrs, but must complete the entire course. Course intended for students who wish to expedite the completion of the language requirement.

**300 Masterpieces of Polish Literature U 5**

Reading of Polish poetry and prose including that of Nobel Prize winning authors.

Au Qtr. 4 cl. Prereq: 10 or hrs in literature courses at the 200 level or above, or permission of instructor. Given in English but students majoring in Slavic will do prescribed portions of the reading in the original.

**405\* Polish Conversation and Composition**

Reading texts of moderate difficulty, conversation, and simple compositions.

Not open to students with credit for 605; or to native speakers of this language through regular course enrollment or EM credit.

**405.01 Classroom Track U 5**

Wi Qtr. 5 cl. Prereq: 104 or 104.01 or 5 cr hrs in 104.51 or permission of instructor.

**405.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 104 or 104.01 or 5 cr hrs in 104.51 or permission of instructor. Not open to students with credit for 605. Students may register for 104.51 and 405.51 concurrently with the permission of the instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one credit hr to the next with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**407\* Polish Conversation and Composition**

Reading from modern Polish literature, practice in writing and speaking.

Not open to students with credit for 606; or to native speakers of this language through regular course enrollment or EM credit.

**407.01 Classroom Track U 5**

Sp Qtr. 5 cl. Prereq: 504.01 or 605 or 5 cr hrs in 405.51 or permission of instructor.

**407.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: B- or above in 605 or 405.01 or 5 cr hrs in 405.51 or permission of instructor. Not open to students with credit for 606. Students may register for 405.51 and 407.51 concurrently with permission of instructor. Students register for and complete 1 to 5 cr hrs during the qtr. Progress is sequential from one credit hr to the next with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**580 Reading Polish I****580.51 Individualized Track U G 1-5**

Readings in contemporary sources; development of reading skills with some attention to grammar, sentence structure, and listening comprehension.

Su, Au, Wi, Sp Qtrs. Prereq: 407.01 or 5 cr hrs in 407.51 or permission of instructor.

**581 Reading Polish II****581.51 Individualized Track U G 1-5**

Continuation of 580.51; development of reading skills with emphasis on word formation and sentence and discourse structure; readings on different facets of Polish life.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 580.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 580.51 and 581.51 concurrently with permission of instructor.

**582 Reading Polish III****582.51 Individualized Track U G 1-5**

Continuation of 581.51; further development of reading skills; readings on different facets of Polish life.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 581.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 581.51 and 582.51 concurrently with permission of instructor.

**630 Polish Drama U G 5**

Modern Polish drama from neo-romantic to the absurd and grotesque.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in literature courses at the 200 level or above, or permission of instructor. Given in English, but students majoring in Slavic will do portions of the readings in the original.

**631† Polish Prose Fiction U G 5**

Modern Polish fiction as related to sociopolitical problems.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in literature courses at the 200 level or above, or permission of instructor. Given in English, but students majoring in Slavic will do portions of the readings in the original.

**693 Individual Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 20 cr hrs, including cr hrs in 693.40. This course is graded S/U.

**694 Group Studies U G 2-10**

Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 15 cr hrs.

**993 Individual Studies G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 40 cr hrs, including cr hrs in 993.20, 993.30, 993.40, and 993.50. This course is graded S/U.

## Political Science

223 Derby Hall, 154 North Oval Mall, 292-2881

**101 Introduction to American Politics U 5**

Introduction to American politics, the institutions and processes which create public policy, the strengths and weaknesses of the American political systems.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 300. BER/LAC/LAR course. SS Admis Cond course.

**105 World Problems U 5**

Consideration of the major problems facing people, such as poverty, food, war, health, environment, population, human rights; discussion of possible political solutions.

Su, Au, Wi, Sp Qtrs. 5 cl. H105 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. SS Admis Cond course.

**165 Introduction to Politics U 5**

Introduction to politics: political issues, political power, democracy, authoritarianism and totalitarianism, basic political institutions, political ideas, and global politics.

Su, Au, Wi, Sp Qtrs. 5 cl. H165 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. SS Admis Cond course.

**201 The Individual in Politics U 5**

Focus on concepts such as attitude, role, and group and their application in such areas as voting behavior and political participation.

5 cl. H201 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. SS Admis Cond course.

**202 Politics in Contemporary Societies U 5**

The politics of contemporary nations, including such topics as political change, party systems, issues in post-industrial societies, political violence, conflict resolution, and policy making.

5 cl. BER/LAC/LAR course. SS Admis Cond course.

**210 Modern Political Ideologies U 5**

Introductory survey of modern political ideologies: capitalism, socialism, communism, anarchism, fascism; consideration of both the justifications of ideologies and their implications for political life.

5 cl. H210 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. SS Admis Cond course.

**215 American Foreign Policy U 5**

An examination of American foreign policy from World War II to the present; consideration of external and domestic influences on American foreign policy behavior.

5 cl. BER/LAC/LAR course. SS Admis Cond course.



**294 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. 5 cl. Repeatable to a maximum of 10 cr hrs.

**300 American Politics and Policy Making U 5**

An examination of American political institutions and the policy-making process.

5 cl. Not open to students with credit for 101. BER/LAC/LAR course.

**305 Introduction to Public Policy U 5**

Introduction to the workings of policy-making processes within governments, and the use of social science reasoning to evaluate and improve the content of policies.

5 cl.

**325 Political Problems of the Contemporary World U 5**

Critical political problems of industrialized and Third World societies, including governmental legitimacy, conflict and violence, social welfare, equality, and economic development.

Au, Wi, Sp Qtrs. 5 cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences. LAR course.

**345 Interpreting International Politics U 5**

An examination of the nature and determinants of major phenomena in international politics such as crises, alliances, integration, interdependence, subversion, war and conflict resolution processes.

5 cl. BER/LAC/LAR course.

**350 Interdependence and Nationalism in World Politics U 5**

An examination of the relationships of the USA, USSR, and other industrialized countries have with each other and nations in the Third World; focus on the potential for cooperation and conflict.

Sp Qtr. 5 cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 and 172; and 5 cr hrs in social and behavioral sciences. LAR course.

**501 The American Presidency U G 5**

An examination of the American presidency, emphasizing the contemporary role of the president, the institutionalized presidency, and theories of presidential behavior.

5 cl.

**502 Campaign Politics U G 5**

The organization and strategy of American political campaigns; practical politics seen in the light of knowledge about political behavior and public opinion.

5 cl.

**503† Survey Research in Political Science U G 5**

The conducting of public opinion polls; participation in a public opinion survey.

4 cl.

**504 Black Politics U 5**

Economic, political, and social constraints on the development of black political power; the efforts made by black people in recent times to organize for effective political action.

5 cl. Not open to students with credit for Black St 504. Cross-listed in Black Studies.

**505 Urban Government U G 5**

Introduction to the governance of urban communities in the United States.

5 cl.

**506† Ohio Politics U G 5**

Examination of state politics with special reference to Ohio.

5 cl.

**510 Political Leadership U 5**

Establishment of a working definition of political leadership, investigation of recruitment of leaders, analysis of major functions political leaders perform, and assessment of consequences of political leadership.

Sp Qtr. 5 cl.

**512\* Women and Politics U G 5**

An examination of women's participation in political activity, including changes over time in women's political roles and comparison with the roles of men.

5 cl.

**514 Women and the Law U G 5**

An examination of the legal status of women and the ways in which law affects the situation of women in American society.

5 cl.

**516 Judicial Politics U G 5**

Analysis of the roles of judges and lawyers as participants in the American political process; analysis of courts as political institutions.

5 cl.

**519 Civil Liberties in the Courts U G 5**

An examination of civil liberties decisions by American courts, their legal and political bases, and their effects on government and society.

5 cl.

**520 The American Constitution and Governmental Powers U G 5**

Assessment of the contemporary realities of U.S. governmental authority as interpreted by the judiciary; emphasis on judicial review, case and controversy requirements, and legislative and executive power.

5 cl. Not open to students with credit for 694 Sp Qtr 1979 or Sp Qtr 1980.

**530 Government and Politics of the Communist World U G 5**

Systematic comparison of central political processes within communist systems: elite recruitment, coalition behavior, conflict resolution, role of intellectuals, social policy, and mass mobilization.

5 cl.

**535 Government and Politics of the Industrialized World U G 5**

Analyses of politics of the United States, Western Europe, and Japan regarding contemporary problems of inequality, regime instability and conflict, value change and the environment.

5 cl.

**541 Government and Politics of the Third World U G 5**

A general introduction to the theoretical and substantive literature dealing with the historical development and contemporary characteristics of the new states of Asia and Africa.

5 cl.

**551 The United Nations System in Global Problem Solving U G 5**

Activities and potential of the United Nations system in promoting economic well-being, environmental management, resource sharing, social justice, and control of violence.

5 cl.

**553 Political Analysis of International Economic Relations U G 5**

Examines the relationship between political and economic events in the international system; topics include global interdependence, inequality, scarce resources, periphery nation strategies.

5 cl. Not open to students with credit for 653 or 753.

**560 Regional Patterns in International Politics U G 5**

Examination of ideological, institutional, and foreign political patterns in particularized regions, such as sub-Sahara Africa, Arab Middle East, Southeast Asia.

5 cl. Repeatable to a maximum of 15 cr hrs.

**570 Alternative World Futures U G 5**

Examines forecasts of the future made by computer simulation, and by philosophers and science fiction writers; discusses ways to change the future through political means.  
5 cl.

**571 Political Theories of Democracy U G 5**

An examination of theories of democracy, focusing on normative and descriptive dilemmas such as participation versus liberty in democratic societies.  
5 cl.

**573 American Political Ideas U G 5**

An analysis of American ideas on law and government, authority and liberty, oligarchy and democracy.  
5 cl. BER course.

**585 Techniques of Political Analysis U 5**

Introduction to research design, nature of data, its generation and analysis; analysis of political variables.  
5 cl.

**589 Student Internship in Politics and Public Policy U G 1-15**

Combines experience in political institutions or policy processes with analysis of that experience in light of relevant scholarly literature.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs; including cr hrs in 689.

**590 Topics in Political Science U G 3-5**

Selected issues and topics in American, international, or comparative politics, political theory or public policy; topics vary by section and instructor.

Repeatable to a maximum of 10 cr hrs.

**593 Individual Studies U G 1-15**

Students will devote their time to special projects including papers, exams, and practical political experience.

Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**H596 Honors Seminar in Political Science U 3-5**

Intensive study of selected political science topics and issues in seminar format; topics vary.

Prereq: Enrollment in an honors program or permission of instructor. Repeatable to a maximum of 10 cr hrs.

**General Prerequisites for Courses Numbered 600**

*Unless otherwise indicated, the prerequisites for 600-level courses are two courses in political science, or the consent of the instructor.*

**601 Advanced Presidential Politics U G 5**

Analysis of recent research on the presidency; methods of studying the presidency.

Wi Qtr. 2 2-hr cl. Prereq: 501 or grad standing or permission of instructor.

**603 Public Opinion U G 5**

Origins and nature of political attitudes; the content of public opinion; the public's influence on policy-making.

Wi Qtr. 5 cl.

**604 American State Politics U G 5**

Comparative analysis of politics in the American states.  
5 cl.

**610† Executive and Bureaucratic Politics U G 5**

Introduction to the roles and behavior of executives and bureaucrats in the formulation and implementation of public policy in the United States.

5 cl.

**614 Urban Politics U G 5**

The study of political problems facing the cities: including community power, poverty, welfare, urban renewal, urban education, law enforcement, and violence.

5 cl.

**617 Legislative Politics and Policy-Making U G 5**

Studies of legislative organization, practices, and recruitment, and their relation to policy outputs; relationships of the legislature to other elements of the American political system.

Au, Wi Qtrs. 5 cl.

**627 Government and Politics of Western Europe U G 5**

Systematic comparison of political phenomena and governmental institutions within West European societies.

5 cl. Prereq: Permission of instructor for second 5 cr hrs. Repeatable to a maximum of 10 cr hrs.

**629† Analysis of 20th-Century Problems in Cross-National Perspective U G 5**

Studies of contemporary political phenomena from a comparative perspective, including instability-stability in parliamentary systems, revolution, urban and local politics, national integration, and other topics.

Repeatable to a maximum of 15 cr hrs.

**630† The Soviet Union U G 5**

A general study of the Soviet Union; governmental and party institutions; ideology and methods; problems of communist dictatorship.

5 cl.

**635† Government and Politics of Japan U G 5**

The government and politics of Japan, with special emphasis being given to the impact of cultural and social patterns on the processes of government with imported political institutions.

5 cl.

**636 Southeast Asia U G 5**

Governments and politics of the Philippines, Indonesia, Indo-China, Malaysia, Thailand, and Burma; contemporary problems of this region in relation to world politics.

5 cl.

**637 Government and Politics of China U G 5**

A study of the contemporary political process of Communist China; considerable time will be spent on an analysis of recent political change in China and the process of revolution.

5 cl.

**640† Latin American Government and Politics U G 5**

A study of political processes, institutions, and groups in Latin America, with emphasis on constitutional, geographical, social, and economic environments in which they operate.

5 cl.

**653 Politics of the Modern World Economy U G 5**

Institutions and processes which define the contemporary global economy; their political origins and consequences as interpreted by competing schools of thought in political economy.

Wi Qtr. 5 cl. Not recommended to students with credit for 553. Not open to students with credit for 753.

**655† Soviet Foreign Policy U G 5**

Basic concepts about, and choices in Soviet foreign policy; development and presentation of patterns of Soviet relations with key nations; major problems in future relationships.

5 cl.

**658† International Relations of the Far East U G 5**

The Far East in contemporary world politics; factors underlying the foreign policies of the nations concerned with this region.

5 cl.

**666 Marxist Political Theory U G 5**

An advanced introduction to the political theories of Marx and Marxism; special attention to revolution, the state, and the materialist interpretation of history.

2 2-hr cl. Prereq: Permission of instructor for students with credit for 766.

**670 Political Theory: Socrates to Machiavelli U G 5**

The study of major works by political theorists, including Plato, Aristotle, Cicero, Augustine, Aquinas, Machiavelli, and others, in ancient and medieval times.

5 cl.

**671 Political Theory: Machiavelli to Hume U G 5**

The study of major works by political theorists, including Machiavelli, Hobbes, Locke, Rousseau, Hume, and others, from the Renaissance into the 18th century.

5 cl.

**672 Political Theory: Hume to Marx U G 5**

The study of major works by political theorists, including Hume, Bentham, Kant, Hegel, Mill, Marx, and others, before and after the French Revolution.

5 cl.

**673 Political Theory: 20th Century U G 5**

The study of major works by political theorists in the 20th century.

Su Qtr. 5 cl.

**674 Political Participation and Voting Behavior U G 5**

A study of political participation and its correlates, determinants of the vote decision, and analysis of recent American elections.

5 cl.

**675† American Political Parties U G 5**

Theories of political parties, party organization, individual voting behavior, nomination and electoral politics, the party in government.

5 cl.

**678 Political Decision-Making and Public Policy U G 5**

Comparative analysis of decision-making processes of contemporary nations considering the welfare, education, economic, and environmental policy arenas.

3 cl, 1 lab. Not open to students with credit for 578.

**679 Policy Analysis U G 5**

An analysis of the policy process emphasizing the determinants of public policy, theories of public choice, and the implementation, impact, and evaluation of policy decisions.

5 cl.

**680 Models of Politics U G 5**

An introduction of major approaches used in modelling politics, including social choice, game theory, and probability models.

Au Qtr. 5 cl.

**684 Introduction to Political Science Research Methods U G 5**

Introduction to political science research with emphasis on survey and experimental designs, data generation techniques, data processing, and computer utilization.

2 2-hr cl. Prereq: Grad standing in polit sc or permission of instructor.

**685 Methods of Quantitative Analysis: Elementary U G 5**

Explication, interpretation, and application of techniques for quantitative analysis of political data; descriptive and inferential statistics, with emphasis on bivariate analysis.

5 cl.

**686 Methods of Quantitative Analysis: Intermediate U G 5**

Descriptive and inferential statistics with emphasis on multivariate analysis; additional topics offered as desired and possible: scaling, index construction, sampling, measurement reliability.

5 cl. Prereq: 685.

**694 Contemporary Political Problems U G 3-5**

Prereq: Sr standing and 15 cr hrs in polit sc. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

*700-level courses are designed as graduate seminars.*

**700† Basic Theories in the Study of American Politics U G 5**

Examination of basic concepts and approaches; consideration of methodological and substantive problems encountered at various levels of analysis.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**Advanced Topics in National Security**

See NSP Std 702.

**703\* Readings in Public Opinion U G 5**

Intensive analysis of literature on selected topics in public opinion.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**704 Readings in State and Local Politics U G 5**

Intensive review of selected aspects of the literature on state and local politics in the United States.

2 2-hr cl. Prereq: 604 or 614 or equiv. Repeatable to a maximum of 10 cr hrs.

**709 Seminar in American Politics U G 5**

Introduction to the central research areas and literature of the field of American politics.

Wi Qtr. 5 cl. Prereq: Grad standing in polit sc or permission of instructor. Not open to students with credit for this topic under 894.

**715 Judicial Politics: Process and Policy Making U G 5**

Examination of the judicial process with emphasis on the work of trial courts and the roles of courts as policy makers.

2 2-hr cl. Prereq: Undergrads: written permission of instructor.

**716\* Judicial Politics: Decision Making U G 5**

Examination of decision making in appellate courts.

2 2-hr cl. Prereq: Undergrads: written permission of instructor.

**717 Readings in Legislative Politics and Policy-Making U G 5**

A theoretical-empirical analysis of the functioning and policy product of American legislatures; intensive reviews of selected aspects of the legislative literature to be conducted.

2 2-hr cl. Prereq: 617 or equiv. Repeatable to a maximum of 10 cr hrs.

**725 Basic Theories in the Study of Comparative Politics U G 5**

Examination of such concepts and theories as structural-functional analysis; general systems theory; and sociocultural systems as determinants of governmental structures.

3 cl.

**731† Problems in Soviet Politics U G 5**

An intensive examination of selected problems such as crises of succession, conflicts of pressure groups, Soviet policies in the United States, Sino-Soviet relations.

3 cl. Prereq: 630 or 655.

**734\* Problems in Asian Politics U G 5**

An advanced seminar for the purpose of structured reading of advanced scholarly materials and limited research experimentation in East and Southeast Asian topics.

1 2-hr cl. Prereq: 635 or 636 or 637 or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**740† Problems in Latin American Politics U G 5**

An advanced seminar devoted to a structured examination of the major theories, concepts, and approaches used in the analysis of Latin American politics.

1 3-hr cl. Prereq: 562 or 640 or permission of instructor.

**741 Political Development U G 5**

Theories, approaches, and methodology in the analysis of political life in the new states of Asia and Africa; discussion of selected case and cross-national studies with theoretical relevance.

3 cl. Prereq: 541 or 636 or permission of instructor.

**745 Basic Theories in the Study of International Politics U G 5**

Examination of such basic concepts and theories as equilibrium models, balance of power, national interest, geopolitical configurations.

2 3-hr cl.

**746 Synthesizing International Politics Scholarship U G 5**

Synthesis of international politics research and writings, intended for advanced graduate students.

2 2-hr cl.

**747 Research Methods in International Politics U G 5**

Examines a number of research techniques and approaches common in international politics such as content analysis, simulation, mathematical modeling, and factor analysis.

2 2-hr cl.

**749 Topics in Cross-National Policy Analysis U G 5**

A comparative examination of substantive cross-national policy issues such as welfare, security, economic development, etc.

3 cl.

**750 Policy Management in International Politics U G 5**

Analyzes such subjects as forecasting, social indicators, social engineering, needs assessment and goal-setting from the perspective of the strategic and executive functions of policy making.

2 2-hr cl.

**751† Conflict and Peace U G 5**

Sources and types of social conflict with special attention to international violence; causes of war, their avoidance and control.

2 2-hr cl.

**753 Theories of International Political Economy U G 5**

Contemporary literatures in international political economy; their ties to classical schools of thought in international relations and political economy; points of contention between them.

2 2-hr cl. Not open to students with credit for 894C Sp Qtr 1984 or Wi Qtr 1986.

**755† American Foreign Policy Making U G 5**

An examination of various approaches used to explain American foreign policy behavior including the rational actor, policy process, and bureaucratic politics models.

2 2-hr cl.

**756 Foreign Policy Design U G 5**

Problems of designing foreign policy including organizational, contextual, economic, and public opinion constraints; how to create an information retrieval system to aid decision-making.

2 2-hr cl.

**757 Comparative Foreign Policies U G 5**

Examines comparatively the sources and classes of behavior of territorial actors in the international political system.

2 2-hr cl.

**759 International Organization U G 5**

Comprehensive view of international governmental, non-governmental, and business organizations; their roles in solving problems such as poverty, war, pollution; particular attention to the U.N. system.

2 2-hr cl.

**760 Transnational Relations U G 5**

Comprehensive view of nongovernmental relations (trade, agriculture, science, religion, health, labor) between people in different nation-states with particular attention to opportunities for increased citizen control.

2 2-hr cl.

**762 Theory and Explanation in Political Science U G 5**

A survey of topics in the methodology and philosophy of social science including: logic, conceptualization, explanation, theory; applications to criticism in political science.

2 2-hr cl.

**766 Selected Topics in Political Theory U G 5**

Intensive joint readings and discussions concentrating upon one of the major themes, problems, or movements in political theory; topic information available from instructor.

1 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**767 Evaluation in Politics U G 5**

The nature and foundations of political evaluation; methodological problems and substantive theories for the evaluation of institutions, public policy, and approaches to policy analysis.

2 2-hr cl. Prereq: Grad standing or permission of instructor.

**774 Readings in Political Participation and Voting Behavior U G 5**

Intensive examination of literature on selected topics in the area of participation and voting behavior in the United States.

2 2-hr cl. Prereq: 674 or equiv. Repeatable to a maximum of 10 cr hrs.

**775† Readings in American Political Parties U G 5**

Intensive study of literature on selected aspects of American political parties.

3 cl. Repeatable to a maximum of 10 or hrs.

**776 Comparative Political Institutions U G 5**

Study of state building process, regime types, and contemporary governmental institutions from a broad cross-national perspective.

3 cl.

**777 Comparative Political Behavior U G 5**

A cross-national examination of political behavior, including such topics as socialization, participation, voting, elite behavior, mass-elite linkages.

3 cl.

**778 Comparative Political Parties and Interest Groups U G 5**

Comparative analysis of the nature and role of political parties and interest groups in contemporary societies.

3 cl.

**779 Readings on the Policy Process U G 5**

Consideration of the basic theories, concepts, and techniques used in policy analysis; the determinants of public policy; and the impact and evaluation of public policy.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**H783 Honors Research U 3-5**

Prereq: 4th yr standing and 40 cr hrs in social sciences, including 15 cr hrs in polit sc with a record of A in at least half of the polit sc courses and an average of B in the remainder; and permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in polit sc. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. A special topic is assigned to each student and results are tested by the requirement of papers and special examinations. This course is graded S/U.

**786\* Causal Analysis U G 5**

Analysis of causal models by Simon-Ballock techniques, recursive and nonrecursive path estimation; special topics include measurement error, standardization, and ordinal data.

2 2-hr cl. Prereq: 685 and 686.

**787\* Scaling and Dimensional Analysis in Political Science U G 5**

Topics include measurement and data theory, unfolding, proximity and dominance (Guttman) scaling, multidimensional scaling, and factor analysis.

2 2-hr cl. Prereq: 685 and 686.

**788† Mathematical Theories of Politics U G 5**

Introduction to various major mathematical theories of political phenomena and the role of formal analysis in political science.

2 2-hr cl. Prereq: 790 or equiv.

**790 Scope and Methods of Political Science U G 5**

An introduction to political science as a scholarly discipline; examination of trends, concepts, and scientific foundations; an overview of theory building and theory testing.

1 2-hr cl, 1 1-hr cl. Prereq: 4th yr standing and 15 cr hrs in polit sc. Repeatable to a maximum of 10 cr hrs.

**793 Individual Studies U G 1-5**

Individual studies in political science; student work is evaluated by papers and/or special examinations.

Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 50 cr hrs, in any combination of decimal subdivisions, with not more than 20 cr hrs in a single subdivision. These courses are graded S/U.

**793.01 American Politics****793.02 Comparative Politics****793.03 International Politics****793.04 Political Theory****793.05 Public Policy****Studies in National Security Policy**

See NSP Std 795.

**General Prerequisites for Courses  
Numbered 800 and 900**

*A general foundation in undergraduate courses in history and the social sciences is assumed. Any of the 800-level courses listed may be repeated provided that no student shall earn more than 10 hours of credit in any single course.*

**800 Research Seminar in American Politics G 5**

Each decimal subdivision repeatable to a maximum of 10 cr hrs, including cr hrs earned for these topics under 894.

**800.01 Design of Research in American Politics**

Development of a research design on a selected topic in American politics; consultation on substantive and methodological problems offered by faculty.

Wi Qtr. 1 2-hr cl, arr time. Prereq: 45 cr hrs of graduate work in polit sc or permission of instructor.

**800.02 Research in American Politics**

Execution of a research design on a selected topic in American politics; consultation on substantive and methodological problems offered by faculty.

Sp Qtr. 1 2-hr cl, arr time. Prereq: 800.01 or permission of instructor.

**826 Research in Comparative Politics G 3-5**

Research seminar on various topics in comparative politics.

1 2-hr cl. Prereq: 2 polit sc courses in foreign governments at 600-level or above, or equiv. Repeatable to a maximum of 15 cr hrs.

**846 Research in International Politics G 3-5**

Research seminar in international politics.

1 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**866 Research in Political Theory G 5**

Research seminar in political theory; intensive treatment of selected topics.

1 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**867 Research in Mathematical Political Science G 5**

Design and examination of research focusing on a problem in mathematical political science.

2 2-hr cl. Repeatable to a maximum of 10 cr hrs.

**874 Research in Political Participation and Voting Behavior G 5**

Development and execution of a research design focusing on a problem in electoral research; extensive consultation with instructor on substantive and methodological aspects of the problem.

1 2-hr cl. Prereq: 774 or equiv.

**879 Research on Public Policy G 5**

Research into the process of policy making and the substance of public policy; consultation on substantive and methodological problems offered by instructor.

1 2-hr cl. Repeatable to a maximum of 15 cr hrs.

**889 Internship in Politics and Public Policy G 1-15**

Combines experience in political institutions or policy processes with analysis of that experience in light of relevant scholarly literature.

Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894† Group Studies: Contemporary Political Problems G 5**

Group studies to examine specific contemporary political problems.

5 cl. Repeatable to a maximum of 30 cr hrs.

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Repeatable by permission.

**999 Research in Political Science G Arr**

Research for thesis or dissertation purposes only.

This course is graded S/U.

## Portuguese

Cunz Hall, 1841 Millikin Road, 292-5842

### 101 Elementary Portuguese U 5

Elements of Portuguese grammar, with oral and written exercises; attention to ear training and oral practice; and customs.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

### 102 Elementary Portuguese U 5

The elements of Portuguese grammar with abundant oral and written exercises; development of conversational skill; reading, vocabulary building.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

### 103 Intermediate Portuguese U 5

Continuation of Portuguese grammar; reading of short stories, plays, and novels; increased attention to development of oral proficiency.

Sp Qtr. 5 cl. Prereq: 102 or 110. Not open to native speakers of this language through regular course enrollment or EM credit.

### 104 Intermediate Portuguese U 5

Reading of Portuguese plays, short stories, and novels; emphasis on oral practice; non-fiction of cultural and historical significance.

Au Qtr. 5 cl. Prereq: 103 or 112. Not open to native speakers of this language through regular course enrollment or EM credit.

### 202 Portuguese Conversation and Composition U 5

Intensive practice in conversation and composition based on materials concerning current life in Brazil and Portugal, with thorough review of grammar.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit.

### 421 Introduction to Modern Luso-Brazilian Literature U 5

Reading and discussion of important modern Portuguese and Brazilian literary works.

Au Qtr. 5 cl. Prereq: 104.

### 611\* The Portuguese Language U G 5

Phonetic transcription from tapes of major continental and Brazilian dialects; the phonological pattern of modern Portuguese; general characteristics of its historical evolution from Hispano-Romance.

Sp Qtr. 4 cl, 1 lab hr. Prereq: 102 and jr standing, or permission of instructor.

### 623\* Modern Brazilian Novel U G 5

The Brazilian novel from the 1930's to the 1960's.

Sp Qtr. 5 cl. Prereq: 421, and 422 or 423, or permission of instructor.

### 693 Individual Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

### 694 Group Studies U G 1-15

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

### H783 Honors Research U 3-5

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 893 Individual Studies G 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 894 Group Studies G 1-15

Investigation of minor problems in the various fields of Portuguese literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

## Poultry Science

108 Dakan Hall, 674 West Lane Avenue, 292-4821

### Domestic Animals in the Service of Man

See Animl Sc 100. Offered in cooperation with Dairy Science and Poultry Science.

### 200 Fundamentals of Poultry Science U 5

Application of science and technology in the poultry and related industries. Stephens.

Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Biology 110 or Animl Sc 100. This course is available for EM credit.

### 389 Poultry Science Experience U 2-5

Practical experience, including completion of outlined program and written report, in an approved poultry establishment. Stephens.

Su, Au, Wi, Sp Qtrs. Prereq: 200 and permission of instructor. Open only to dept majors. Repeatable to a maximum of 10 cr hrs.

### 420 Principles of Animal Improvement U 5

An introduction to the methods available for bringing about genetic change in farm animals. Davis, Fechner and Irvin.

Au, Wi, Sp Qtrs. 5 cl. Prereq: Animl Sc 100, Math 148 or equiv and Genetics 140. Not open to students with credit for Animal Sc 420 or Dairy Science 420. Cross-listed in Animal Science and Dairy Science.

### 430 Principles of Animal Nutrition U 5

A study of the fundamental principles of nutrition in mammals and birds. Tyznik.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: Chem 102 or 122, and Math 148 or equiv. Not open to students with credit for Animl Sc 430 or Dairy Sc 430. Cross-listed in Animal Science and Dairy Science.

### 494 Group Studies U 2, 3 or 5

Intensive study of selected areas of poultry science appropriate to the group and not provided in other courses.

Su, Au, Wi, Sp Qtrs. Cl hrs arr. Prereq: 200. Repeatable to a maximum of 10 cr hrs.

### 541 Commercial Poultry Management U G 5

A study of commercial poultry management utilizing an enterprise approach. Havenstein.

Sp Qtr. 4 cl, 1 2-hr lab. Prereq: 200 and Agr Econ 310.01 or 310.02 or equiv and junior standing.

### 593 Individual Studies U 2, 3, or 5

Su, Au, Wi, Sp Qtrs. Prereq: 250 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**614 Poultry Physiology U G 5**

An organ system approach to avian physiology with particular emphasis on adaptation to modern production systems, animal care, growth, and reproduction. Bacon.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: Biology 110 or 113 and Vet Phys 410 or 411 or Zoology 432 or Physiol 601. Not open to students with credit for 610 and 611.

**630 Nutrition and Feeding of Nonruminant Animals U G 5**

The nutrition of swine, poultry, and laboratory animals; principles and practice. Latshaw and Lepine.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 430 or equiv. Not open to students with credit for Animl Sc 630. Cross-listed in Animal Science.

**635 Nutrition Applied to Farm Animals U G 3**

Application of nutrient requirements, feed formulation, and feed technology to providing adequate nutrition for farm animals. Lilburn and Weiss.

Sp Qtr. 3 cl. Prereq: 630 or Animl Sc 630 or 631 or 632 or Dairy Sc 631. Not open to students with credit for 735, Animl Sc 635 or 735, or Dairy Sc 635 or 735. Cross-listed in Animal Science and Dairy Science.

**640 Prevention and Control of Avian Diseases U G 5**

The etiology, recognition, prevention, and control of the important diseases of poultry and game birds. Bermudez.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: Chem 102 or 122 and Microbiol 509 or 520.

**650 Egg and Poultry Products Technology U G 5**

Quality identification and maintenance; processing; physical, chemical, microbiological, and nutrient properties; preservation and utilization of egg and poultry products. Stephens.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: Chem 102 or 122 and Microbiol 509 or 520.

**H683 Honors Projects U 1-10**

Conducting and reporting the honors project.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Agr H590.01, enrollment in honors program, and permission of honors project supervisor. Repeatable to a maximum of 10 cr hrs as H683 or in combination with 293, 593, H593, 693, or H693. This course is graded S/U.

**694 Group Studies U G 3-5**

Advanced studies of selected areas of poultry science appropriate to the group and not provided in other courses.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**695 Seminar U G 1**

Au, Wi, Sp Qtrs.

**Advanced Reproductive Physiology**

See Dairy Science 710. Offered in cooperation with Animal Science and Dairy Science.

**721 Genetics of Animal Populations I U G 3**

Parameters of static populations, genetic arrays, and equilibria and statistical measures; partitioning the phenotypic variance mutation, migration, selection and chance. Irvin.

Wi Qtr. 3 cl, Prereq: 420 or Genetics 500 and 650 or equiv. Not open to students with credit for Animl; or Dairy Sc 721. Cross-listed in Animal Science and Dairy Science.

**722 Genetics of Animal Populations II U G 3**

Selection of polygenic characters, mating systems, and development of breeding plans. Irvin.

Sp Qtr. 3 cl. Prereq: 721 or Animl Sc 721 or Dairy Sc 721 or equiv. Not open to students with credit for Animl or Dairy Sc 722. Cross-listed in Animal Science and Dairy Science.

**733 Nutrition in the Support of Growth U G 5**

A functional approach to the study of nutrition for support of growth and maintenance in animals and humans. Ramsey and White.

Au Qtr. 5 cl. Prereq: 630 or Animl Sc 630 or 631 or 632 or Dairy Sc 631 or Humn Ntr 610; prereq or concour: Biochem 511 or Physchem 611 and permission of instructor. Not open to students with credit for Animl Sc 733 or Dairy Sc 733 or Fd Sc&Nu 733. Cross-listed in Animal Science, Dairy Science, and Food Science and Nutrition.

**734 Nutrition in the Support of Reproduction U G 3**

A functional approach to the study of nutrition for support of reproduction in animals and humans. Day and Latshaw.

Wi Qtr. 3 cl. Prereq: 630; Animl Sc 630 or 631 or 632, or Dairy Sc 631; prereq or concour: Biochem 511 or Physchem 611. Not open to students with credit for Animl Sc 734 or Dairy Sc 734. Cross-listed in Animal Science, Dairy Science, and Food Science and Nutrition.

**800 Seminar G 1**

Discussion of poultry science research and research methods. Havenstein.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad standing in pltry sc. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**810 Advances in Physiology of Domestic Animals G 3**

Au, Wi, Sp Qtrs. 4-hr cl. Prereq: Acceptable courses in physiol, anatomy, biochem, and written permission of instructor. Not open to students with credit for Animl Sc 810 or Dairy Sc 810. Cross-listed in Animal Science and Dairy Science.

**810.01\* Anterior Pituitary Function**

Bacon.

Au Qtr.

**810.02\* Endocrinology of Reproduction**

Pate.

Wi Qtr.

**810.03 Immunology and Immunogenetics**

Hines.

Sp Qtr.

**810.05\* Mammalian Germ Cells**

Pope.

Wi Qtr.

**820 Current Topics in Animal Genetics**

Prereq: Acceptable courses in animal genetics, math, and statistics. Repeatable to a maximum of 12 cr hrs. Not open to students with credit for Animl Sc 820 or Dairy Sc 820. Cross-listed in Animal Science and Dairy Science.

**820.01\* Selection Index Theory G 1-3**

Allaire.

Au Qtr.

**820.02†\* Nonadditive Genetic Variance G 1-3**

Wi Qtr.

**820.04†\* Modeling of Breeding Systems G 1-3**

Allaire and Davis.

Sp Qtr.

**820.05\* Cytogenetics of Animal Populations G 1-3**

Fechheimer.

Wi Qtr.

**820.07 Seminar in Animal Genetics Research G 1**

Review of literature related to genetics improvement of agricultural animal populations. Allaire.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Acceptable courses in animal genetics, math, and statistics. Not open to students with credit for Animl Sc 820 or Dairy Sc 820. Repeatable to a maximum of 12 cr hrs. This course is graded S/U. Cross-listed with Animal Science and Dairy Science.

**830 Advanced Studies in Nutrition G 3**

Su, Au, Wi, Sp Qtrs. 3 or 4 cl. Prereq: 630 or Animl Sc 630 or Dairy Sc 631 or Hum Nutr 610; Fd Sc&Nu 761 and 762; and 10 grad cr hrs in physiol. Not open to students with credit for Animl Sc 830 or Dairy Sc 830 or Humn Ntr 830. Cross-listed in Animal Science, Dairy Science, Food Science and Nutrition, and Human Nutrition and Food Management.

**830.01\* Energy**

Latshaw, Palmquist, and Snook.

Wi Qtr.

**830.02†\* Minerals**

Mahan.

Wi Qtr.

**830.03\* Proteins and Amino Acids**

Sp Qtr.

**830.04\* Vitamins**

Sp Qtr.

**830.05†\* Lipids**

Palmquist.

Au Qtr.

**830.08\* Carbohydrates**

Roehrig.

Au Qtr.

**840 Advanced Study in Molecular Endocrinology G 5**

Combined lecture/laboratory course on the molecular and cellular basis of hormone action and state-of-the-art methodologies in molecular endocrinology.

Su Qtr. Prereq: Biochem 511 or equiv and permission of instructor. Cross-listed in Animal Science and Dairy Science.

**850 Molecular Biology Techniques G 4**

Combined lecture/laboratory in the techniques of nucleic acid isolation, analysis, hybridization, sequencing, cloning, expression, and associated biotechnologies.

Su Qtr. 10 2-hr cl, 10 4-hr lab. Prereq: Biochem 521 or 613 or equiv. Not open to students with credit for Animl Sc 850 or Dairy Sc 850. Cross-listed in Animal Science and Dairy Science.

**898 Interdepartmental Seminar in Nutrition G 1**

See Interdepartmental Seminars.

Sp Qtr. This course is graded S/U.

**993 Individual Studies G 2, 3, or 5**

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs of 300-level courses or higher in pltry sc, animl sc, or dairy sc and permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Preventive Medicine

B-201 Starling-Loving Hall, 320 West 10th Avenue,  
293-3907

**685 Field Experience in Comprehensive Health Planning P 6, 12, or 18 G 6-12**

Full-time assignment to a state or local health planning agency, to work on a specific project in community health under the guidance of a selected faculty adviser.

Su, Au, Wi, Sp Qtrs. Field time assigned for medical students 1, 2, or 3 months and grad students ½ or entire summer quarter. Prereq: Permission of instructor.

**700 Current Health Problems P G 3**

Descriptive epidemiology and clinical features of major causes of morbidity and mortality; appraisal of current control mechanisms and policy issues. Gaeuman.

Au Qtr. 1 2½-hr cl. Prereq: Grad standing in prev med or permission of instructor. Not open to students with credit for 780.

**730 Principles of Environmental Health P G 3**

Survey of major environmental factors affecting human health, including air, water, and land pollution, occupational hazards, trace metals, chemical carcinogens, radiation, and noise. Wilkins.

Wi Qtr. 2 1½-hr cl. Prereq: Grad standing in prev med or permission of instructor.

**750 Principles of Epidemiology P G 3**

Introduction to the nature and scope of epidemiology; survey of basic epidemiological methods and their application to selected acute and chronic health problems. Hopkins.

Au Qtr. 2 1½-hr cl. Prereq: Grad or professional standing. Not open to students with credit for 800 or 851.

**751 Principles and Applications of Epidemiology and Associated Statistical Methods I P G 3**

Population medicine: distribution and determinants of health and disease, screening for detection of disease, observation and analytic studies, and control of infectious disease.

Au Qtr. Prereq: Enrollment in MPH program or permission of instructor.

**754 History of Public Health P G 3**

Development of public health services in the United States; social, economic, and cultural influences; historical background of current responses to perceived health needs.

Su Qtr. Prereq: Enrollment in MPH program or permission of instructor.

**764 Design and Analysis of Comparative Biomedical Research I P G 3**

Theory and application of basic statistical concepts as they affect design, analysis, and interpretation of veterinary biomedical research. Moeschberger.

Au Qtr. 2 2-hr cl. Prereq: Grad standing in prev med or permission of instructor. Not open to students with cr for Vet Prev 764 or Vet Phys 764. Cross-listed in Veterinary Preventive Medicine and Veterinary Physiology and Pharmacology.

**765 Biostatistics and Computers in Medical Research P G 3**

Review of the fundamental concepts of biostatistics, including more complex analysis of variance designs, integrated with application of the electronic computer. Moeschberger.

Wi Qtr. 1 2-hr cl and 1 2-hr lab. Prereq: Grad standing in prev med or permission of instructor. Not open to students with cr for 785 or Vet Prev 765. Cross-listed in Veterinary Preventive Medicine.

**766 A Problem-Oriented Approach to Biostatistics U G 3**

The employment of actual health-related problems to illustrate the use of computers and applied statistical methods important to epidemiologists and other health professionals. Lanese and Moeschberger.

Sp Qtr. 2 1½-hr cl. Prereq: 764 and 765 or permission of instructor. Not open to students with credit for 794.01 covering this same topic.

**770 Health Survey Methods P G 3**

An introduction to health survey methods; lectures, readings, classroom, and community exercises; consideration of health planning and epidemiological applications. Lanese.

Sp Qtr. 1 2-hr cl and 1 1-hr conf. Prereq: Grad standing in prev med or permission of instructor.

**786 Biometrics Laboratory P G 3**

Participation in consultations offered to biomedical researchers, combined with individualized faculty guidance. Moeschberger.

Au, Wi, Sp Qtrs. 2 1-hr lab and 2 1-hr conf. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 6 cr hrs.



**793 Individual Studies in Preventive Medicine P 6, 12, or 18 G 2-5**

1, 2, 3, or 4 months; offered all months except June. Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit and 15 cr hrs for grad credit. These courses are graded S/U.

**793.02 Biometrics**

Lanese and Moeschberger.

**793.04 Environmental Health**

Wilkins.

**793.05 Epidemiology**

Keller and Wilkins.

**793.08 Community Health**

Keller and Banks.

**793.09 Comprehensive Health Planning****793.10 Health Agency Administration**

Banks.

**793.11 Behavioral Sciences Studies in Health**

Lanese and Banks.

**794 Group Studies in Preventive Medicine P 6, 12, or 18 G 2-5**

1, 2, 3, or 4 months; offered all months except June (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for professional credit and 15 cr hrs for grad credit.

**794.01 Biometrics**

Lanese and Moeschberger.

**794.02 Environmental Health**

Wilkins.

**794.03 Epidemiology**

Keller and Wilkins.

**794.04 Community Health**

Banks and Keller.

**794.99 General****800 Epidemiology I G 3**

Principles of epidemiology with special emphasis on methods employed in current epidemiologic studies. Wilkins.

Au Qtr. 2 1½-hr cl. Prereq: Grad standing in prev med or permission of instructor. Not open to students with credit for 851.

**801 Epidemiology II G 3**

Design of epidemiologic studies of major health problems; review of key studies; application of epidemiologic data to public health programs and medical care delivery. Hopkins.

Wi Qtr. 2 1½-hr cl. Prereq: 800 or 801, or permission of instructor.

**802 Epidemiology in Environmental Health P G 3**

Principles and application of epidemiologic methods in the investigation and control of health problems stemming from environmental hazards. Wilkins.

Sp Qtr. 2 1½-hr cl. Prereq: 800 or 801 or permission of instructor.

**803 Health Data: Sources and Uses P G 3**

Study of compilation of health and health-related data and their utilization; local, state, regional, and national surveys; and life tables and community health indices.

Sp Qtr. Prereq: Enrollment in MPH program or permission of instructor.

**812 Public Health Organization G 3**

History and development of public health agencies; legal bases of public health law; administrative structure of official and voluntary agencies and their relationships to the complex of health and medical services in the community. Keller and Banks.

Wi Qtr. 1 2-hr cl and 1 1-hr conf. Prereq: Grad standing in prev med or permission of instructor.

**814 Programs of Health Promotion and Disease Prevention P G 3**

Theory and practice of preventive programs in personal health and environmental health, national strategies of disease prevention, and prospects for the improvement of health in the United States.

Su Qtr. Prereq: Enrollment in MPH program or permission of instructor.

**849 Pro-Seminar in Community Health Development G 2-3**

Each week a basic area of community health development is presented by a specialist; the students prepare by reading assigned literature in this area, respond to questions raised during each session, and prepare reviews of the key issues.

Au, Wi, Sp Qtrs. 1 2-hr session per wk, and additional conferences. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 12 cr hrs.

**850 Seminar in Preventive Medicine G 1-3**

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 8 cr hrs.

**852 Comprehensive Health Planning G 3**

Study of comprehensive health planning concepts and techniques; with emphasis on topics relating to the design of health plans at the community level.

Wi Qtr. 1 2-hr session plus 1 1-hr conference per wk. Prereq: Grad standing in prev med or permission of instructor.

**853 Behavioral Epidemiology G 3**

A review of the epidemiological literature that examines the relationship between behavioral factors, theories of stress, and disease processes. Lanese and Banks.

Au Qtr. 2 1½-hr cl. Prereq: Grad standing in prev med or permission of instructor.

**854 Economics of Community Health G 3**

Survey of the application of economic analysis to community health problems; emphasis on topics relating to the allocation of health resources and health manpower.

Au Qtr. 2 1½-hr cl. Prereq: Grad standing in prev med or permission of instructor.

**857 Health Planning Laboratory G 3**

Practicum in the application of planning techniques to current health problems and policy issues.

Sp Qtr. 2 1½-hr conf. Prereq: Grad standing in prev med or permission of instructor. Repeatable to a maximum of 9 cr hrs.

**885 Behavioral Responses in Disease Prevention G 3**

A survey of behavioral science literature concerning health behavior, illness behavior, and sick-role and their impact upon programs for prevention, early detection, and amelioration of disease. Banks.

Sp Qtr. 2 1½-hr cl. Prereq: Grad standing in prev med or permission of instructor.

**890 Clinical Approaches to Prevention P G 3**

Study of application and evaluation of the methods of community health to practice of clinical medicine and other interventions at the level of the individual. Keller.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Grad standing in prev med or permission of instructor.

**999 Research in Preventive Medicine G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing in prev med or permission of instructor. This course is graded S/U.

## Psychiatry

071 Upham Hall, 473 West 12th Avenue, 292-8282

### 793 Individual Studies in Psychiatry P 6, 12, 18 G 1-18

A supervised, scholarly investigation of some aspects of psychiatry in which there is interest by the student and expertise by the faculty.

1, 2, or 3 months. Offered all months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Adequate clinical training in psychiatry and permission of chairperson and instructor. Repeatable to maximum of 18 cr hrs. This course is graded S/U.

### 850 Seminars in Psychiatry G 1-6

A—Clinical Psychiatry  
B—Group Therapy  
C—Psychotherapy  
D—Psychiatric Literature  
E—Child Psychiatry

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of chairperson and instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

### 999 Psychiatry Research G Arr

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Prereq: MD and residency in psychiatry. This course is graded S/U.

## Psychology

142 Townshend Hall, 1885 Neil Avenue, 292-6741

### 100 General Psychology U 5

Introductory psychology, a prerequisite to advanced courses; the application of the scientific method to behavior; topics include learning, motivation, perception, personality, physiological basis of behavior.

Su, Au, Wi, Sp Qtrs. 5 cl. H100 (honors) may be available to students enrolled in an honors program or by permission of dept. This course is available for EM credit. BER/LAC/LAR course. SS Admis Cond course.

### 101 Advanced General Psychology U 5

Continuation of 100 with further emphasis on the development of a scientific attitude toward personal psychological problems in the fields of learning, thinking, intelligence, and personality.

Au, Wi, Sp Qtrs. 5 cl. H101 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 100. BER/LAC/LAR course. SS Admis Cond course.

### 120 The Psychology of Academic and Personal Effectiveness U 3

A survey of theories and practices designed to improve higher level skills in reading, perception, learning, and adjustments.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab.

### 130† Advising College Students U 1-4

Selected students will study the dynamics of and learn skills related to the career, scholastic, social, and personal development of college students.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 4 cr hrs.

### 210 Educational Psychology for Medical Personnel U 5

Consideration of human capacities, abilities, interests, individual differences, and overall development; aspects of learning, personality, and physiological correlates of psychological phenomena of interest to medical personnel.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100. Not open to students with credit for 230. BER course. SS Admis Cond course.

### 220 Quantitative and Statistical Methods in Psychology I U 3

Elementary presentation of probability, descriptive, and inferential statistics and methods of measurements relevant to contemporary psychology.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 100, Math 116 or 130 or 148, and completion of the mathematical and logical analysis component of the LAC/LAR. Not open to students with credit for Stat 125. 220A is designed for students preparing for a bachelor's degree program. 220B is designed for students preparing for a grad or advanced degree program.

### 221 Quantitative and Statistical Methods in Psychology II U 4

A concentrated examination of applications of statistical tools in inference in contemporary psychology; hypothesis testing, regression, correlation, and analysis of variance.

Au, Wi, Sp Qtrs. 2 cl, 1 2-hr lab. Prereq: 220. Not open to students with less than a grade of C in 220.

### 230 Introduction to Educational Psychology U 5

Facts and principles of human development and learning are applied to the problems of education; emphasis on scientific evidence in the solution of educational problems.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 100. Not open to freshmen or to students with credit for 210. SS Admis Cond course.

### 310 Basic Psychology: Perception U 3

Theory, methods, and physiological correlates of sensory and perceptual processes; emphasis on the relation of behavior to stimulus variation.

Au Qtr. 3 cl. Prereq: 220.

### 311 General Psychology: Motivation and Action U 3

A behavioristic presentation of experimental work on learning and motivation.

Wi Qtr. 3 cl. Prereq or concur: 220.

### 312 General Psychology: Learning and Thinking U 4

An introduction to experimental study of human memory, learning, and cognition.

Sp Qtr. 3 cl. Prereq: 220.

### 320 Social Psychology U 5

Survey of group processes as they affect individual behavior; topics include individual motivation, group behavior, attitudes, and perception of self and others.

Au, Wi, Sp Qtrs. 4 cl. H320 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 5 cr hrs in psych and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER course.

### 321 Applications of Psychology U 3

Introduction to fields of applied psychology, use of psychological methods and principles in understanding and solving problems in a variety of organizational settings.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 100.

### 330† Psychology of Abnormal Behavior U 3

Prereq: 100.

#### 330.01 Major Psychological Disorders

A consideration of the symptomatology, etiologies, and therapies of the major neuroses and psychoses.

Su, Au, Wi, Sp Qtrs. 3 cl. Not open to students with credit for 330.

#### 330.02 Historical and Philosophical Issues

A sociological and historical examination of the concept of mental disorder.

Wi Qtr. 2 1½-hr cl.

### 331 Psychopathology and Psychotherapy I U 3

Examination of current problems, issues, theories, and approaches to psychological deviance.

Au, Wi Qtrs. Prereq: 100. Not open to students with credit for 330.01.

**332 Psychopathology and Psychotherapy II U 3**

Continuation of 331; focus on psycho-therapeutic approaches.  
Sp Qtr. Prereq: 331.

**333† Human Behavior Problems U 3**

Analyses of behavior patterns often considered undesirable or otherwise problematic; emphasis on behavioral definitions and analyses of problems, and on behavioral interventions.

Au Qtr. 2 1½-hr cl. Prereq: 100.

**333.01 General Survey****333.02 Sexual****335 Psychology of Adjustment U 3**

Examination of psychological concepts and theories related to individual adjustment and adaptation.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: 100. BER course.

**340† Introduction to Life Span Developmental Psychology U 3**

A survey of developmental psychology including some phylogenetic perspective.

Au Qtr. 3 cl. Prereq: 100.

**350† Contemporary Issues in Developmental Psychology U 3**

A survey course acquainting students with issues resulting from the social changes of the past decade and from an increased interest in the life span.

Au, Sp Qtrs. 3 cl. Prereq: 100.

**394† Group Studies U 1-5**

Undergraduate seminar; topics vary and will be announced.

Su, Au, Wi, Sp Qtrs. Prereq: 100. Repeatable to a maximum of 10 cr hrs, including cr hrs earned in 294.

**500 Experimental Psychology U 5**

An overview of experimental methodological techniques with experiments selected for cultural value; as preparation for technical study; and to represent paradigms used in human and animal research.

Au, Wi Qtrs. 2 cl, 3 lab hrs. Prereq: 220, and 6 cr hrs above 300, including at least one of 310, 311, or 312; and English 110 or 111; or equivs with written permission of instructor. Open only to psych majors. Fulfills in part the ASC advanced English composition requirement.

**501 Physiological Psychology U G 3**

An introduction to the biological bases of behavior, basic neuroscience, sensory and motor systems, homeostatic behaviors such as ingestion and reproduction, and the neural bases of learning and memory.

Wi Qtr. 2 1½-hr cl. Prereq: 100 and introductory biology and/or chem recommended.

**502 Advanced Physiological Psychology U G 3**

Current topics in physiological psychology; behavioral and neural effects of brain damage, recovery of function after brain damage, development of the nervous system, and biological models of human psychopathology.

Sp Qtr. 2 1½-hr cl. Prereq: 501 or permission of instructor.

**503† Experimental Approaches to Cognition U G 4**

Cognitive processes are studied from an experimental viewpoint; topics may include attention, pattern recognition, speech perception, memorial processes, and others.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 220, and 310 or 312.

**505 Contemporary Viewpoints in Psychology U G 3**

A consideration of the development of modern scientific psychology from its roots in the school of the 19th century to its contemporary status.

Sp Qtr. 3 cl. Prereq: 100 and an additional 11 cr hrs in psych.

**511 Psychological Testing U G 3**

An overview of theoretical and practical aspects of the assessment and prediction of human behavior; topics include achievement, intelligence, personality, attitudes, interests, and interpersonal relations.

Au Qtr. 3 cl. Prereq: 100 and an additional 5 cr hrs in psych.

**520 Experimental Social Psychology U 4**

Typical experiments in such social psychological areas as attitude change, group processes, and group influences upon the individual.

Au, Wi, Sp Qtrs. 2 cl, 4 lab hrs. Prereq: 221, 320, and permission of instructor. Open only to psych majors. Repeatable to a maximum of 12 cr hrs.

**521 Personnel Psychology U G 3**

Overview of theory, method, and practices of personnel psychology: job analysis, recruiting, personnel section, performance appraisal, and training.

Au, Wi Qtrs. 3 cl. H521 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: 220 or written permission of instructor.

**522 Organizational Psychology U G 3**

Overview of theory, method, and practice of organizational psychology: motivation, job attitudes, leadership, groups, organizational design.

Au, Sp Qtrs. 3 cl. H522 (honors) may be available to students enrolled in an honors program or by permission of dept honors committee. Prereq: 220 or permission of instructor. Not open to students with credit for 521 prior to Au Qtr 1987.

**530 Psychology of Personality U G 3**

Major theoretical and research orientations in the study of personality; consideration of psychological processes involved in the attribution of personality characteristics.

Wi, Sp Qtrs. 3 cl. Prereq: 100 and an additional 5 cr hrs in psych.

**531 Clinical Psychology and Alternative Aspects U 3**

Prereq: 100 and an additional 10 cr hrs in psych.

**531.03 Medical Aspects**

Introduction to medical psychology; psychobiological approach to cause and treatment of various mental disorders (schizophrenia, affective illness, psycho-physiologic disorders); treatment approaches include relaxation, hypnosis, biofeedback.

Sp Qtr. 2 1½-hr cl.

**539† Stress, Social Support, and the Professional Helper U G 3**

Stress at work and elsewhere; emphasis on treatment through social support.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in psych. Not open to students with credit for 640. Designed for health professionals, personnel workers, teachers, and related specialists in human services.

**540 Counseling Psychology: An Introduction U G 3**

For students interested in counseling and personnel work; discussion of counseling psychology, counseling, and testing.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 100 and an additional 5 cr hrs in psych.

**543 Psychology of Women U G 4**

Exploration of the nature and causes of sex differences in behavior patterns and factors influencing development of women through psychological theory and research.

Wi Qtr. 4 cl. Prereq: 100 and an additional 7 cr hrs in psych. Not open to psych grad students.

**550 Psychology of Childhood U G 3**

Presentation of psychological aspects of growth and development in early and middle childhood.

Su, Au, Wi, Sp Qtrs. 3 cl. H550 (honors) may be available to students enrolled in an honors program or by permission of dept. Prereq: 100.

**551 Adolescence U G 3**

A study of the outstanding characteristics of the adolescent, the educational and social problems arising at this period, and means for dealing with these problems.

Su, Au, Wi, Sp Qtrs. 3 cl. Prereq: 100.

**552 Psychology of the Adult Years U G 3**

Theory and research related to adulthood as a sequence of psychological stages involving adjustment and coping behaviors; relationship of adulthood to other life-span stages.

Sp Qtr. 3 cl. Prereq: 100.

**560 Educational Psychology U G 3**

Critical appraisal of the implications for education of modern psychological findings in advanced educational psychology.

Su Qtr. 3 cl. Prereq: 100 and an additional 5 cr hrs in psych.

**571 Psychology of Developmental Disability U G 4**

Overview of developmental disability including etiology, early identification, treatment, and psychological impact on the family.

Au, Wi Qtrs. 3 cl. Prereq: 100 and an additional 5 cr hrs in psych, or written permission of instructor.

**600 Psychology of Learning U G 4**

The study of principles which underlie the discovery, fixation, and retention of behavior; emphasis on theoretical formulation of the conditions necessary for learning and remembering.

Au, Wi Qtrs. 4 cl. Prereq: 101 or equiv.

**601 Comparative Psychology U G 3**

Research on animal behavior by psychologists and ethologists; studies of the behavior of different species in the lab and in the field.

Wi Qtr. 3 cl. Prereq: 100 and an additional 15 cr hrs in psych or zoology, or permission of instructor.

**602† Psychology of Listening and Reading U G 3**

Introductory survey of work on reading and the perception of speech; emphasis is on reading with a focus on the underlying perceptual and cognitive processes.

Au Qtr. 2 1½-hr cl. Prereq: 100.

**603† Visual Perception U G 3**

Principles, theories, and methods relevant to the study of visual perception; emphasis on the availability and usefulness of visual information.

Au Qtr. 3 cl. Prereq: 310 or permission of instructor.

**604† Psychology of Language U G 5**

Introductory survey of the psychological research on language behavior; emphasis on understanding both language processes in the adult speaker and a child's acquisition of language.

Wi Qtr. 2 2-hr cl. Prereq: 100.

**606† Psychology of Perception U G 3**

Survey of principles of perceptual learning and development, adaptation to distorted stimulation, recognition memory, perceptual set and attention, relation of perception to action and communication.

Wi Qtr. 3 cl. Prereq: 310 or 603 or permission of instructor.

**608†\* Introduction to Mathematical Psychology U G 3**

Survey of current topics in mathematical psychology; topics include measurement theory, scaling, utility theory, subjective probability, decision making in uncertain situations, choice theory.

Au Qtr. 3 cl. Prereq: 221 or equiv, or permission of instructor. Not open to students with credit for 615.

**609†\* Introduction to Mathematical Models in Experimental Psychology U G 4**

A survey of mathematical models and theories in important areas of experimental psychology; models of perceptual and cognitive processes, memory, and learning.

Wi Qtr. 2 2-hr cl. Prereq: 221 and 608; or grad standing.

**610†\* Contemporary Mathematical Models and Theories in Psychology U G 4**

Topics include axiomatic, geometric, conjoint measurement, functional measurement, and artificial intelligence models.

Sp Qtr. Prereq: 221 and 608; or grad standing.

**611 Educational Testing U G 3**

A service course for those majoring in elementary and secondary education, guidance, school psychology, and school administration; stress on use of measurements in school.

Su Qtr. 3 cl. Prereq: 100 and an additional 10 cr hrs in psych.

**616† Psychological Scaling U G 4**

Theory and applications of unidimensional and multidimensional scaling methods for proximity and preference data; emphasis on multidimensional scaling.

Wi Qtr. 2 2-hr cl. Prereq: 608 or grad standing.

**619†\* Visual Information Processing U G 3**

Rapid visual decisions: how the visual representation is formed, stored, and interpreted, enabling one to read, drive, and look for and compare visual objects.

Sp Qtr. 3 cl. Prereq: 310 or permission of instructor.

**620 Human Performance U G 5**

Research and theory on perceptual, cognitive, and motor processes that limit performance; topics include memory, attention, pattern discrimination, motor control.

Au Qtr. 2 cl. Prereq: 100 and an additional 7 cr hrs of psych beyond the 300 level (310 or 312 or 500 recommended).

**624 Psychology of Monkeys and Apes U G 3**

Research about monkeys and apes with emphasis on their learning, arts, memory, curiosity, language, and neuropsychological problems.

Sp Qtr. 3 cl. Prereq: 100 or permission of instructor.

**625† Introduction to Auditory Perception U G 3**

Theory and research in auditory perception; traditional psychoacoustic and new ecological approaches.

Sp Qtr. 3 cl. Prereq: 100, 220, and 310.

**630† Psychology of Public Attitudes U G 3**

Attitude organization and change; study of the determinants of attitude.

Au Qtr. 3 cl. Prereq: 320 and 220 or equiv.

**636† Mental Disability and the Law**

Problem oriented analysis of interaction between law and psychology; emphasis on civil commitment, rights of institutionalized individuals, rights to community services, and guardianship.

3 cl. Prereq: Written permission of instructor. Students should contact the College of Law regarding course scheduling. Cross-listed in Law.

**652 Behavior Modification with Children and Youth U G 3**

Theory and practice of behavior modification; emphasis on experience with individual children and youth and consultation within applied settings.

Wi Qtr. 1 3-hr cl, lab arr. Prereq: 571 or equiv, 600, and permission of instructor. Not open to students with credit for 852.01.

**662 Psychology of Creativity U G 3**

A critical examination of conceptual, theoretical, and methodological problems related to the systematic study of creativity; special attention to background factors related to creative behavior.

Au Qtr. 3 cl. Prereq: 100 and an additional 10 cr hrs in psych.

**665† Psychology of the Later Years U G 3**

Critical consideration of major gerontological issues facing aged adults; theories, methodologies, and research into human aging process.

Su, Wi, Sp Qtrs. 3 cl. Prereq: 100.

**681 Developmental Psychopathology of Childhood U G 3**

The description, etiology, and assessment of childhood psychopathologies such as autism, depression, drug abuse, hyperactivity; developmental approach is used.

Wi Qtr. 3 cl. Prereq: 100 and 550.

**682† Principles of Treating the Problem Child U G 3**

Approaches to diagnosis and treatment of psychological disorders; survey of and illustration through case studies of developmental problems of infancy and childhood.

Su, Sp Qtrs. 3 cl. Prereq: 550 and 681, or written permission of instructor.

**684† Psychology of Delinquency U G 3**

Characterization, causation, and treatment; emphasis on current theories and research.

Su, Wi, Qtrs. 3 cl. Prereq: 551 or equiv.

**688† Laboratories in Industrial/Organizational Psychology U G 4**

Laboratory and field experience in job analysis, selection, validation, measurement, interviewing, training, leadership, and group and organizational processes.

Au, Wi, Sp Qtrs. 4 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 40 cr hrs in any combination of alphabetical subdivisions.

A— Job and Task Analysis  
B— Development of Criteria  
C— Selection Devices  
D— Placement and Classification  
E— Validation Procedures  
F— Individual Differences Measures  
G— Satisfaction Measures  
I— Training and Development  
J— Leadership  
K— Group Processes  
L— Organizational Processes  
M— Interviewing

**693 Individual Studies U G 1-15**

Individual reading or research projects by special agreement between instructor and student.

Su, Au, Wi, Sp Qtrs. Prereq: 100, an additional 9 cr hrs in psych, and permission of instructor. Repeatable to a maximum of 30 cr hrs for undergrads and to a maximum of 45 cr hrs for grads in any combination of decimal subdivisions. These courses are graded S/U.

- 693.01 Clinical Psychology
- 693.02 Counseling Psychology
- 693.03 Developmental Psychology
- 693.04 Human Experimental Psychology
- 693.05 Industrial Psychology
- 693.06 Quantitative Psychology
- 693.07 Social Psychology
- 693.08 Comparative and Physiological Psychology
- 693.09 Mental Retardation and Developmental Disabilities U G 1-15

**695 Seminars in Psychology U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor, and either 220 and 17 cr hrs in psych above the 200-level or grad standing. No more than 6 cr hrs in any combination of decimal subdivisions may be counted toward the undergrad major.

- 695.01 Clinical
- 695.02 Counseling
- 695.06 Quantitative
- 695.07 Social
- 695.08 Comparative and Physiological

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**700 Interprofessional Education G 3**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Limited to students in allied medical professions, education, law, medicine, nursing, psychology, social work, and theology (Columbus Cluster of Theological Schools).

**700.07 Interprofessional Approaches to Child Abuse and Neglect**

Interprofessional exploration of issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. Prereq: Permission of instructor.

**710 Laboratory in Test Design U G 3**

Practice in writing, editing, administering, and validating personality and ability measures.

Sp Qtr. 1 cl, 2 lab hrs. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**720 Psychology Applied to Sport U G 3**

Psychology applied to sport; focus on the athlete; consideration of special population (women, minorities, and youth); the sport psychologist's role.

Wi Qtr. 2 1½-hr cl. Prereq: 540 or psych major or grad standing or permission of instructor. Not open to students with credit for 794C Wi Qtr 1984 or 1985.

**740† Aging and Cognition: Developmental Perspectives U G 3**

An examination of the relationship between cognitive development and aging; topics include intelligence, memory, learning, perception, and sensation in relation to normal and pathological aging.

Wi Qtr. 2 1½-hr cl. Prereq: 100. Not open to students with credit for 794A Wi Qtr 1983 or Wi Qtr 1984.

**H783 Honors Research U 3**

A program of readings, conferences, and reports selected to aid the student in completing a senior honors thesis.

Au, Wi, Sp Qtrs. 1 3-hr cl. Prereq: Candidate for degree *with distinction*. Repeatable to a maximum of 9 cr hrs including cr hrs earned in H599.

**788†\* Laboratory in Attitude Measurement U G 3**

Wi Qtr. 1 cl, 4 lab hrs. Prereq: Written permission of instructor.

**794 Group Studies U G 1-5**

The topics vary from quarter to quarter and will be announced at least one month in advance.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 15 cr hrs in psych at the 500 level or above and permission of instructor.

**800 Advanced Experimental Laboratory G 3-15**

Advanced training in the experimental and quantitative methods in the several areas of general experimental psychology and comparative psychology.

Au Qtr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**803† Theories of Perception G 3**

Survey of history and theories of perception, emphasizing different concepts of stimulation, research methods, and the roles of prior experience, motor performance, and attention.

Sp Qtr. 3 cl.

**804† Advanced Comparative Psychology G 3**

Contemporary literature in comparative psychology.

Sp Qtr. 3 cl. Prereq: 601.

**806 Neuropsychology I G 3**

An introduction to the principles governing neural integrative mechanisms; morphology of nervous systems of the vertebrates; transmission in individual neurons; properties of junctions in integrative networks; elementary laws of reflex action.

Au Qtr. 3 cl.

**807 Neuropsychology II G 3**

Functional differentiation of the nervous systems of vertebrates; properties of principle division of the brain; organizations of the forebrain; mechanisms of sleep and waking rhythm; mechanisms of perception.

Wi Qtr. 3 cl. Prereq: 806.

**808 Neuropsychology III G 3**

Neural mechanisms of motivation and behavioral plasticity; control of major cyclical phenomena, including hunger, thirst, and reproduction; reactions to aperiodic and continued stresses; mechanisms of the learning process.

Sp Qtr. 3 cl. Prereq: 807.

**809 History and Systems of Psychology G 3**

Development of psychology from the philosophical antecedents to its present status as a science and a profession; assignments in original sources as far as possible.

Au Qtr. 3 cl. Prereq: 16 or hrs in psych.

**811 Seminar in Experimental Psychology G 2**

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 or hrs.

**815 Decision Processes G 4**

Introductory course in the application of statistical decision theory as a normative model and analytic technique in the experimental study of cognitive processes.

Wi Qtr. 4 cl. Prereq: Grad standing in psych, undergrad inferential statistics strongly recommended.

**816† Human Performance Theory G 4**

Research and theory on the discrete and on the continuous cases of human information processing; topics include input processes, central processing functions, and output processes.

Wi Qtr. 3 cl. Prereq: 620 or written permission of instructor.

**817 Seminar in Human Performance G 3**

Wi Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 or hrs.

**818 Current Frameworks in Industrial and Organizational Psychology G 4****818.01 Advanced Personnel Psychology**

Content and methodology of personnel psychology, including such topics as job analysis, interviewing, test validation, selection and placement systems, performance appraisal, and training.

Au Qtr. 2 2-hr cl. Not open to students with credit for 621.

**818.02 Motivation and Attitudes in Work Organizations**

Courses and consequences of attitudes and motivation in organizations, with emphasis on theory and research.

Wi Qtr. 2 2-hr cl. Not open to students with credit for 623.

**818.03 Psychology of Organizational Effectiveness**

Effects of organizations and groups on individual behavior, including interpersonal processes (groups, leadership), structural effects (task, technology, reward systems) and organizational conflict and change.

Sp Qtr. 2 2-hr cl. Not open to students with credit for 622.

**819 Seminars in Industrial and Organizational Psychology G 3**

2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 15 or hrs.

A— Psychology of Individual Effectiveness.

B— Psychology of Organizational Effectiveness.

C— Human Motivation

D— Theoretical Developments and Issues. Au, Wi, Sp Qtrs.

E— Current Practices and Trends

**820 Fundamentals of Factor Analysis G 4**

Basic Common Factor Model and its application in psychology; model, communality estimation, factor extraction, orthogonal and oblique rotation, factor scores, confirmatory factor analysis use of computer programs.

Au Qtr. 2 2-hr cl. Prereq: Permission of instructor.

**821 Seminar in Field and Experimental Research Methods G 3**

Logic of the research process, uses and limitations of major research strategies, and application of specific data gathering techniques with special emphasis on field settings.

Au, Wi Qtrs. 3 cl. Prereq: Permission of instructor, and 821A for 821B, and 821B for 821C. Repeatable to a maximum of 9 or hrs.

**822 Psychological Assessment G 3**

A critical survey and evaluation of concepts and techniques of assessment of intelligence, special aptitudes, and personality.

Au Qtr. 3 cl.

**824 Seminars in Psychological Measurement G 2-4**

Repeatable to a maximum of 10 or hrs.

A— Models for Psychophysics. Sp Qtr.

B— Models for Measurement and Scaling

C— Models for Interpersonal Analysis

**826 Statistics in Psychology G 4**

Basic concepts of descriptive and inferential statistics; includes estimation, hypothesis testing, and introductory treatment of analysis of variance, correlation and regression, and non-parametric techniques.

Au Qtr. 2 1½-hr cl, 2 lab hrs. Prereq: 220 or equiv and grad standing in psych, or permission of instructor.

**827 Analysis of Variance G 4**

Statistical inference in analysis of variance designs; basic concepts and procedures in one-way designs; factorial, repeated measures, randomized blocks, mixed models designs; procedures for planned and post hoc comparisons.

Wi Qtr. 2 1½-hr cl, 2 lab hrs. Prereq: 826 or equiv.

**828 Correlational Analysis G 4**

Correlation and regression techniques for quantitative and qualitative data analysis; simple linear regression and correlation, multiple linear regression, nominal scales, interactions; other related multivariate methods; use of computer programs.

Sp Qtr. 2 1½-hr cl, 2 lab hrs. Prereq: 827 or equiv.

**830 Covariance Structure Models G 3**

Theory and methods of testing models of covariance structures; general mathematical model, identification, parameter estimation, goodness of fit, model modification, and the use of computer programs such as LISREL.

Wi Qtr. 2 1½-hr cl. Prereq: 820 and 828, or permission of instructor. Not open to students with credit for 831G taken prior to Au Qtr 1984.

**831 Seminars in Psychological Statistics G 2-5**

2-5 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 18 or hrs.

A— Analysis of Variance

B— Experimental Design

C— Factor Analysis

D— Mathematical Models and Theory

E— Non-Parametric Statistics. Au Qtr.

F— Quasi-Experimental Design

G— Advanced Multivariate Analysis

I— Current Practices and Trends. Au, Wi Qtrs.

J— Computer Simulation Research

**832 Sociomoral Development G 4**

Focus upon recent work stemming from Piagetian and Eriksonian approaches; relation of specific theoretical perspectives to current issues and findings emphasized.

Au, Sp Qtrs. 2 1½-hr cl.

**833 Methodological Problems in Developmental Psychology G 3**

A bridge from formal statistics to current research in developmental and educational psychology with repeated measure, time series data, indices of change, etc.

Sp Qtr. 3 cl. Prereq or concur: 826 and 827 or equiv with written permission of instructor. Repeatable to a maximum of 6 or hrs.

**834 Psychology of Infancy G 3**

Psychological development during the first four years of life with particular reference to neonatal period and research methodology in studies involving infants.

Sp Qtr. 1 2½-hr cl. Prereq: 837 or permission of instructor.

**835 Child Development G 3**

Major developmental aspects of childhood; review of theory, methodology, research studies, and historical and contemporary writing about children; consideration of interdisciplinary approaches.

Wi Qtr. 3 cl. Prereq: 837 or permission of instructor.

**836† Developmental Psychology G 3****836.01 Adolescence**

Comprehensive view of adolescence as a stage in human development; theory, methodology, research and application to family, school and community; relation to other developmental stages.

Sp Qtr. Prereq: 826, 835 or equiv, and permission of instructor.

**836.02 Maturity and Aging**

Survey of psychology of adulthood; normative episodes, problems of stress, adaptation, social interaction and physical and intellectual functioning; maturity in modern and historical cultures.

Au Qtr. 3 cl. Prereq: Permission of instructor.

**837 Nature and Direction of Human Development G 3**

Critical consideration of human development, selected theories and methods of investigation including units of measurement; emergence of mind considered through the phylogenetic and ontogenetic sequence.

Au Qtr. 3 cl.

**840 Practicum in Developmental Psychology G 3-9**

Observation of children in a representative variety of clinical settings with particular reference to developmental phenomena of growth and behavior; application of research, diagnostic and intervention methodology.

Su, Au, Wi, Sp Qtrs. 1 cl, lab hrs. Prereq: 837, 2nd yr grad standing in psych, and permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**842 Seminar in Developmental Psychology G 3**

2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. Selected topics.

- A— Current Theoretical Issues. Wi Qtr.
- B— Development of Dimensions of Cognitive Functions. Sp Qtr.
- C— Development of Social Attitudes and Values
- D— Cultural Influences on Human Development
- E— Psychological Variables in Growth
- F— Development of Creative Behavior
- G— Deviate Behavior in Childhood and Adolescence
- I— Aging and Senescence
- J— Sequential Phenomena of Growth and Degeneration
- K— Developmental Aspects of Language
- L— Phylogenesis

**843 Theories of Human Development G 3**

Comparative presentation of significant major historical and modern developmental theories with specific evaluation of their relevance in the formulation of a comprehensive psychological theory.

3 cl. Prereq: 837 and 2nd yr grad standing.

**843.01 Analytic and Social Learning Theory**

Wi Qtr.

**843.02 Cognitive, Organic, and Structural Theories**

Sp Qtr.

**844 Psychopathology of Childhood G 3**

A study of psychopathological conditions of childhood, such as autism, schizophrenia, neurosis, acting out, and behavior problems from a developmental point of view.

3 cl. Prereq: Permission of instructor.

**844.01 Concepts**

Sp Qtr.

**844.02 Disturbances****845 Child Psychotherapies G 3**

Study of several major modes of psychotherapy with children; consideration of theoretic foundations, principal techniques, range of applicability, and presumed means of effecting change.

Au Qtr. 1 2½-hr cl. Prereq: 844 or equiv and permission of instructor.

**846 Advanced Educational Psychology G 3**

Critical consideration of research and theory in developmental learning and measurement as relevant to education; special attention to historical positions, assumptions, and current literature.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**848 Seminar in the College Teaching of Educational Psychology G 2**

The objectives of educational psychology in teacher education; a presentation of practical problems in organization, development, and evaluation of undergraduate courses in educational psychology.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 6 cr hrs.

**849† Seminar in Educational Psychology G 3**

Au Qtr. 3 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**850 Adaptive Behavior and Developmental Disability G 3**

Overview of the psychology of adaptation and its relationship to the classification, assessment, and modification of mental retardation and developmental disability.

Sp Qtr. 3 cl. Prereq: 857 or permission of instructor.

**855 Child Behavior Assessment and Consultation G 3**

Theory of psychological assessment and consultation; practice in observation, interviewing, testing, documentation of behavior, writing reports and consulting on the learning and behavioral problems of children.

**855.01† Introduction**

Survey of validity data on the most used assessment techniques and practice in combining data for selected clinical cases.

3 cl. Prereq: Permission of instructor.

**855.02 Psychodiagnostic Assessment I**

Psychodiagnostic assessment with major emphasis on administration, scoring and utilization of the Rorschach psychodiagnostic technique.

Au Qtr. 3 cl. Prereq: 850, 2nd yr grad standing in psych, and permission of instructor.

**855.05 Psychodiagnostic Assessment II**

Psychodiagnostic assessment with major emphasis on the TAT: administration, scoring and utilization.

Wi Qtr. 3 cl. Prereq: 850, 855.02 or permission of instructor, and 2nd yr grad standing in psych.

**855.06 Psychodiagnostic Assessment III**

Psychodiagnostic assessment with major emphasis on the Draw-a-Person Test, and the Bender-Gestalt Test; administration, scoring and utilization, and relationship to other tests.

Sp Qtr. 3 cl. Prereq: 850, 855.02, 855.05, or permission of instructor, and 2nd yr grad standing in psych.

**856 Child Behavior Assessment and Therapy G 3**

Assessment and treatment approaches for child behavior.

Sp Qtr. 2 1½-hr cl. Prereq: Permission of instructor.

**857 Psychological Problems in Mental Retardation G 4**

Advanced study of psychological aspects of mental retardation; topics include theories of mental retardation, studies of sensory and perceptual processes, cognitive chronically ill and neurologically impaired.

Au Qtr. 4 cl. Prereq: Permission of instructor.

**859† Seminars in the Psychology of Exceptional Children and Adults G 3**

Advanced topics in research strategies and methodology; specialized topics on the growing edge of the psychology of exceptional children and adults.

Wi Qtr. 2 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 12 cr hrs.

**860 Theories of Personality G 3**

A critical consideration of the theories of personality structure psychology.

Su, Au Qtrs. 3 cl. Prereq: Advanced work in personality and social psych and permission of instructor.

**861 Clinical Psychology**

Introduction to the theory and use of clinical methods in psychology, designed for first-year graduate students in clinical psychology.

Prereq: Permission of instructor.

**861.01 Lecture G 3**

Au Qtr. 3 cl. Repeatable to a maximum of 9 cr hrs.

**862 Problems of Human Behavior**

Introduction to the study of human behavior problems; practicum involves observation and participation in field settings.

Prereq: Permission of instructor.

**862.01 Lecture G 3**

Au Qtr. 2 cl. Repeatable to a maximum of 6 cr hrs.

**863 Psychological Dynamics**

Special topics in the study of behavior.

Prereq: Permission of instructor.

**863.01 Lecture G 3**

Au Qtr. 3 cl. Repeatable to a maximum of 9 cr hrs.

**864 Psychological Appraisal**

Concepts and procedures for appraising human behavior.

Prereq: Permission of instructor. Courses (except 864.01) ordinarily involve both classroom and practicum experiences.

**864.01 Lecture G 3**

Theories and methods of psychological appraisal; integration of different theories and approaches.

Au Qtr. 3 cl.

**864.04\* Actuarial Appraisal G 1-4**

Wi Qtr. 1-4 cl, and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

**864.06\* Special Topics G 1-4**

Su Qtr. 1-4 cl, and/or 2-8 lab hrs. Repeatable to a maximum of 8 cr hrs.

**866 Interventions with Individuals G 1-5**

Concepts and practices of various interventions into the troubled behavior of individuals.

1-5 cl and/or 2-10 lab hrs. Prereq: Permission of instructor.

Courses ordinarily involve both classroom and practicum experience. Each decimal subdivision repeatable to a maximum of 15 cr hrs.

**866.01† Individual Psychotherapy****866.02 Behavior Modification**

Au Qtr.

**866.04† Novel and Experimental Approaches****867 Seminar in Clinical Abnormal Psychology G 3**

Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Two sections may be offered in any one qtr.

**867.01 Psychopathology**

Theory and research on the major classes of adult psychopathology.

Au Qtr. 1 3-hr cl. Prereq: Permission of instructor.

**867.02† Schizophrenia**

An intensive review of theory and research in schizophrenia; historical as well as contemporary conceptualizations.

Sp Qtr. 1 3-hr cl. Prereq: Permission of instructor.

**869 Research Methodology G 2**

Discussion of conceptual and methodological issues related to the ongoing work of graduate students and faculty.

Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs.

**870 Advanced Social Psychology G 3**

Problems of learning and perception relative to the social environment, the influence of culture in the development of individual behavior patterns, and related topics.

Au Qtr. 3 cl. Prereq: 25 cr hrs in psych including 320 and 802 or 600 or equiv.

**871 Professional Altruism and Social Policy G 3**

An examination of the helping specialties in terms of the languages of social policy and professionalism.

Sp Qtr. 3 cl.

**872 Social Psychology Laboratory G 3-12**

Advanced training in methods and data collection in the areas of social psychology, laboratory, and field experience.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs for each additional cr hr.

Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**873 Seminar in Social Psychology G 3**

3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. Subdivisions B, C, D, and F offered every other year.

A— Contemporary Attitude Theory and Research.

B— Social Structure and Personality. Wi Qtr.

C— Systematic Theory in Social Psychology.

Au Qtr.

D— The Psychology of Social Movements.

E— Current Research Trends. Au, Sp Qtrs.

F— Group Processes.

**874† Cognitive Psychology G 4**

Survey of paradigms, procedures, theories, and findings of research on human cognitive structures and processes; includes mental representation, attention, categorization, memory.

Wi Qtr. 2 2-hr cl. Prereq: 20 cr hrs in psych or permission of instructor.

**875 Practicum in Social Psychology G 4**

Survey and supervised experience in using the technique and research designs of social psychology.

2 cl, 2 lab hrs. Prereq: Grad standing in psych or permission of instructor.

**875.01 Practicum in Social Psychology I**

Wi Qtr.

**875.02 Practicum in Social Psychology II**

Sp Qtr.

**875.03† Practicum in Social Psychology III****877 Human Learning I: Learning G 4**

Introductory survey of the theoretical and empirical issues in human learning; emphasis on the analysis of learning tasks and the conditions under which learning occurs.

Au Qtr. 2 2-hr cl.



**878 Human Learning II: Memory G 4**

Theoretical issues and experimental research on the topic of human memory.

Wi Qtr. 2 2-hr cl.

**879 Human Learning III: Cognitive Processes G 4**

Theoretical and experimental research in several areas of cognition including concept learning, problem solving, and reasoning.

Sp Qtr. 2 2-hr cl.

**881† Social Ecology: Implications for Counseling G 4**

Advanced graduate students relate person-environment interaction theory to practice in counseling, educational, and community settings.

Sp Qtr. 2 cl. Prereq: Written permission of instructor.

**882 Psychology of Counseling****882.01 Lecture G 3**

Theoretical, research, cultural and professional bases for counseling; fundamentals of interviewing; counseling procedures and techniques.

Au Qtr. 3 cl. Prereq: 13 cr hrs in psych.

**882.02 Laboratory G 2**

A series of practical exercises designed to apply the principles of the psychology of counseling.

Au, Wi Qtrs. 4 lab hrs. Prereq: Permission of instructor.

**883 Counseling Diagnostics****883.01 Lecture G 3**

Theory and application of interview data, observed behavior, test results, and biographical information as a basis for diagnostics in counseling and evaluation.

Wi Qtr. 3 cl. Prereq: 13 cr hrs in psych.

**883.02 Laboratory G 2**

Survey of specific diagnostic techniques and tests and application through role playing.

Wi, Sp Qtrs. 4 lab hrs. Prereq: Permission of instructor. This course is graded S/U.

**884 Psychology of Career Development****884.01 Lecture G 4**

A survey and critical analysis of literature and research regarding work, work adjustment, career choice and development, vocational exploration, and variables associated with career development.

Sp Qtr. 2 2-hr cl.

**884.02 Laboratory G 2**

A series of practical exercises designed to apply the principles of the psychology of career development.

Sp Qtr. 1 2-hr lab. Prereq: 882 or equiv and written permission of instructor.

**885 Beginning Practicum in Counseling G 4**

Supervised practice in assisting college students in their adjustment to college; emphasis on diagnosis and treatment; special help given to interviewing procedures.

Su, Au, Wi, Sp Qtrs. 2 cl, 8-10 lab hrs. Prereq: 883 and written permission of instructor. Repeatable to a maximum of 8 cr hrs. This course is graded S/U.

**886 Advanced Practicum in Counseling G 4**

Supervised practice in (a) assisting college students and adults with problems of personality adjustments or (b) supervising techniques through observation and discussion of work with other counselors.

Su, Au, Wi, Sp Qtrs. 2 cl, 8-10 lab hrs. Prereq: 885 and written permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**887 Seminar in Counseling Psychology G 3**

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

A— Counseling Older Adults

B— Behavioral Therapy

C— Tests and Assessment in Counseling. Au Qtr.

D— Counseling Supervision. Wi, Sp Qtrs.

E— Ethics and Professional Issues. Su, Wi Qtrs.

F— Cognitive Approaches to Counseling. Au Qtr.

G— Counseling Women. Au Qtr.

I— Psychodynamic Theories of Counseling

J— Group Counseling

K— Research in Study Skills. Sp Qtr.

L— Politics of Languages in Counseling and Consultation

M— Existential and Phenomenological Approaches to Counseling. Sp Qtr.

P— Social Influence Process in Counseling Psychology

R— Marriage and Family. Sp Qtr.

T— Multicultural Issues in Counseling Psychology. Sp Qtr.

Y— Adult Career Development Problems

Z— Special Topics

**888 Psychological Study of Individuals and Groups G 3**

Basic concepts and techniques of student personnel work.

Wi Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with 6 cr hrs in 650.

**889 Practicum in Clinical Psychology G 1-15**

Supervised practice in psychological assessment and intervention in the department's psychoeducational clinic.

Su, Au, Wi, Sp Qtrs. 1-2 client contact hrs; 1-2 supervision hrs. Prereq: Permission of instructor. Open only to students in clinical psychology. Repeatable to a maximum of 15 cr hrs.

**980 Supervised Field Experience in Psychology G 1-15**

Supervised experience, either research or operational, in any agency doing professional psychological work such as a school system, a psychological clinic, an industrial personnel department, or a counseling center.

Su, Au, Wi, Sp Qtrs. Prereq: Psych 2nd yr standing and approval of local staff of area in which student is specializing. Supervised by member of local staff and some member of the outside agency approved by the Dept of Psychology. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**999 Research in Psychology G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Public Policy and Management

202 Hagerty Hall, 1775 College Road, 292-8696

**795 Public Policy: The Business-Government Relationship U G 4**

Business tools and strategy for influencing government; evolution and direction of public policy toward business.

Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Sr standing or permission of instructor.

**796 Managing in the Political Environment U 4**

Introduction to public policy process and stakeholder approaches to issue management; strategic options and policy tools (political action committees, advocacy, and image advertising), state policy incentives, and international relations.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: Sr standing or permission of instructor.

**797 Interdepartmental Seminar U G 1-5**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Repeatable by permission.

**H797 Public Policy: The Business-Government Relationship U G 4**

Business tools and strategy for influencing government; evolution and direction of public policy toward business. Wi Qtr. 2 2-hr cl. Prereq: Sr standing or permission of instructor.

**801 Public Policy Formulation and Administration G 5**

Analysis of the operating environment of the public administrator; public policy processes, public organization behavior, and policy formulation in the U.S. federal system. Au, Wi, Sp Qtrs. 2 2-hr cl. Prereq: Polit Sc 300 or equiv.

**802 Legal Environment of Public Administration G 3**

An examination and analysis of the constraints imposed upon public administrative processes by the legal environment including judicial policy-making and the evolving legal order. Sp Qtr. 2 1½-hr cl.

**803 Public Policy Implementation G 4**

Policy implementation process in a political setting emphasizing planned changes; organizational design, systems analytic program management and evaluation; conflict management within a public bureaucracy.

Wi, Sp Qtrs. 2 2-hr cl. Prereq: 801.

**804 Concepts and Methods of Program Evaluation G 3**

Provides an understanding of the conceptual, methodological, bureaucratic, political, and organizational issues surrounding evaluation research.

Wi Qtr. 1 2½-hr cl. Prereq: 822 or equiv. Not open to students with credit for 880A05.

**808 Policy Problem Seminar I G 3**

Multidisciplinary seminar integrated with field experience in the solution of actual public administrative and policy problems; organized around problem areas.

Au Qtr. Prereq: Permission of instructor. 2-qtr sequence with 809.

**809 Policy Problem Seminar II G 3**

Continuation of 808.

Wi Qtr. Prereq: 808. Offered in a series with 808.

**810 Strategic Management G 3**

The conducting of a strategic assessment of an agency; identifying strengths, weaknesses, opportunities, and threats; and with development of accompanying management strategy.

Au, Wi Qtrs. 1 2½-hr cl. Prereq: 803 or permission of instructor. Not open to students with credit for 880B06.

**811 Public Management and Human Relations G 4**

Development of management skills essential for beginning and mid-level managers and supervisors in public sector agencies.

Sp Qtr. 1 3-hr cl. Not open to students with credit for 880H06 or 880J06.

**820 Problem Formulation and Research Methods in Public Administration G 3**

Introduction to types of problems encountered in public policy and management; problem formulation and basic research methods tools required to tackle them.

Au Qtr. 2 2-hr cl. Prereq: College algebra and a course in Stat.

**821 Governmental Information Systems Administration G 3**

Critical study of the administration and design of management information systems for public agencies; selected case studies.

Au, Wi Qtrs. 2 2-hr cl.

**822 Data Analysis in Public Administration G 3**

Multivariate model building using theoretical and exploratory data analysis perspectives for use in public sector decision support systems; public sector case studies.

Sp Qtr. 2 2-hr cl. Prereq: 820.

**823 Systems Analysis for Public Policy Decisions G 3**

Studies in the application of systems analysis to administrative and policy problems in the public sector; selected case studies and problems.

Au Qtr. 2 2-hr cl.

**830 Economics of Public Policy and Management G 4**

Economic analysis applied to problems of public policy selection and government management operations; efficiency criteria, market failure, and public choice applied to administrative decision-making.

Au Qtr. 2 2-hr cl. Prereq: Econ 200 or equiv. Not open to students with credit for 860B99.

**834 Public Budgeting and Spending Decisions G 3**

Budgeting as analysis of resource allocation, planning evaluation, and control; tools of analysis for program budgeting and measurement of program results; case studies.

Sp Qtr. 2 1½-hr cl. Prereq: Econ 730 or equiv. Not open to students with credit for 806.

**835 Seminar in Fiscal Administration G 3**

Current professional practices and issues in public sector fiscal administration, including budget and expenditure administration, revenue administration, financial management, and borrowing and debt management.

Sp Qtr. 1 2-hr cl. Prereq: 834. Not open to students with credit for 880A02.

**836 Financial Management G 3**

Exploration of capital programming and budgeting, debt management, and other aspects of major urban capital developments.

Wi Qtr. 1 2½-hr cl. Prereq: Econ 730. Not open to students with credit for 880C02.

**837 Grants Policy and Administration G 4**

Investigation of grant-related policy issues, the distributional impact of grant policy, and how federal grants may have influenced city-suburban hardship disparities.

1 3-hr cl. Prereq: 730. Not open to students with credit for 880B02.

**840 Criminal Justice Policy and Management G 3**

Provides an overview of the criminal justice system with a focus on structural, organizational, and micro-level aspects of the criminal justice process.

Au Qtr. 1 2½-hr cl. Not open to students with credit for 880A01.

**841 Juvenile Justice System G 3**

Similarities and differences in juvenile and criminal justice processes are discussed, and major policy and management issues in the administration of juvenile justice are explored.

Wi Qtr. 1 2½-hr cl. Not open to students with credit for 880B01.

**850 The Political Economy of Administrative Regulation G 3**

Development of an understanding of the origin, intent, and technical elements of administrative regulation with special reference to economic and social regulation.

Au Qtr. 1 2-hr cl. Not open to students with credit for 880A07.

**851 Current Issues, Practices, and Concepts in Administrative Commission Regulation G 3**

Focus on the economic regulation of transport, power, and communications, and the social regulation of business in the form of environmental and safety standards.

Sp Qtr. 1 2-hr cl. Not open to students with credit for 880B07.

**866 Seminar in Public Sector Collective Bargaining G 4**

Problems and issues relating to the growth and practice of personnel and labor relations administration in the public sector.

Sp Qtr. 1 3-hr cl. Prereq: Bus-MHR 761 or 861 or equiv. Not open to students with credit for BUS-MHR 866. Cross-listed in Business Administration: Management and Human Resources.

**867 Seminar in Public Sector Human Resources Administration G 4**

Analysis of problems in public sector human resources management with emphasis on the nature of the employment relationship, research strategies, and policy evaluation.

Sp Qtr. Prereq: Bus-MHR 860 or equiv. Not open to students with credit for Bus-MHR 867 or LHR 867. Cross-listed in Business Administration: Management and Human Resources.

**870 Urban Policy and Management I G 3**

Management processes affecting city growth or decline, and issues facing those involved in the administration of an urban area.

Au Qtr. 2 1½-hr cl. Not open to students with credit for 880A08.

**871 Urban Policy and Management II G 3**

Introduction to the field of economic development, emphasizing the role of public management.

Wi Qtr. 2 1½-hr cl. Prereq: 870. Not open to students with credit for 880B08.

**880 Seminar on Advanced Problems in Public Policy and Management G 1-6**

Special studies of selected problems which may include readings, case studies, internships, field investigations, simulation, system analysis, role playing, team teaching, and other experimental techniques.

Su, Au, Wi, Sp Qtrs. Repeatable.

- 880.01 Criminal Justice Policy and Management
- 880.02 Fiscal Policy and Management
- 880.03 Health Policy and Management
- 880.04 Human Resources Policy and Management
- 880.05 Management Information Systems' Administration
- 880.06 Public Policy and Management
- 880.07 Regulation Policy and Management
- 880.08 Urban Policy and Management
- 880.99 Special

**890 Research Methods in Public Administration G 3**

Logic inquiry for public policy and management.

Wi Qtr. 1 2-hr cl.

**893 Individual Studies G 1-6**

Advanced individual studies in public administration.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Grad standing in pub adm and written permission of instructor. Repeatable to a maximum of 15 cr hrs including cr hrs in decimal subdivisions. This course is graded S/U.

**894 Group Studies G 1-6**

Advanced group studies in public administration.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs including cr hrs in decimal subdivisions.

**899 Interdepartmental Seminar G 1-5**

Two or more departments may collaborate in presenting seminars on subjects of mutual interest; topics to be announced.

Au, Wi, Sp Qtrs. Arr. Repeatable by written permission.

**998 Research in Public Administration: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs.

**999 Research in Public Administration: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 45 cr hrs.

## Radiologic Technology

School of Allied Medical Professions

340 School of Allied Medical Professions Building, 1583 Perry Street, 292-0571

**201 Introduction to Radiologic Technology U 4**

An orientation to radiologic technology including responsibilities of the technologist, professional development, radiation protection, and the formation of the radiographic image. Finney.

Sp Qtr. 3 cl, 1 2-hr lab. Prereq: Permission of instructor.

**310 Patient Care in Radiography U 1**

Principles of patient care including analysis of ethical and legal issues pertaining to the delivery of radiological services. Bardach.

Au Qtr. 1 cl. Prereq: Enrollment in Radiologic Technology Division.

**411 Radiographic Procedures I U 4**

Analysis of theory in radiography of the chest, abdomen, and appendicular skeleton with application of theory in the laboratory. Bruckner.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: Written permission of instructor; concur: 440.

**412 Radiographic Procedures II U 4**

Continuation of 411 emphasizing the bony thorax, vertebral column, pelvis, and skull. Bruckner.

Wi Qtr. 3 cl, 1 2-hr lab. Prereq: Written permission of instructor; concur: 440.

**425 Principles of Radiographic Exposure and Processing U 5**

Integration of elements of exposure and processing to optimize radiographic quality; sensitometry, processing variables, effects of accessory radiographic equipment on image quality. Ballinger.

Au Qtr. 4 cl, 1 2-hr lab. Prereq: Admission to Radiologic Technology Division.

**440 Applied Radiologic Technology I U 1-6**

Clinical application of radiographic techniques in the Department of Radiology. Bruckner.

Su, Au, Wi, Sp Qtrs. 20 or 24 hrs clinical experience. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**471 Radiologic Physics I U 3**

An analysis of the production of X-rays including X-ray circuitry. Ballinger.

Wi Qtr. 2 cl, 1 hr rec. Prereq: Physics 112 or permission of instructor.

**530 Advanced Radiographic Exposure U 3**

In-depth study in establishing radiographic exposure values in new installations or when equipment is changed. Finney.

Au Qtr. 2 cl, 1 2-hr lab. Prereq: Permission of instructor.

**540 Applied Radiologic Technology II U 1-6**

Continuation of 440 emphasizing the more complex radiographic procedures. Bruckner.

Su, Au, Wi, Sp Qtrs. 20 or 24 hrs clinical experience. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. This course is graded S/U.

**550 Practica U 2**

Theory and experience in selected radiology specialties.

Prereq: Enrollment in Radiologic Technology Division and permission of instructor. Repeatable to a maximum of 8 cr hrs; individual subdivisions not repeatable. 6 cr hrs required of rad tech majors.

**550.10 Operation of a Medical Imaging Department**

Analysis of the structure and operation of a medical imaging department.

Sp Qtr 1 cl, 1 2-hr cl, field trip.

**550.41 Cardiovascular and Interventional Radiologic Procedures**

Theory and clinical education in diagnostic and therapeutic radiologic procedures.

Wi, Sp Qtrs. 8 hrs clinical experience.

**550.42 Computed Tomography**

Supervised clinical education and instruction in the theory and operation of CT units in different health care facilities.

Wi, Sp Qtrs. 8 hrs clinical experience.

**550.43 Advanced Cranial Radiography**

Instruction and supervised clinical education in performing radiographic examinations of the human skull.

Wi, Sp Qtrs. 8 hrs clinical experience.

**550.50 Diagnostic Medical Sonography**

Instruction and experience in the performance and interpretation of sonographic images.

Wi, Sp Qtrs. 8 hrs clinical experience.

**550.60 Magnetic Resonance Technology**

Instruction and experience in the performance and interpretation of magnetic resonance.

Wi, Sp Qtrs. 8 hrs clinic. Prereq: Enrollment in Radiologic Technology Div.

**550.70 Nuclear Medicine**

Observation and participation in performing static and dynamic examinations requiring the use of radiopharmaceuticals.

Wi, Sp Qtrs. 8 hrs clinical experience.

**550.80 Principles of Radiation Oncology**

Clinical observation and participation involving planning for and administering radiation treatment of disease.

Wi, Sp Qtrs. 8 hrs clinical experience.

**560 Imaging Modalities in Radiologic Technology U 4**

Analysis of theory involving medical sonography, nuclear medicine, and radiation oncology; emerging modalities of computed tomography, digital radiography, and nuclear magnetic resonance. Finney.

Au Qtr. 4 cl. Prereq: 471 or permission of instructor.

**565 Administrative and Educational Aspects of Radiologic Technology U 3**

Analysis of radiology department management, evaluation of radiologic equipment, federal equipment specifications, professional education accreditation, licensure, and curriculum concerns in radiologic technology education. Ballinger.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**587 Student Teaching in Radiologic Technology U 2**

Student teaching experience within a radiologic technology instructional setting. Finney.

Wi, Sp Qtrs. Arr. Prereq: Educ 400 and permission of instructor. This course is graded S/U.

**590 Special Radiographic Procedures and Contrast Media U 4**

Emphasis placed on vascular and neurological examinations with an analysis of equipment and contrast agents used. Bruckner.

Sp Qtr. 4 cl. Prereq: Permission of instructor

**595 Seminar U 1-3**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. 1-3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 9 or hrs.

**615 Radiographic Clinical Correlations U P G 3**

The fundamentals of radiographic diagnosis; emphasis on the correlation of the patient's medical history with the radiographic findings. Bruckner.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**660 Quality Assurance in Diagnostic Imaging U 3**

Examination and analysis of quality assurance programs for diagnostic imaging facilities to include management, implementation, maintenance, and evaluation aspects. Finney.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 530 or permission of instructor.

**672 Radiologic Sectional Anatomy U 3**

Identification of anatomic structures as seen in cadaver cross-sections, emphasizing the correlation of anatomy and diagnostic computer generated patient images. Bruckner.

Su, Au Qtrs. 1 cl, 2 2-hr labs. Prereq: Enrollment in Rad Tech.

## Radiology

S209 Rhodes Hall, 410 West 10th Avenue, 293-8315

**670 Medical Radiation Physics U P G 2**

Ionizing radiations, their production, properties and interaction with materials of medical interest; physical principles of radiation therapy, radiation dosimetry, and radiation protection.

Au, Sp Qtrs. 2 cl. Prereq: Permission of instructor.

**680 Radiation Biology U P G 2**

Effect of ionizing radiation in biological systems at the molecular, cellular, organ, organism, and community levels with special emphasis on medical implications and radiation safety.

Wi Qtr. 2 cl. Prereq: Permission of instructor.

**740 Clinical Radiology P G 5**

Analysis of various radiographic examinations and the opportunity to make presentations.

Su, Au, Wi, Sp, Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

A— Radiologic Diagnosis

B— Radiation Therapy

**750 Radiologic Anatomy G 2**

Anatomy of specific regions or areas as it applies to the interpretation and understanding of diagnostic images.

Sp Qtr. Arr. Prereq: Satisfactory completion of Med Coll 662, or Anatomy 712 and 713 or equiv and permission of instructor. Repeatable to a maximum of 8 or hrs. Cross-listed with Anatomy 750.

**793 Individual Studies**

Prereq: Permission of instructor. Repeatable to a maximum of 24 or hrs. These courses are graded S/U.

**793.02 General U P G 1-6**

**793.10 Radiation Biology U P G 3-6**

**850 Seminar G 1**

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor.

Repeatable to a maximum of 10 or hrs in any combination of decimal subdivisions. These courses are graded S/U.

**850.09 Radiation Oncology**

Selected topics of particular current interests in both research and applications of ionizing radiation in the treatment of cancer.

**850.10 Radiobiology**

Introduction to state of the art developments and innovations resulting from research directed at the study of cellular-molecular-environmental interactions.

Sp Qtr.

**850.20 Physics of Imaging**

Selected topics of current interests in research, development, and technology in medical physics as applied to medical imaging.

Au, Wi, Sp Qtrs.

**850.26 Physics of Radiation Therapy**

Selected topics of interest in research and developments of the methodology and technology of radiation treatment, planning, dosimetry, and equipment.

Au, Wi Qtrs.

**999 Research in Radiology G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Recreation Education

### School of Health, Physical Education, and Recreation

253 Larkins Hall, 337 West 17th Avenue, 292-6538

**200 Social Recreation U 2**

Age characteristics and developmental levels relative to social activities; techniques, rules, strategy and social behaviors in a range of cultural activities, i.e., social games and pastimes.

Au, Wi, Sp Qtrs. 2 cl. SS Admis Cond course.

**209 Orientation to Recreation and Leisure U 2**

Designed to enable the prospective major to understand basic concepts, philosophies, and scopes of the recreation and leisure services field, and to assess individual potential as a recreator.

Au, Wi, Sp Qtrs. 2 cl, 1 lab.

**240 Recreation Leadership U 3**

Methods and materials for comprehensive programming with individuals and different groups in a variety of recreation settings.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 209 or Phys Ed 209 or permission of instructor.

**270 Supervision of Playground and Community Recreation Activities U 2**

Programming of recreational activities relative to community conditions; overview of activities desirable for a broad, comprehensive program.

Au, Sp Qtrs. 2 2-hr labs.

**271 Camp Counseling U 3**

Investigation of the responsibilities and duties of the counselor in various types of camps; practical experience in basic campcraft skills.

Au, Sp Qtrs. 1 2-hr cl, 1 2-hr lab.

**289 Directed Field Experience U 2-5**

Professional service in community recreation and leisure service agencies.

Su, Au, Wi, Sp Qtrs. Designed for students in recreation education curriculum. Repeatable to a maximum of 20 cr hrs.

A— Initial  
B— Community  
C— Therapeutic  
D— Outdoor Programs

**440 Recreation for Special Populations U 3**

Introduction to programs of recreation services for the aged, economically disadvantaged, youthful and adult offenders, and persons with physical or mental handicaps.

Au, Wi Qtrs. 3 cl. Prereq: 5 cr hrs in biological sciences and Hlth Edu 200 or equiv. Open only to majors in recreation education.

**589 Practicum in Recreation U 6-15**

Opportunity to put professional theory and research into practice by leadership and supervisory experience in an agency setting.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 289 or Phys Ed 289.06. Repeatable to a maximum of 15 cr hrs.

**600 Contemporary Issues in Sport and Leisure**

Studies of relevant contemporary issues and trends in sport and leisure.

**600.02 Sport and Social Values U G 2**

Selected value-laden issues current in the conduct of American sport such as the ethics of competition, equality and excellence, and the place of athletics in Education.

Sp Qtr. 2 cl.

**600.03 Origin and Development of Leisure and Recreation U G 3**

Examination of the evolution of leisure and recreational pursuit as individual and cultural human activity.

Au, Sp Qtrs. 2 1½-hr cl. Prereq: Sr or grad standing.

**692 Workshop U G 1-8**

Intensive study of a recreation education topic of interest to the participants for the purpose of developing sound principles and practices relating to it.

Su Qtr. Arr. Prereq: Practical experience in the field and permission of workshop director. Repeatable to a maximum of 12 cr hrs.

**693 Individual Studies in Recreation Education U G 1-4**

Investigation of selected professional problems.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Sr or grad standing and permission of adviser. Repeatable to not more than 30 cr hrs for undergrads and 15 cr hrs for master's degree. This course is graded S/U.

**694 Group Studies in Recreation Education U G 1-5**

Group studies on special problems in recreation.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

Repeatable to a maximum of 6 cr hrs, including cr hrs in Ed-F & R 700.01, 700.02, 700.03, and 700.04; subdivisions are not repeatable, except 700.04 which is repeatable to a maximum of 10 cr hrs. Limited to students enrolled in allied medical professions, education, law, medicine, nursing, social work and theology. Cross-listed in Ed. Policy & Leadership, Ed. Theory & Practice, Human Services Ed, Health Education, and Physical Education.

**700.01 Seminar of Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual cases.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumers/clients/patients.

**700.03 Seminar on Ethical Issues Common to the Helping Professions U G 3**

Ethical issues of concern to the professions and arising out of advanced technology; euthanasia, enforced treatment, privacy and confidentiality, malpractice, and the social responsibility to the professions.

**700.04 Interprofessional Practicum in Clinical Settings U G 3, 5**

Interprofessional teamwork in clinical settings.

Prereq: Permission of instructor.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**727 Special Topics in Education P G 1-5**

Special topics for professional educators and graduate students in selected areas; designed to provide the opportunity to update professional skills and review current research developments.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or registration in one of the professional schools. Repeatable to a maximum of 20 or hrs. This course is graded S/U.

**760 Outdoor Pursuits for Young Children and Preschoolers U G 3**

Examination and implementation of outdoor recreation activities and skills with young children and preschoolers; emphasis on instructional strategies and preparations.

Au, 2 3-hr cl for 5 wks plus weekend. Sp, 1 3-hr cl plus 1 weekend. Prereq: Sr or grad standing.

**770 Outdoor Education and Camp Administration U G 3**

Introduction to the principles, status, and administration of outdoor education and camping.

Su, Au, Sp Qtrs. Prereq: 271 or permission of instructor.

**771 Public Recreation: Its Organization and Administration U G 3**

Consideration of common patterns of organization of community recreation found in American cities, large and small, under municipal, school, and other auspices. Wardwell.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: 209 or permission of instructor.

**780 Leisure Services for Special Populations U G 3**

Basic information on recreation services for special populations including role of the recreation practitioner, legal considerations, and procedures for planning activities.

Au, Sp Qtrs. 1 2½-hr cl. Prereq: Sr standing or above. Not open to students with credit for Ed-Excep 780 or Ed-HuSer 780.

Cross-listed in Human Services Education.

**781 Assessment of Leisure Skills for Special Clients U G 2**

Basic information and limited practice in assessment and observation of leisure skills as they relate to leisure services; emphasis on special clients and populations.

Wi Qtr. 1 2-hr cl. Prereq: 780 or Ed-Excep 780 or Ed-HuSer 780; and Ed-Excep 722 or Ed-HuSer 722. Not open to students with credit for Ed-Excep 781. Cross-listed in Human Services Education.

**782 Developing and Implementing Leisure Plans with Special Clients U G 3**

Basic information and limited experience in teaming, selecting, and modifying activities, tracking client participation, and consultation skills.

Wi Qtr. 1 2½-hr cl. Prereq: 781 or Ed-Excep 781 or Ed-HuSer 781. Not open to students with credit for Ed-Excep 782 or Ed-HuSer 782. Cross-listed in Human Services Education.

**783 Recreation Program Development and Evaluation for Special Populations U G 4**

Basic information and limited experience in program development, modification, utilizing current research, and program evaluation of recreation programs for special groups/individuals.

Sp Qtr. 1 3½-hr cl. Prereq: 780 or Ed-Excep 780 or Ed-HuSer 780. Not open to students with credit for Ed-Excep 783 or Ed-HuSer 783. Cross-listed in Human Services Education.

**784 Leisure Programming for Children with Severe Behavior Handicaps U G 4**

Basic information and experience in programming leisure activities for children with severe behavior handicaps.

Au Qtr. 2 2-hr cl. Prereq: Ed-Excep 722 or Ed-HuSer 722 or permission of instructor. Not open to students with credit for Ed-Excep 784 or Ed-HuSer 784. Cross-listed in Human Services Education.

**889 Internship in Recreation Education G 8-15**

Supervised internship for qualified graduate students in the area of Recreation Education.

Su, Au, Wi, Sp Qtrs. 3 cl, 20 or 40 hrs field experience. Prereq: Written permission of instructor and adviser. Students may not register for more than a total of 30 or hrs under this number; subdivisions are not repeatable.

**889.01 Leisure Services for Special Populations**

Supervised internship in the area of leisure services for special populations.

Su, Au, Wi, Sp Qtrs.

**889.02 Coaching and Sport Leadership**

Supervised internship in the area of coaching and youth sports.

Su, Au, Wi, Sp Qtrs.

**889.03 Adult and Later Years**

Supervised internship in the area of recreation for adults and later years.

Su, Au, Wi, Sp Qtrs.

**889.04 Outdoor**

Supervised internship in the area of outdoor recreation.

Su, Au, Wi, Sp Qtrs.

**894 Group Studies G 3**

Advanced problems in recreation and leisure.

**996 Seminar in Recreation G 2**

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Repeatable to a maximum of 12 or hrs.

## Religious Studies

306 Dulles Hall, 230 West 17th Avenue, 292-2559

**Introduction to Comparative Religion**

See Comp Std 270.

**History of Religions**

See History 270.

**Philosophy of Religion**

See Philos 270.

**294 Group Studies U 3-5**

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Repeatable to a maximum of 15 or hrs.

**321 The Religions of India U 5**

History and structure of South Asian religions with attention to myth, ritual, art, philosophy, and social stratification.

5 cl. Prereq: Comp Std 270.

**323 The Buddhist Tradition U 5**

History and structure of Buddhism from founding to present in South, Southeast, and East Asia; emphasis on rituals, beliefs, and local and regional variations.

5 cl. Prereq: Comp Std 270. Not open to students with credit for EALL 323. Cross-listed in East Asian Languages and Literatures.

**Sociology of Religion**

See Sociol 467.

**520 Approaches to the Study of Religion U G 5**

Survey and comparison of concepts, categories, theories, and methods used by various disciplines in the study of religion.

5 cl. Prereq: Comp Std 270 or History 270 or Philos 270 or Hebrew 273 or English 260 or grad standing or permission of instructor. Comp Std 270 or History 270 recommended. Not open to students with credit for Comp Std 520 or 693 with content of 520.

### Special Topics in Cultural Anthropology: Anthropology of Religion

See Anthro 620.11.

#### 641† The Japanese Religious Tradition U G 5

A survey of the Japanese tradition, including Shinto, Buddhism, Taoism, New-Confucianism, and folk religion from the 6th century B.C.E. to the present.

Wi Qtr. 2 2-hr cl. Prereq: Permission of instructor. Not open to students with credit for Japanese 641. Cross-listed in Japanese.

#### 693 Individual Studies U G 1-5

Students may register for individual directed study in areas not covered in regular course work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

#### 694 Group Studies U G 3-5

Groups of students are given an opportunity to pursue special studies not otherwise offered.

Repeatable to a maximum of 15 cr hrs.

#### H783 Honors Research U 3-5

A program of reading arranged for each student, with individual conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing; a grade of A in at least half the major courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed. Open only to candidates *with distinction* in rel stds. Repeatable to a maximum of 10 cr hrs.

## Respiratory Therapy

School of Allied Medical Professions

431 School of Allied Medical Professions Building, 1583 Perry Street, 292-8445

#### 320 Components of Respiratory Health U 5

Survey of normal respiratory mechanisms with specific consideration for the basis of respiratory therapeutics, the respirable environment and the role of the therapist.

Sp Qtr. 5 cl. Prereq: Admission to the Resp Ther Division or permission of instructor.

#### 400 Therapeutics I U 6

Study of theories, procedures, and equipment utilized in delivering, monitoring, and evaluating basic respiratory therapeutics to patients with compromised respiratory function in the hospital setting.

Au Qtr. 2 2-hr cl, 2 2-hr labs. Prereq: 320.

#### 410 Introduction to Clinical Respiratory Care U 4

An introduction to basic cardiopulmonary assessment and life support techniques, infection control, the medical record, and the clinical environment.

Au Qtr. 1 2-hr cl, 1 3-hr lab, 1 3-hr clinical. Not open to students with credit for 489.01.

#### 420 Therapeutics II U 2

Study of theories, procedures, equipment, standards, organizations, and legislation applicable to the delivery of respiratory therapeutics in ambulatory settings.

Sp Qtr. 1 2-hr cl. Prereq: 400.

#### 430 Pulmonary Function Testing U 3

Study of theories, procedures, standards, and interpretations of pulmonary functions with consideration of mechanical and electronic principles of testing equipment.

Au Qtr. 1 2-hr cl, 1 3-hr lab. Prereq: 320. Not open to students with credit for 460.

#### 440 Continuous Ventilatory Management U 4

Study of ventilatory life-support with emphasis on respiratory techniques, hemodynamic and ventilatory monitoring, and the principles of operation and mechanical characteristics of selected ventilators.

Wi Qtr. 2 cl, 2 3-hr labs. Prereq: 400, 410, and 430.

#### 450 Arterial Blood Gas Analysis U 2

A study of the methods and procedures for obtaining arterial blood, the principles and standards of analysis, and application of the physiologic data.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq: 430. Not open to students with credit for 460.

#### 470 Airway Management U 1

Principles, techniques, procedures, and equipment associated with the insertion and maintenance of artificial airways.

Sp Qtr. 1 cl or 1 2-hr lab. Prereq: 400 and 410.

#### 480 Respiratory Disease I U 2

A study of the etiologies, manifestations, and treatment of respiratory diseases and their clinical courses.

Wi Qtr. 1 2-hr cl. Prereq: 400, 410, and 430.

#### 489 Clinical Experience

Su, Au, Wi, Sp Qtrs. 4-8 hr/wk. Prereq: Admission to the Resp Ther Division. Repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

##### 489.02 Application of Therapeutics I U 1-4

Clinical application and evaluation of basic respiratory therapeutics applied in hospital settings.

Wi, Sp Qtrs. 40 hrs arr for each cr hr. Prereq: 400. Repeatable to a maximum of 4 cr hrs.

##### 489.03 Application of Therapeutics II U 1

Clinical application and evaluation of respiratory therapeutics applied to ambulatory settings.

Su Qtr. 40 hrs arr. Prereq: 420.

##### 489.04 Continuous Ventilation U 1-5

Clinical application of continuous ventilatory management.

Su, Au, Sp Qtrs. 40 hrs arr for each cr hr. Prereq: 440. Repeatable to a maximum of 5 cr hrs.

##### 489.05 Pulmonary Function I U 1

Clinical application of various techniques and procedures involved in pulmonary function testing.

Wi Qtr. 40 hrs arr. Prereq: 430.

##### 489.06 Introduction to Clinical Pediatrics U 3

Clinical application of basic neonatal and pediatric respiratory therapy.

Su Qtr. 120 hrs arr. Prereq: 500.

##### 489.07 Intubation and Airway Management U 1

Clinical application of techniques and procedures involved with intubation and airway management.

Su Qtr. 40 hrs arr. Prereq: 470.

##### 489.08 Pulmonary Rounds U 1

Clinical observation and participation in the therapeutic decision-making process and case study presentations of patients receiving respiratory therapy.

Su Qtr. 40 hrs arr. Prereq: 490.

##### 489.10 Pulmonary Function II U 1

Clinical application of various techniques and procedures involved in pulmonary function testing, emphasis on arterial blood gas analysis.

Sp Qtr. 40 hrs arr. Prereq: 450 and 489.05.

#### 490 Respiratory Disease II U 1 or 2

A continuation of the study of respiratory diseases with emphasis on the etiologies, manifestations, and treatments for respiratory failure.

Sp Qtr. 1 2-hr cl. Prereq: 440 and 480; or Nur Anes 350.

#### 500 Neonatal and Pediatric Respiratory Therapy U 4

Neonatal and pediatric pulmonary pathophysiology with consideration of the necessary adaptations of equipment and therapeutics for application to the pediatric patient.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 440.

**510 Advanced Techniques in Patient Monitoring U 2**

Principles, techniques, procedures, and equipment associated with advanced cardiac life support and patient monitoring techniques.

Su Qtr. 1 2-hr cl. Prereq: 470 and 490.

**520 Administration of Respiratory Therapy Services U 3**

An analysis of management processes utilized by respiratory therapy services including organization, communication, quality assurance, audit, budget and regulatory processes, personnel management, and educational functions.

Wi Qtr. Prereq: Alli Med 630.

**589 Advanced Clinical Practice U 1-5**

Supervised clinical education and experiences in respiratory therapy education, administration of respiratory services, and areas of advanced professional practice.

Su, Au, Wi, Sp Qtrs. 8 hrs/wk, 1 or hr. Prereq: Written permission of instructor and satisfactory completion of all respiratory therapy professional courses. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**593 Individual Studies in Respiratory Therapy U 1-5**

Guided study of topics or pursuit of individual experiences in respiratory therapy.

Su, Au, Wi, Sp Qtrs. Prereq: Admission to the Respiratory Therapy Division or permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**595 Seminar U 1-5**

Conferences, group discussions, and presentations of selected topics.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 9 cr hrs. This course is graded S/U.

## Romance Linguistics

Cunz Hall, 1841 Millikin Road, 292-5842

**811\* Romance Linguistics I G 5**

A general survey of the development of the Romance languages and an introduction to the basic materials and techniques of investigation.

Au Qtr. 5 cl. Prereq: Permission of instructor.

**812\* Romance Linguistics II G 5**

Topics and problems, both synchronic and diachronic; special attention to the minor Romance languages.

Wi Qtr. 5 cl. Prereq: 811 or permission of instructor.

**831\* Seminar in Romance Linguistics G 3-5**

Sp Qtr. Prereq: Permission of instructor.

**893 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-15**

Investigation of minor problems in the various fields of Romance linguistics.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

**999 Research in Romance Linguistics G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Romanian

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101 Elementary Romanian U 5**

Extensive practice in the basic language skills. Botoman.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**102 Elementary Romanian U 5**

The elements of Romanian grammar with oral and written exercises; development of conversational skill; reading, vocabulary building, attention to Romanian idioms. Botoman.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**104† Intermediate Romanian U 5**

Reading, oral and written practice, grammar review; balanced use of the four basic skills (reading, oral comprehension, speaking, and writing). Botoman.

Au Qtr. 5 cl. Prereq: 112 or equiv with permission of instructor. Not open to students with credit for 294 Au Qtr 1982; or to native speakers of this language through regular course enrollment or EM credit.

**111 Intensive Intermediate Romanian U 5 or 10**

An intensive course that combines the content of two quarters of Romanian to complete the presentation of the basic Romanian grammar and readings based on Romanian geography, history, and customs. Botoman.

Sp Qtr. 5 2-hr cl. Prereq: 102. Equiv to the third and fourth courses of the foreign language sequence; successful completion of 101-102-111 fulfills the Arts and Sciences foreign language requirement. Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 103 or equiv will enroll for 5 cr hrs.

**112 Intensive Romanian U 5, 10, 15**

Elementary and intermediate Romanian for students desiring comprehensive knowledge of Romanian in the shortest possible time.

Su Qtr. 15 cl. Prereq: Permission of instructor. Not open to students with credit for 294 Su Qtr 1982. Full-time fees required regardless of number of cr hrs. Equiv to 101, 102, 103. Students may not register for any other course if they enroll in 112. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in Romanian will enroll for 15 cr hrs. Regardless of cr hrs enrolled, a student will attend class throughout entire qtr. Withdrawal from the course means forfeiture of all cr hrs. No audit. SS Admis Cond course.

**235 Introduction to Romanian Culture U 5**

Romanian literature in its cultural context, survey of the relationship of literature, art, cultural traditions from the beginnings to the present.

Wi Qtr. 5 cl. Not open to students with credit for 294 Wi Qtr 1981 or Wi Qtr 1983. Taught in English.

**293 Individual Studies U 1-15**

Individual studies in Romanian.

Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-15**

Group studies in Romanian language, literature, and culture.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept. Repeatable to a maximum of 15 cr hrs.

**405 Conversation and Composition I U 5**

Drill in everyday patterns of conversation and elementary practice in writing.

Au Qtr. 5 cl. Prereq: 104 or 111 or permission of instructor. Not open to students with credit for 293 taken Au Qtr 1982 or Wi Qtr 1983.



**407 Conversation and Composition II U 5**

Review of Romanian grammar; written compositions; perfection of pronunciation, translation practice, and expansion of vocabulary.

Wi Qtr. 5 cl. Prereq: 405 or permission of instructor. Not open to students with credit for 293 Au Qtr 1982 or Wi Qtr 1983.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

## Rural Sociology

103 Agricultural Administration Building, 2120 Fyffe Road, 292-7911

**105 Introduction to Rural Sociology U 5**

Principles of society, major social institutions, and social change; emphasizes social changes in rural life, rural organizations, population, and family living. Napier, Rief, and Thomas.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Sociol 101 or 201. This course is available for EM credit. BER course. SS Admis Cond course.

**110 Socio-Economic Systems in Rural America U 5**

A study of our rural socio-economic systems, the individual's interaction within these systems, and the impact of societal decisions on resource use and control.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Agr Econ 110. Cross-listed in Agricultural Economics. SS Admis Cond course.

**489 Internship in Rural Sociology U 3-5**

Supervised experience with an approved firm or organization; written comprehensive report required.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of major adviser. Repeatable to a maximum of 10 cr hrs. Open only to dept majors.

**562 Diffusion of Information on Agricultural Technology U G 3**

The process by which new ideas diffuse to farmers, homemakers, and peasants; emphasis on group influence, change agents, green revolution, and intermediate technology. Donnermeyer.

Sp Qtr. 3 cl. Not open to students with credit for 421.

**642†\* Concepts and Theories in Rural Sociology U G 5**

A comparative analysis of rural-urban social systems; analysis of the decline of rural-urban differences and the development of interdependency among rural-urban subsystems.

Au Qtr. 2 2-hr cl. Prereq: 15 cr hrs in rur soc and/or sociol at the 300-level or higher. Not open to students with credit for 600.

**662 Rural Sociology of Developing Societies U G 5**

Sociological principles applied to analysis of present social systems and institutions of developing nations for students preparing for foreign service with rural societies. Hansen and Kenney.

Wi Qtr. 3 cl. Prereq: 105, Sociol 101, or 201. Not open to students with credit for 422.

**666\* Rural Poverty U G 5**

Evaluation of the factors which tend to create and perpetuate social and economic deprivation; the socio-economic conditions of poverty subgroups are analyzed in depth.

Wi Qtr. 2 2-hr cl. Prereq: 15 cr hrs in rur soc or related social science.

**688†\* Social Impact Assessment of Domestic Development U G 5**

Discussion of concepts and methods associated with social impact assessment of planned change programs; primary emphasis will be placed upon public development programs. Napier.

Wi Qtr. 1 3-hr cl. Students will be required to use 2 hrs/week on a special class project. Prereq: 15 cr hrs in rur soc or sociology courses numbered 300 and above or related social sciences.

**693 Individual Studies U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: 2.50 cumulative pt-hr ratio and written permission of instructor. Repeatable to a maximum of 15 cr hrs in any or a combination of decimal subdivisions.

These courses are graded S/U.

**693.01 Rural Social Problems**

**693.02 Rural Formal Organizations**

**693.03 Rural Sociology in Foreign Areas**

**693.04 Research Methods in Rural Sociology**

**693.05 Rural Community and Institutions**

**693.06 Community Development**

**693.07 Diffusion of Technology**

**693.08 General Rural Sociology**

**694 Group Studies U G 2-5**

An intensive study of a selected area in rural sociology appropriate to the needs of the group not provided in other courses.

Su, Au, Wi, Sp Qtrs. Prereq: permission of instructor. Repeatable to a maximum of 8 cr hrs.

**744†\* Rural Sociology Demography U G 5**

Application of demographic principles to rural communities, rural institutions, and rural social problems with emphasis on population change and migration. Thomas

Au Qtr. 2 2-hr cl. Prereq: 15 cr hrs in rur soc or sociol or related social sciences. Not open to students with credit for 769.01.

**766†\* Environmental Sociology U G 5**

Exploration of sociological approaches to the study of society and its physical environment and analysis of major issues relating to the survival base of human societies. Napier.

Wi Qtr. 2 2-hr cl. Prereq: 15 cr hrs in rur soc and/or sociol at 400 level or above.

**788 Sociological Theory Applied to Domestic Development U G 5**

Application of general sociological theories and development research findings to the analysis of domestic rural development; emphasis upon consensus and conflict models.

Wi Qtr. 1 3-hr cl. Prereq: 15 cr hrs in rur soc or sociol or related social science. Not open to students with credit for 796.06.

**796 Seminars in Rural Sociology U G 2-4**

Su, Au, Wi, Sp Qtrs. Prereq: 15 cr hrs in rur soc and/or sociol or permission of instructor. Repeatable to a maximum of 12 cr hrs.

**888 Social Action in Community Development G 5**

An analysis of the steps and conceptual areas in the social action process and its application to rural community development. Napier.

Sp Qtr. Arr.

**999 Research G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

# Russian

232 Cunz Hall, 1841 Millikin Road, 292-6733

## 101 Elementary Russian I

Development of oral and written language skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 101.01 Classroom Track U 5

Su, Au, Wi, Sp Qtrs. 5 cl. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 101.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs for 101.05.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

## 102 Elementary Russian II

Development of oral and written language skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

### 102.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 101.01 or 5 cr hrs in 101.05 or 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 102.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 101.01 or 5 cr hrs of 101.05 or 101.51 or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the quarter may proceed to 103.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs for 102.05.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

## 103 Intermediate Russian I

Readings, oral and written practice, grammar review. Students may select from among the following subdivisions which emphasize special areas.

Not open to native speakers of this language through regular course enrollment or EM credit.

### 103.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 101.01 or 5 cr hrs in 102.05 or 102.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

### 103.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Grade of B- or above in 102.01 or 5 cr hrs of 102.05 or 102.51 or permission of instructor. Students may register for 102.51 and 103.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs for 103.05.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

## 104 Intermediate Russian II

Readings, oral and written practice, grammar review.

Not open to native speakers of this language through regular course enrollment or EM credit.

### 104.01 Basic U 5

Balanced use of the four basic skills: reading, oral comprehension, speaking, and writing; emphasis on Russian literary texts.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 103.01 or 5 cr hrs of 103.05 or 103.51. Not open to students with credit for 104. This course is available for EM credit.

### 104.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Prereq: Grade of B- or above in 103.01 or 5 cr hrs of 103.05 or 103.51 or permission of instructor. Students may register for 103.51 and 104.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with 5 cr hrs for 104.05.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

## 111 Intensive Intermediate Russian U 5 or 10

An intensive course combining the content of 103.01 and 104.01.

Sp Qtr. 5 2-hr cl. Prereq: 102. Not open to students with credit for 104 or 104 decimal subdivisions; or to native speakers of this language through regular course enrollment or EM credit. Equiv to third and fourth courses of the foreign language sequence; successful completion of 101-102-111 fulfills the Arts and Sciences foreign language requirement. Students with credit for 103, any hours of 103 decimal subdivisions, or 112 may not register for more than 5 cr hrs.

## 135 Introduction to Russian Culture U 5

Russian literature in its cultural context, survey of the relationship of literature, art, music, and drama from the beginnings to the present.

Su, Au, Wi, Sp Qtrs. 4 cl, 1 hr arr. Taught in English. BER/LAC/LAR course.

## 214 Camp Horizon (Lager' Gorizont) U 1

A weekend total immersion Russian language camp; Russian only spoken; lectures, discussions, films, singing, dancing.

Sp Qtr. Friday 6 pm-Sunday 2 pm. Prereq: 103.01 or 103.51 or permission of instructor. Repeatable to a maximum of 4 cr hrs. Travel and subsistence costs will be borne by the student. This course is graded S/U.

## 250 Masterpieces of Russian Literature in Translation U 5

Reading and analysis of works by the great masters. Turgenev, Dostoevsky, and Tolstoy, and the Nobel Prize winners, Bunin, Sholokhov, Pasternak, and Solzhenitsyn.

Sp Qtr. 5 cl. Not open to students with credit for 220 or 221. Taught in English. BER/LAC/LAR course.

## 405 Russian Conversation and Composition

Drill in everyday patterns of conversation and elementary practice in writing.

### 405.01 Classroom Track U 5

Au, Wi, Sp Qtrs. 5 cl. Prereq: 104 or permission of instructor. Not open to students with credit for 405; or to native speakers of this language through regular course enrollment or EM credit. Students must register for and complete 5 cr hrs during the qtr.

**405.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: 104.01 or 104.51 or permission of instructor. Not open to students with credit for 405 or 405.01; or to native speakers of this language through regular course enrollment or EM credit. Students may register for 104.51 and 405.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete five credit hours during the qtr may proceed to 407. Progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**407 Intermediate Russian Conversation and Composition**

Review of Russian grammar; written compositions, perfection of pronunciation, translation practice, and expansion of vocabulary.

**407.01 Classroom Track U 5**

Au, Wi, Sp Qtrs. 5 cl. Prereq: 405.01 or 5 cr hrs of 405.51 or permission of instructor. Not open to students with credit for 408; or to native speakers of this language through regular course enrollment or EM credit. Students must register for and complete 5 cr hrs during the qtr.

**407.51 Individualized Track U 1-5**

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 405.01 or 5 cr hrs of 405.51 or permission of instructor. Not open to students with credit for 407 or 407.01; or to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one credit hour to the next, with proficiency at the level of 80% required for advancement. Not open to students with credit for 407 or 407.01. Students may register for 405.51 and 407.51 concurrently with permission of instructor.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**511 Language Maintenance Course U 2**

Intended for the non-major and non-minor desiring to maintain an active knowledge of Russian without enrolling in advanced courses in grammar, literature or linguistics. Intermediate level conversation and non-literary popular readings.

Su, Au, Wi, Sp Qtrs. 2 cl. Prereq: 407, 407.01 or 407.51 or permission of instructor. Repeatable to a maximum of 12 hrs. Credit does not count for the major or minor. This course is graded S/U.

**512 Practical Russian Conversation U G 3**

Contemporary Soviet conversational patterns; preparation for program at the Pushkin Institute in Moscow.

Sp Qtr. 3 cl. Prereq: 30 hrs of Russian or permission of instructor. Not open to students with credit for 695, 698, 895, or 995. The instructor will be a visiting professor from the Pushkin Russian Language Institute in Moscow, USSR.

**520 Russian Literature in English****Translation: From Pushkin to Turgenev U G 5**

An introduction to the Russian novel, drama, and poetry; major contributions of Pushkin, Lermontov, Gogol, Ostrovsky, Goncharov, and Turgenev.

Au Qtr. 4 cl. Not open to students with credit for 220.

**521 Russian Literature in English Translation: From Dostoevsky to Andreyev U G 5**

Reading and analysis of works by Dostoevsky, Tolstoy, Saltykov-Shchedrin, Chekhov, Gorky, Bunin, Bely, Andreyev.

Wi Qtr. 4 cl. Not open to students with credit for 221.

**522 Russian Literature in English Translation: Soviet Literature U G 5**

A survey of Soviet Russian literature from 1917 to the present; reading of representative authors such as Fadeyev, Leonov, Fedin, Sholokhov, Pasternak.

Sp Qtr. 4 cl. Not open to students with credit for 222.

**551 Introduction to Russian Literature: Romanticism and Naturalism U G 3**

Readings from representative authors such as Pushkin, Lermontov, and Gogol.

Au Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

**552 Introduction to Russian Literature: The Russian Realists U G 3**

Readings from representative authors such as Turgenev, Dostoevsky, Tolstoy, and Goncharov.

Wi Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

**553 Introduction to Russian Literature: Impressionism, Symbolism, and Socialist Realism U G 3**

Reading from representative authors such as Chekhov, Gorky, Blok, Bunin, and Sholokhov.

Sp Qtr. 3 cl. Prereq: 407 or equiv with written permission of instructor. Conducted in Russian.

**560 Third-year Russian Language I U G 3**

Designed to improve the student's command of spoken and written Russian.

Au Qtr. 3 cl. Prereq: 407 or permission of instructor.

**561 Third-year Russian Language II U G 3**

Designed to improve the students command of spoken and written Russian.

Wi Qtr. 3 cl. Prereq: 560 or permission of instructor.

**571 Basic Russian for Graduate Students G 5**

Basic elements of Russian grammar.

Au Qtr. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum hours required for the master's or doctoral degrees.

**572 Russian for Research I G 3**

Wi Qtr. 3 cl. Prereq: Grade of C or above in 571 or equiv. Credit does not apply to the minimum hours required for the master's or doctoral degrees. Repeatable twice. Satisfactory completion of this course (grade A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement. No audit.

**573 Russian for Research II G 3**

Reading of difficult material at a reasonable rate of speed and with only infrequent use of dictionaries.

Sp Qtr. 3 cl. Prereq: Grade of A or B in 572 or equiv preparation demonstrated by a placement test and permission of instructor. Open only to grad students. Repeatable to a maximum of 6 cr hrs. Completion of this course with a grade of A or B may be accepted by the student's dept as evidence of a thorough reading knowledge of Russian. Credit does not apply to minimum hrs required for the master's or PhD degree. No audit.

**580 Reading Russian I**

Readings from a variety of sources with special emphasis on contemporary materials.

Prereq: 407.01 or 5 cr hrs in 407.51 or 573. Not open to students with credit for 510.

**580.01 Classroom Track U G 3**

Sp Qtr. 3 cl.

**580.51 Individualized Track U G 1-3**

Strategies for reading Russian expository prose; skimming, scanning, reading for complete comprehension, and critical reading. Authentic texts from contemporary journalistic prose.

Su, Au, Wi, Sp Qtrs. Students may register for 407.51 and 565.51 concurrently. Students register for and complete from 1 to 3 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 566.51. Progress is sequential from one cr hr to the next, with a proficiency at the level of 80% required for advancement.

E—Designates a version covering the same material and satisfying the same University and college requirements, but with instructor assistance and oral testing over the telephone. Not open to currently enrolled Columbus campus students. Registration is through CED.

**581 Reading Russian II****581.51 Individualized Track U G 1-3**

Continuation of 580; further development of strategies for reading Russian expository prose; authentic texts from contemporary journalistic prose.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 580.01 or 5 cr hrs in 580.51 or permission of instructor. Students register for and complete from 1 to 3 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 580.51 and 581.51 concurrently with permission of instructor.

**582 Reading Russian III****582.51 Individualized Track U G 1-3**

Continuation of 581.51; further development of strategies for reading Russian expository prose; authentic texts from contemporary journalistic prose.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 3 cr hrs of 581.51 or permission of instructor. Students register for and complete from 1 to 3 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 581.51 and 582.51 concurrently with permission of instructor.

**609 Advanced Reading, Conversation, and Composition I U G 4**

Reading of contemporary prose and verse, presentation of oral and written reports, drill in intonation patterns, translation from English into Russian. Rugaleva.

Au Qtr. 3 cl, 2 hr arr. Prereq: 561 or permission of instructor.

**610 Advanced Reading, Conversation, and Composition II U G 4**

Rugaleva.

Wi Qtr. 3 cl, 2 hr arr. Prereq: 609 or permission of instructor.

**611 Advanced Reading, Conversation, and Composition III U G 4**

Rugaleva.

Sp Qtr. 3 cl, 2 hr arr. Prereq: 610 or permission of instructor.

**613 Translation Techniques I U G 5**

Translation of material from the social sciences; discussion of techniques, procedures, methodology, and the art of translation. Ehlers.

Au Qtr. 5 cl. Prereq: 30 cr hrs in Russian. Not open to students with credit for 513.

**614 Translation Techniques II U G 5**

Continuation 613; work with progressively more difficult passages. Ehlers.

Wi Qtr. 5 cl. Prereq: 613 or equiv or permission of instructor. Not open to students with credit for 514.

**615 Translation Techniques III U G 5**

Translation of modern fiction; comparative and contrastive analysis of problems encountered in translating fiction and factual material. Ehlers.

Sp Qtr. 5 cl. Prereq: 614 or equiv or permission of instructor.

**616 Translation Laboratory U G 2**

Supervised translation of materials from current Soviet publications in the humanities and social sciences.

Au, Wi, Sp Qtrs. 2 cl. Prereq or concur: 613, 614, or 615; or equiv with written permission of instructor. Repeatable to a maximum of 6 cr hrs. Required of all majors in translation certificate program and translation track of the BA major in Slavic languages and literatures with specialization in Russian.

**617\* Business Russian U G 5**

Simulated trade negotiations with the Soviets providing sufficient terminology to facilitate bilingual trade negotiations. Rugaleva.

Sp Qtr. 5 cl. Prereq: 30 hrs of Russian or permission of instructor.

**631 Introduction to Russian Linguistics U G 3**

An introduction to linguistic concepts useful in the study of Russian; survey of major figures in Russian historical and descriptive linguistics.

Wi Qtr. 3 cl. Prereq: 30 cr hrs in Russian.

**635\* Practical Russian Pronunciation U G 5**

Lectures and practical exercises, use of phonetic symbols, corrective exercises, and problems of teaching pronunciation.

Au Qtr. 3 cl, 2 lab hrs. Prereq: 30 cr hrs in Russian.

**640 Introduction to the Structure of Russian U G 5**

Elements of Russian pronunciation and grammar with comparisons to English.

Au Qtr. 3 cl. Prereq: 30 cr hrs in Russian.

**644\* Russian Folklore U G 5**

From the beginning to present; proverbs, the oral epic, historical songs, folktales, the folk theatre; analysis of the folklore component in modern Russian literature.

Sp Qtr. 3 cl. Not open to students with credit for 834. Taught in English.

**653†\* Russian Drama U G 5**

Emphasis on the period from 1850 to present day; Ostrovsky, Chekhov, Gorky, Andreyev, Blok, and Soviet writers Leonov and Kataev. Kalbous.

Sp Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list.

**660 Basic Approaches to the Study of Russian Literature U G 3**

Historical overview of Russian literary criticism and theory; basic practical approaches to the study of literary texts.

Au Qtr. 3 cl. Prereq: Grad standing in dept or 25 hrs of Russian literature, or permission of instructor.

**661 The Poetics of Russian Verse U G 4**

Presentation of the basic distinctive features of Russian verse and a theoretical historical survey of the main trends and authors in Russian poetry.

Wi Qtr. 3 cl. Prereq: 660 or permission of instructor.

**662 The Poetics of Russian Prose U G 4**

Stylistic, thematic, and structural study of Russian prose as a developing genre in the 19th and 20th centuries.

Sp Qtr. 3 cl. Prereq: 660 or permission of instructor.

**664†\* Studies in 20th Century Russian Literature U G 5**

Offerings will include such topics as: the Serapion Brethren, literature and the revolution, prose of the 1920's emigre literature.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature at the 200 level or above. Repeatable to a maximum of 20 cr hrs. Given in English; some original reading required of Slavic undergrad and grad majors.

**693 Individual Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 30 cr hrs including cr hrs in 693.01 through 693.08 in any combination of decimal subdivisions. These courses are graded S/U.

- 693.20 Literature
- 693.30 Linguistics
- 693.40 Language
- 693.50 Unspecified

**694 Group Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 15 cr hrs.

**695 Quarter or Semester at the Pushkin Russian Language Institute in Moscow, USSR I U G 5, 15, or 18**

Formal language instruction 30 hrs per week by faculty of the Institute; in the USSR only Russian will be spoken.

Au, Sp Qtrs. Prereq: Minimum of 30 cr hrs in Russian or equiv and permission of the chairperson. Repeatable to a maximum of 46 cr hrs including 895. Travel and subsistence costs for the institute will be borne by the student.

**723 Topics in Russian Poetry U G 5**

Topics vary: the history of Russian poetry, versification theory; literary schools such as symbolism, formalism, or futurism; study of individual poets from any period.

Sp Qtr. 3 cl. Prereq: 610 or permission of instructor. Repeatable to a maximum of 20 cr hrs. Conducted in Russian.

**750\* Pushkin and his Time G 5**

Analysis of Eugene Onegin as poetry and an encyclopedia of the times; social, political, and cultural trends in the 1820s and 1830s; romantic poets.

Au Qtr. 3 cl. Prereq: 10 hrs of Russian literature at the 200 level or above or permission of instructor. Not open to students with credit for 840.

**751 Gogol' and 19th-Century Russian Satire U G 5**

Satire in the works of Nikolay Gogol', Nikolay Leskov, and Mikhail Saltykov-Shchedrin studied in the context of Russian literary and social development.

Prereq: 10 hrs in Russian or other literature in courses at the 200 level or above, or permission of instructor.

**752 Turgenev, Chekhov, and Aspects of Russian Realism U G 5**

Study of Russian prose works outside of the satirical genre and others than the prose of Dostoevsky and Tolstoy.

Prereq: 10 hrs or Russian or other literature in courses at the 200 level or above, or permission of instructor.

**753\* Dostoevsky U G 5**

Critical analysis of the major novels and shorter works; intellectual and literary development of Dostoevsky.

Au Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list. Not open to students who have taken 650 within the last four years.

**754†\* Tolstoy U G 5**

Analysis of all major works including the novels, plays, stories, and important polemical works.

Au Qtr. 3 cl. Prereq: 10 cr hrs in Russian or other literature courses at the 200 level or above. Given in English but undergrad majors in Slavic will do prescribed portions of the reading in the original; grad students in Slavic must read in the original items starred on the departmental MA reading list. Not open to students who have taken 651 within the last four years.

**801 College Teaching of Russian I G 3**

Methods and techniques for teaching Russian at the college level, selection and preparation of teaching and testing materials, the language laboratory, and other aids.

Au Qtr. 3 cl, 2 lab hrs. Prereq: 611 or equiv, or permission of instructor.

**820 History of the Russian Language G 3**

A survey of phonetic, morphological, and syntactical changes from the period of Common Slavic to the present; the formation of the Russian literary language. Robinson.

Sp Qtr. 3 cl.

**823\* Development of the Russian Literary Language G 5**

The formation of Russian as a literary language; the role of Church Slavonic elements in its formation and Western influences on Russian.

Sp Qtr. 3 cl. Prereq: 820 or permission of instructor.

**826\* Topics in the Structure of Russian G 5**

Analysis and description of the structure of contemporary standard Russian. Robinson.

Au Qtr. 3 cl. Prereq: 640 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**827\* Topics in the History of Russian G 5**

Development of Russian from Common Slavic to contemporary standard Russian with consideration of its place within East Slavic.

Au Qtr. 3 cl. Prereq: 820 or equiv with written permission of instructor. Repeatable to a maximum of 15 cr hrs.

**829\* Old Russian Literature: 15th-17th Century G 5**

Study of literary works of various genres cultivated in this period.

Wi Qtr. 3 cl. Prereq: 611 or 615.

**831†\* Russian Literature, 1650-1800 G 5**

The baroque period, classicism, and sentimentalism; emphasis on the classical period of the 18th century. Silbajoris.

Sp Qtr. 3 cl. Prereq: 2nd yr grad standing or permission of instructor.

**851 Seminar in Russian Literature, 1820-1917 G 3-5**

Au Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

**852 Seminar in Russian Literature since 1917 G 3-5**

Sp Qtr. 2 cl. Repeatable to a maximum of 15 cr hrs.

**895 Quarter or Semester at the Pushkin Russian Language Institute in Moscow, USSR II G 5, 15, or 18**

Formal language instruction 30 hrs per week by faculty of the Institute; in the USSR only Russian will be spoken.

Au, Sp Qtrs. Prereq: 695 or 698 or minimum of 50 cr hrs in Russian or equiv and permission of chairperson. Repeatable to a maximum of 46 cr hrs including 695 and 698. Travel and subsistence costs for the institute will be borne by the student.

**993 Individual Studies G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

- 993.20 Literature
- 993.30 Linguistics
- 993.40 Language
- 993.50 Unspecified

**995 Pushkin Language Institute, Moscow, USSR G 18**

Ten month program in language, methodology, civilization, culture, contemporary Soviet literature.

Prereq: 695 or 698 or 895 or equiv and permission of chairperson. Must be a grad student in Russian at time of application. Instruction 30-36 hrs per week by Institute faculty; in USSR only Russian will be spoken; students must enroll in all three decimal subdivisions. Travel and subsistence costs for the institute will be borne by the student.

- 995.01 Part 1
- Au Qtr.
- 995.02 Part 2
- Wi Qtr.
- 995.03 Part 3
- Sp Qtr.

## Sanskrit

204 Cunz Hall, 1841 Millikin Road, 292-4052

See also Linguistics.

### 621†\* Elementary Sanskrit U G 5

Introduction to Indo-European, Indic, and Sanskrit; reading of introductory texts.

Au Qtr. 5 cl. Not open to students with credit for Linguist 621.

### 622†\* Classical Sanskrit U G 5

Reading of classical Sanskrit texts.

Wi Qtr. Prereq: 621 or permission of instructor. Not open to students with credit for Linguist 622.

## Scandinavian

314 Cunz Hall, 1841 Millikin Road, 292-6985

### 222\* Nordic Mythology U 5

Nordic perceptions of the origin, structure, and destruction of the universe as revealed in major myths of Northern Europe.

Wi Qtr. 5 cl. Taught in English.

### 500†\* Masterpieces of Scandinavian Literature U G 3

Selected masterpieces of Scandinavian literature in European cultural context; from the sagas through Ibsen and Strindberg to the present.

Sp Qtr. 3 cl. Taught in English. Repeatable to a maximum of 6 cr hrs.

### 520\* The Films of Ingmar Bergman U G 5

Major works of Sweden's foremost director; stress on film as a creative expression of the development of modern aesthetic and philosophical concerns.

Wi Qtr. 2 cl, 1 3-hr cl. Taught in English.

### 571†\* Reading the Scandinavian Languages U G 5

Fundamentals of grammar of the Scandinavian languages for research purposes in the humanities, sciences, and social and behavioral sciences.

Wi Qtr. 5 cl.

### H783 Honors Research U 3-5

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

## Sensory Biophysics

105 Biological Sciences Building, 484 West 12th Avenue, 292-8772

### 601 Introduction to Sensory Biophysics U G 5

Anatomy and function of sensory systems; psychophysical research methods; mathematical descriptions of information transfer; biophysical models. Kornacker.

Wi Qtr. 5 cl. Prereq: Biology 110 or 113 or H115, Chem 122, Physics 112, and Math 117.

## Serbo-Croatian

232 Cunz Hall, 1841 Millikin Road, 292-6733

### 101\* Elementary Serbo-Croatian I

Not open to students with credit for 601; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

#### 101.01 Classroom Track U 5

Au Qtr. 5 cl.

#### 101.51 Individualized Track U 1-5

Su, Au, Wi, Sp Qtrs. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Not open to students with credit for 101 or 601.

### 102\* Elementary Serbo-Croatian II

Prereq: 101 or 101.01 or 5 cr hrs of 101.51 or 601 or permission of instructor. Not open to students with credit for 602; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

#### 102.01 Classroom Track U 5

Wi Qtr. 5 cl.

#### 102.51 Individualized Track U 1-5

Prereq: 101 or 101.01 or 5 cr hrs of 101.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advanced. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Not open to students with credit for 102 or 602.

### 103\* Intermediate Serbo-Croatian I

Prereq: 102 or 102.01 or 5 cr hrs of 102.51 or 602 or permission of instructor. Not open to students with credit for 603; or to native speakers of this language through regular course enrollment or EM credit.

#### 103.01 Classroom Track U 5

Sp Qtr. 5 cl.

#### 103.51 Individualized Track U 1-5

Students register for and complete 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 102.51 and 103.51 concurrently with permission of instructor.

### 104 Intermediate Serbo-Croatian II

Continuation of 103; development of the four skills.

Prereq: 103.01 or 5 cr hrs of 103.51 or 112 or equiv or permission of instructor. Not open to students with credit for 104 or 111; or to native speakers of this language through regular course enrollment or EM credit.

#### 104.01 Classroom Track U 5

#### 104.51 Individualized Track U 1-5

Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 103.51 and 104.51 concurrently with permission of instructor.

### 111\* Intensive Intermediate Serbo-Croatian U 5 or 10

An intensive course that combines the content of 103 and 104; balanced use of the four skills: reading, oral comprehension, speaking, and writing. Intended for students who wish to expedite the completion of the language requirement.

Sp Qtr. 5 2-hr cl. Prereq: 102. Not open to students with credit for 104; or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 103 or 112 may not register for more than 5 cr hrs but must complete the entire course.

**300 Modern Serbo-Croatian Literature U 5**

Reading and analysis of narrative prose of post-World War II Serbian and Croatian authors in English translation.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in literature courses at the 200 level or above, or permission of instructor. Given in English; some original reading required of students specializing in Srb-Croa.

**405 Conversation and Composition I****405.01†\* Classroom Track U 5**

Reading texts of moderate difficulty, conversation, and simple compositions.

Wi Qtr. 5 cl. Prereq: 104.01 or 5 cr hrs of 104.51 or 111 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit.

**405.51 Individualized Track U 1-5**

Reading texts of moderate difficulty, conversations, and simple compositions.

Su, Au, Wi, Sp Qtrs. Prereq: 104.01 or 5 cr hrs of 104.51 or 111 or permission of instructor. Not open to students with credit for 605. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 104.51 and 405.51 concurrently with permission of instructor.

**407 Conversation and Composition II****407.01 Classroom Track U 5**

Reading from modern Serbo-Croatian literature, practice in writing and speaking.

Sp Qtr. 5 cl. Prereq: 405.01 or 5 cr hrs of 405.01 or 605 or permission of instructor.

**407.51 Individualized Track U 1-5**

Reading from modern Serbo-Croatian literature; practice in writing and speaking.

Su, Au, Wi, Sp Qtrs. Prereq: 405.01 or 5 cr hrs of 405.51 or 605 or permission of instructor. Not open to students with credit for 606. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 405.51 and 407.51 concurrently with permission of instructor.

**580 Reading Serbo-Croatian I****580.51 Individualized Track U G 1-5**

Development of reading skills; short texts and headlines from contemporary popular journals and newspapers.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 407.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 407.51 and 580.51 concurrently with permission of instructor.

**581 Reading Serbo-Croatian II****581.51 Individualized Track U G 1-5**

Continuation of 580.51; reading of somewhat more difficult unedited texts from contemporary magazines and newspapers; reading for comprehension without a dictionary.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 5 cr hrs of 580.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement. Students may register for 580.51 and 581.51 concurrently with permission of instructor.

**620†\* Serbo-Croatian Literature to the 1950s U G 5**

Historical and aesthetic development of oral and written Serbo-Croatian literature from the medieval period to the 1950s.

Au Qtr. 3 cl. Prereq: 10 cr hrs in any literature courses at the 200 level or above or permission of instructor. Given in English; some reading in original language required of undergrads specializing in Srb-Croa and grad students in Slavic.

**621†\* Serbo-Croatian Literature 1950s to the Present U G 5**

Contemporary Serbo-Croatian literary works in English translation.

Wi Qtr. 3 cl. Prereq: 10 cr hrs in literature courses at the 200 level or above, or permission of instructor. Given in English; some reading in the original language required of undergrads specializing in Srb-Croa and grad students in Slavic.

**693 Individual Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairperson. Each decimal subdivision repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

**693.20 Literature****693.30 Linguistics****693.40 Language****693.50 Unspecified****694 Group Studies U G 2-10**

Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 15 cr hrs.

**993 Individual Studies G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of chairperson. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

## Slavic and East European Studies

344 Dulles Hall, 230 West 17th Avenue, 292-8770

**694 Group Studies U G 1-5**

Selected topics focusing on Slavs and East Europeans and the countries of Eastern Europe.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

## Slavic Languages and Literatures

232 Cunz Hall, 1841 Millikin Road, 292-6733

**130 Slavic Languages and Cultures U 5**

History of the distribution of Slavic peoples; cultural impact of Slavic nations upon each other, their interaction with non-Slavic neighbors; language policies of Slavic nations.

Au Qtr. 4 cl. Taught in English. BER/LAC course.

**245 Introduction to Slavic Literature and Culture U 5**

Non-Russian Slavic literature in its cultural context; survey of the relationship of literature, art, music, and drama with emphasis on the late 19th century to the present.

Wi Qtr. 5 cl. Taught in English. BER/LAC/LAR course.

**294 Group Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 10 cr hrs including cr hrs earned in 294.01 through 294.09.

**519 Slavic Literature in English Translation from the Beginning to the Present U G 5**

Emphasis on masterpieces of non-Russian Slavic literatures; epic tradition, Kochanowski, Comenius, Obradovic, Mickiewicz, Shevchenko, Macha, Sienkiewicz, Reymont, Franko, Ukrainka, Vazov, Capek, and Hasek.

Sp Qtr. 4 cl. Not open to students with credit for 219.

**671 Grammar of Selected Slavic Languages U G 5**

Fundamentals of grammar required for reading one of the following: Belorussian, Lusatian, Macedonian, Slovak or Slovenian; the language to be taught will change each year. Wi Qtr. 5 cl. Prereq: Permission of instructor. Repeatable to a maximum of 25 cr hrs; individual languages not repeatable. Taught in English.

**672 Reading of Selected Slavic Languages U G 5**

Reading of elementary and intermediate texts and translation into English from one of the following: Belorussian, Lusatian, Macedonian, Slovak or Slovenian. Sp Qtr. 4 cl. Prereq: 671 (same language) or equiv. Repeatable to a maximum of 25 cr hrs; individual languages not repeatable. Taught in English.

**693 Individual Studies U G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of dept chairperson. Each decimal subdivision repeatable to a maximum of 20 cr hrs. These courses are graded S/U.

**693.20 Literature****693.30 Linguistics****693.40 Languages****693.50 Unspecified****694 Group Studies U G 1-10**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 10 cr hrs including cr hrs earned in 694.01 through 694.11.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**699 Senior Tutorial and Essay U 5**

Individual study which leads to the writing of an essay that will integrate the experience of earlier courses in Slavic.

Au, Wi, Sp Qtrs. Open only to sr majors in Slavic languages.

**H783 Honors Research U 3-5**

Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the Slavic courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**800 Bibliography G 1**

Required of all candidates for graduate degrees; acquaints grad students with bibliographical sources essential for research in Slavic and East European literature, linguistics, and pedagogy.

Au Qtr. 6 2-hr cl. Not open to students with credit for 880.

**810 Old Church Slavonic G 5**

Study of the earliest Slavic language; reading and linguistic interpretation of original documents.

Au Qtr. 5 cl. Not open to students with credit for Russian 810.

**812\* Readings in Church Slavonic Texts G 5**

Reading and analysis of Church Slavonic texts of the later period.

Wi Qtr. 3 cl. Prereq: 810 or permission of instructor. Not open to students with credit for Russian 812.

**821\* Structure of Selected Slavic Languages G 5**

Structure of any of the following: Belorussian, Bulgarian, Czech, Lusatian, Macedonian, Polish, Serbo-Croatian, Slovak, Slovenian, or Ukrainian.

Sp Qtr. 3 cl. Prereq: Permission of instructor. Repeatable to a maximum of 25 cr hrs; individual languages not repeatable.

**860 An Introduction to the Slavic Languages G 3**

A general survey of all the Slavic languages and their common features.

Sp Qtr. 3 cl.

**861\* History of the South Slavic Languages G 5**

Bulgarian, Macedonian, Serbo-Croatian, and Slovenian, with emphasis on Serbo-Croatian and its relation to the other South Slavic languages. Naylor.

Au Qtr. 3 cl. Prereq: Good command of Russian and acquaintance with a second Slavic language or permission of instructor.

**862†\* History of the West Slavic Languages G 5**

Polish, Czech, Slovak, Polabian, Kashubian, and Lusatian, with special emphasis on Polish and its relation to the other West Slavic languages. Robinson.

Sp Qtr. 3 cl. Prereq: Good command of Russian, and acquaintance with a second Slavic language or permission of instructor.

**864\* Comparative Slavic Grammar G 5**

Development of Indo-European phonology and morphology into Common Slavic and the development in contemporary Slavic languages.

Sp Qtr. 3 cl. Prereq: 860 or permission of instructor.

**870 Seminar in Slavic Philology G 3-5**

Historical and comparative studies in the Slavic languages and related language families, including Baltic and Finno-Ugric.

Sp Qtr. 2 cl. Repeatable to a maximum of 20 cr hrs.

**871\* Seminar in Slavic Linguistics G 3-5**

Descriptive and transformational studies in Russian and other Slavic languages.

Sp Qtr. 2 cl. Repeatable to a maximum of 20 cr hrs.

**993 Individual Studies G 2-10**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of chairperson. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions including cr hrs in 993.01 through 993.11. These courses are graded S/U.

**993.20 Literature****993.30 Linguistics****993.40 Languages****993.50 Unspecified****999 Research in Slavic G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Social and Behavioral Sciences, College of

166 Denney Hall, 164 West 17th Avenue, 292-8448

**294 Group Studies U 1-5**

Interdisciplinary studies in the social and behavioral areas.

Repeatable to a maximum of 15 cr hrs.

**694 Group Studies U G 1-5**

Interdisciplinary studies in the social and behavioral areas.

Repeatable to a maximum of 15 cr hrs.

## Social Work

300 Stillman Hall, 1947 College Road, 292-6288

**220 Introduction to Social Welfare U 3**

Exploration of the universality of human needs and the American experience in meeting those needs through the institutional arrangements of church, family, government, and market place.

Su, Au, Wi, Sp Qtrs. 3 cl. Designed primarily for freshmen and sophomores. SS Admis Cond course.



**240 Introduction to Social Work Profession and Practice U 3**

Social work within society and the community of professions; exploration of purposes, problems, and opportunities of practice; observation of, and exposure to, practice in the field. Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Designed primarily for freshmen and sophomores.

**494 Group Studies U 2-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered in social work.

Su, Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 10 cr hrs.

**503 Juvenile Delinquency: Its Treatment and Prevention U 5**

Juvenile delinquency as a social problem; methods of treatment and prevention, including juvenile courts, clinics, probation, parole, correctional institutions, child placement, and recreational programs.

Wi Qtr. 2 2½-hr cl. Prereq: 3rd or 4th year standing.

**509† Legal Aspects of Social Work U G 3**

Law as a means of social control; study of case, statute, and constitutional law most frequently involved in social work practice; legal aid.

Sp Qtr. 2 1½-hr cl. Prereq: 3rd or 4th yr standing or permission of instructor.

**511 Interviewing U 3**

Social work interviewing concepts, principles, processes, and skills are examined; particular interviewing approaches and techniques are reviewed; simulated interview situations are enacted and analyzed.

Su, Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Jr standing; designed primarily for social work majors.

**520 Problems, Policies, and Programs in Social Welfare I U 4**

An introduction to historical backgrounds and the utilization of an analytical framework in the study of the American social welfare system.

Au Qtr. 2 2-hr cl. H520 (honors) may be available to students enrolled in the Social Work honors program, or by permission of instructor. Prereq: Soc work major; nonmajors with permission only.

**521 Problems, Policies, and Programs in Social Welfare II U 4**

Application of an analytical framework to the study of current issues and problems of policies, programs and social welfare services in the perspective of the American welfare system.

Wi Qtr. 2 2-hr cl. Prereq: 520.

**533 Determinants of Social Functioning I U 4**

Study of life cycle, growth, and development from birth through adolescence from bio-psycho-social perspective; selected theories of personality discussed in relationship to growth and development.

Au Qtr. 2 2-hr cl. H533 (honors) may be available to students enrolled in the Social Work honors program, or by permission of instructor. Prereq: Jr. standing in soc work.

**534 Determinants of Social Functioning II U 4**

Study of life cycle from young adulthood through old age including dying and death; discussion of influences on social functioning of group relationships, organizations, and institutions.

Wi Qtr. 2 2-hr cl. Prereq: 533.

**570 Interpretation of Social Welfare Information U 4**

Examination of different kinds of social welfare data with a focus on data analysis; review of descriptive and inferential methods with a primary emphasis on interpretation.

Au Qtr. 2 2-hr cl. Prereq: Math 104.

**571 Introduction to Research Methods in Social Work U 4**

Science and society; research design; measuring variables; data collection, processing, and analysis.

Wi Qtr. 2 2-hr cl. H571 (honors) may be available to students enrolled in the Social Work honors program, or by permission of instructor.

**590 Social Welfare Policies Related to Social Work Practice U 3**

Broadens knowledge of the impact of social welfare policies and programs upon generalist social work practice in field placement settings.

Sp Qtr. 2 1½-hr cl. Prereq: 521. Students may not register for more than a total of 9 cr hrs under this number; subdivisions not repeatable.

**590.01 Child and Family Services****590.02 Corrections****590.03 Aging****590.04 Mental Retardation and Developmental Disabilities****590.05 Physical Health Care****593 Individual Studies U 1-5**

Individual study projects on problems and services in selected areas of social welfare; report required.

Su, Au, Wi, Sp Qtrs. Prereq: 10 cr hrs in soc work or related courses, approval of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**595 Integrative Seminar U 3**

Lectures and discussions designed to apply core curriculum content to areas of contemporary concern to social workers; focus on the development of assessment skills.

Sp Qtr. 2 1½-hr cl. Prereq: 521, 534, 571; nonmajors by permission only.

**600 Race and Ethnic Perspectives in Social Welfare U 3**

Problems and needs of oppressed populations will be addressed from a social work perspective.

Au, Wi, Sp Qtrs. 2 1½-hr cl. Prereq: Jr or sr standing. Not open to students with credit for 494B

**640 Social Work Generalist Practice U 3**

Broadens knowledge of social work generalist practice theory and roles in support of field placement settings.

Au Qtr. 2 1½-hr cl. Prereq: 644 and 645. Open to social work majors only.

**640.01 Child and Family Services****640.02 Corrections****640.03 Aging****640.04 Mental Retardation and Developmental Disabilities****640.05 Physical Health Care****644 Social Work Practice Lab U 3**

Introduction to practice-relevant communication, interactional group skills; extensive use of discussion-participation, role-play, and demonstration with help of audio-visual media.

Sp Qtr. 2 1½-hr cl. Concur: 645. Open only to social work majors.

**645 Social Work Practice I U 4**

Foundation professional values, practice knowledge and change-oriented action within a generalist ecological perspective for working with people at various levels of human systems.

Sp Qtr. 2 2-hr cl. Prereq: Jr standing and concur 644.

**646 Social Work Practice II U 4**

Values, knowledge, and skills of generalist social work practice with individuals and families by using an ecological problem-solving model.

Wi Qtr. 2 2-hr cl. Prereq: 644 and 645; soc work majors only.

**647 Social Work Practice III U 4**

Generalist-ecological framework with professional values, knowledge, and skills essential to effective intervention with small groups and community groups.

Sp Qtr. 2 2-hr cl. Prereq: 646. Open only to soc work majors. Not open to students with credit for 696.

**689 Field Practice U 1-18**

Placement in a social welfare organization used by the college as a teaching center; student expected to assume a service provision role in a progressively responsible manner.

Au, Wi, Sp Qtrs. Social agency assignments. Prereq: 644, 645, and permission of program coordinator. Repeatable to a maximum of 18 cr hrs.

**694 Group Studies U G 1-5**

Selected topics.

Su, Au, Wi, Sp Qtrs. Arr.

**H694 Thesis Seminar U G 2**

Direction will be provided to facilitate honors students and MSW students at designing a thesis proposal.

Sp Qtr. Arr. Prereq: H520, H533, H571, or MSW major. Not open to non-social Work majors.

**695 Integrative Seminars—Senior Year U 3**

Examines the various fields of social work practice; focuses on developing the ability to set practice goals, decide methods of intervention, implement, and evaluate consequences.

Sp Qtr. 2 1½-hr cl. Prereq: Sr standing. Repeatable to a maximum of 6 cr hrs.

**695.09 Alcoholism****695.10 Women's Issues****698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****700 Interprofessional Education**

Focus on ethical issues, changing professional/consumer rights, and interprofessional cooperation.

3-hr cl. Repeatable to a maximum of 6 cr hrs. Limited to students in allied medical professions, education, law, medicine, nursing, social work, and theology.

**700.01 Seminar on Interprofessional Care U G 3**

Treatment of the whole person through the analysis of the interrelated problems of actual patients/clients.

Wi, Sp Qtrs.

**700.02 Changing Societal Values U G 3**

Identification and clarification of values considerations as they relate to professional problems in dealing with consumer/clients/patients.

Sp Qtr.

**700.03 Ethical Issues U G 3**

Ethical issues of concern to the professions and arising out of the advanced technology: euthanasia, mind control, malpractice, and social responsibility of the professions.

Au Qtr.

**700.05 Interprofessional Seminar in Policy Analysis U G 3**

Explores interprofessionally the history, formation, and implementation of public policy issues of significance to seven helping professions.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**700.06 Care of Chemically Dependent Families U G 3**

Interprofessionally explores issues in the identification and treatment of chemical dependency within the family context.

Wi Qtr. Prereq: Permission of instructor. This course is graded S/U.

**700.07 Interprofessional Approaches to Child Abuse and Neglect G 3**

Interprofessionally explores issues in the identification, treatment, and prevention of child abuse and neglect.

Au Qtr. 1 2½-hr cl. Prereq: Permission of instructor. Limited to 12 students each in allied medicine, education, law, medicine, nursing, psychology, social work, and theology through Columbus Cluster.

**703 Seminars in Social Welfare Policy and Program Analysis P G 3**

Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 721 or equiv and written permission of instructor. Repeatable to a maximum of 9 cr hrs.

D— Law and Social Work

E— International Social Welfare

G— School

**710 Women's Issues in Social Work P G 3**

Examination of relevant issues in the professional practice of social work.

Su, Sp Qtrs. 1 2½-hr cl.

**711 Race and Ethnicity in Social Work Practice P G 3**

An analytical approach to problems, needs, and intervention for effective social work practice with the oppressed target populations of Appalachians and Blacks.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: Grad standing. Not open to students with credit for 794B.

**712 Social Welfare and the Jewish Community P G 3**

A study of the historical, cultural, and religious antecedents for the development of the current organization of Jewish Communal Services in the United States.

Sp Qtr. 1 2½-hr cl. Not open to students with credit for 794F.

**720 Social Welfare Policies and Programs I P G 3**

Historical and comparative analysis of social welfare systems; their relationship to change in the basic social institutions: family, church, government, and economic institutions.

Au Qtr. 1 2½-hr cl. Prereq: Soc work grad standing or permission of instructor.

**721 Social Welfare Policies and Programs II P G 3**

The development and application of a conceptual model for social welfare policy and program analysis.

Wi Qtr. 1 2½-hr cl. Prereq: 720.

**730 Seminars in Social Functioning P G 3-5**

Presentation and critical examination of personality, interactional, small group, and organizational and community concepts and approaches used in analyzing social dysfunction.

Su, Sp Qtrs. 1 2½-hr cl. Prereq: Soc work grad standing.

A— Institutional and Organizational Behavior

B— Psychopathology and Deviance

**733 Human Behavior and the Social Environment I P G 3**

Introductory course covering theories and concepts related to individuals and families as they develop over the life span; systems model provides a unifying framework.

Au Qtr. 1 2½-hr cl. Prereq: Soc work grad standing or permission of instructor.

**734 Human Behavior and the Social Environment II P G 3**

Continues applying the systems and life span frameworks to extra-familial environments (i.e., groups, communities, and cultures) that effect individual development and social functioning.

Wi Qtr. 1 2½-hr cl. Prereq: 733.

**735 Human Behavior and the Social Environment III P G 3**

Su, Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: Grad standing

**735.03 Social Work and Human Deviance**

Significance of individual and group behaviors that are at variance with social norms within a pluralistic society, particularly relevant to social work practice.

Not open to students with credit for 730B.

**740 Social Planning and Administrative Practice P G 3**

Preparation for social planning and administrative social work roles in public or private human service organizations, or adjunctive systems; guided by theoretical framework for organizational and community change and the values and ethics of the profession.

**741 Clinical Practice**

Theory and methods of clinical social work practice with individuals, families, and groups; social work philosophy and values in the study of assessment, evaluation, and methods of intervention.

**741.01 Introduction P G 3**

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 746.

**741.02 Individuals P G 3**

Su, Au Qtrs. 1 2½-hr cl. Prereq: 741.01.

**741.03 Conjoint Marital and Family Therapy P G 3**

Wi, Qtr. 1 2½-hr cl. Prereq: 741.01.

**741.04 Crisis Intervention P G 3**

Sp Qtr. 1 2½-hr cl. Prereq: 741.01.

**741.05 Groups P G 3**

Au Qtr. 1 2½-hr cl. Prereq: 741.01.

**741.09 Special Topics P G 2-5**

Au, Wi, Sp, Su Qtrs. Arr. Repeatable to a maximum of 20 cr hrs.

**742 Administrative Aspects of Practice in Human Services Organizations**

Examines generic functions and processes of administration in relation to a conceptual framework for the management of human services professionals, based in a social work value orientation; application to public and voluntary social welfare/human services organizations.

**742.01 Introduction P G 3**

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 746.

**742.02 Staffing P G 3**

Au Qtr. 1 2½-hr cl. Prereq: 742.01.

**742.05 Financial Management P G 3**

Wi Qtr. 1 2½-hr cl. Prereq: 742.01.

**742.06 Management Information Systems P G 3**

Sp Qtr. 1 2½-hr cl. Prereq: 742.01.

**742.09 Special Topics P G 2-5**

Au, Wi, Sp Qtrs. Arr. Prereq: 744 and 745. Repeatable to a maximum of 20 cr hrs.

**742.10 Supervision P G 3**

Sp Qtr. 1 2½-hr cl. Prereq: 730A.

**743 Social Planning Aspects of Practice**

Concepts and strategies involved in the design, planning, implementation, monitoring, and evaluation of social delivery.

**743.03 Neighborhood and Community Development P G 3**

Sp Qtr. 1 2½-hr cl. Prereq: 746.

**743.06 Theories of Social Welfare Planning P G 3**

Historical and current views of planning are examined for their value in understanding social welfare planning theory; the role of government and private forces are examined for their respective contributions to the development of contemporary social planning theory.

Au Qtr. 1 2½-hr cl. Prereq: 743.03. Not open to students with credit for 743.04.

**743.07 Social Welfare Planning Methods P G 3**

Contemporary social welfare planning techniques and processes essential to the design, implementation, and evaluation of social welfare services are examined for their application in governmental and not-for-profit institutional delivery systems.

Wi Qtr. 1 2½-hr cl. Prereq: 743.03. Not open to students with credit for 743.01.

**744 Social Work Practice Lab P G 2**

Experiential learning to complement the theoretical constructs studied in 745.

Au Qtr. 1 3-hr cl. Prereq: Soc work grad standing; concur 745.

**745 Practice and Profession I P G 3**

Emerging development of social work, its fundamental goals, knowledge, values, ethics, and interventive approaches focusing primarily on micro- and mezzo-ecosystems and a beginning conceptual framework for practice.

Au Qtr. 1 2½-hr cl. Prereq: Soc work grad standing; concur 744.

**746 Practice and Profession II P G 3**

Continued examination of key elements of social work focusing primarily on mezzo- and macro-ecosystem approaches, and concluding with an integrated framework for social work practice.

Wi Qtr. 1 2½-hr cl. Prereq: 744 and 745. Open only to SWK majors.

**750 Social Welfare Policies and Programs P G 3**

Unique and specific aspects of social welfare policies and programs in selected fields of Social Work which augment Clinical and Social Planning/Administration concentrations.

Au, Wi Qtrs. 1 2½-hr cl. Prereq: 721. Students may not register for more than a total of 9 cr hrs under this number; subdivisions not repeatable.

**750.01 Child and Family Services**

Understanding and application of the analytic model of social welfare policies and programs with special emphasis on the disadvantaged as applied to child and family social work practice.

**750.02 Aging**

Examination of social welfare policies affecting the elderly; identification of current and future issues and comparison of international, federal, state, and local programs.

**750.03 Health**

Analysis of social and economic policies and political forces which influence the delivery of health services and the role of social workers in health care.

**750.04 Mental Health**

Utilizing a social policy analytic framework; introduces social welfare policy issues and program organization.

**750.05 Mental Retardation and Developmental Disabilities**

Focuses on analysis of problems, policies, and programs which affect practice with the MR/DD population and their families.

**751 Social Work Practice P G 3**

Unique and specific aspects of social work practice in related fields and social work which augment clinical and social planning/administration concentrations.

Au, Wi, Sp Qtrs. 1 2½-hr cl. Prereq: 746. Students may not register for more than a total of 9 cr hrs under this number; subdivisions are not repeatable.

**751.01 Child and Family Services**

Develops advanced skills in dealing with problems of children and their families to assure protection and permanency through direct and indirect social work intervention.

**751.02 Aging**

Theoretical perspectives relevant to the aging process are examined; review of special concerns and treatment modalities unique to adults in middle and later years.

**751.03 Health**

Knowledge and skills for specialized social work practice in health; clinical, planning, and administrative roles in several subspecialties are addressed.

**751.04 Mental Health**

Provides knowledge and skills in clinical, and planning/administrative modes of practice in a range of mental health settings with selected target populations.

**751.05 Mental Retardation and Developmental Disabilities**

Provides advanced knowledge and skills of multiple social work roles in working with MR/DD clients and their families.

**770 Research Methods in Social Work P G 3**

Basic research methodology; the role of research in social work.

Su, Au Qtrs. 1 2½-hr cl. Prereq: Soc work grad standing or permission of instructor.

**771 Data Analysis Designs P G 3**

Interpretation of social work data; quantitative techniques; designs of data analysis.

Su, Wi Qtrs. 1 2½-hr cl. Prereq: Soc work grad standing or permission of instructor.

**775 Methods and Techniques in Social Work Research**

The study of methodological issues in social work research; focus on the various phases of research process.

1 2½-hr cl. Prereq: 770.

**775.01 Needs Assessment in the Human Services P G 3**

Su, Sp Qtrs.

**775.02 Data Processing Methods P G 3**

Au Qtr.

**775.09 Special Topics P G 2-5**

Arr. Repeatable to a maximum of 20 cr hrs.

**789 Field Practicum I P G 1-15**

Integration of field practice with social work practice theory.

Su, Au, Wi, Sp Qtrs. Prereq: 744 and 745. Placement in assigned human service organization 2 days wkly. Normally scheduled Wi and Sp Qtrs. Arr with student's faculty adviser. Open only to SWK majors. Repeatable to a maximum of 15 cr hrs.

**793 Individual Studies P G 1-5**

Directed readings and tutorials related to specific problems.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work grad standing, permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**794 Group Studies U P G 1-4**

Group seminars in specialized areas of curriculum.

Su, Au, Wi, Sp Qtrs. Prereq: Soc work grad standing, permission of instructor. Repeatable to a maximum of 15 cr hrs.

**875 Seminars on the Application of Evaluation Designs to Social Work Research**

Application of experimental design to the evaluation of outcomes in social work practice; focus on types of design, collection, analysis, and interpretation of data for agency decision-making; practicum and/or evaluation proposals required.

**875.01 Single Case Design G 3**

Su, Sp Qtrs. 1 2½-hr cl. Prereq: 770.

**875.03 Macro Program Evaluation G 3**

Au Qtr. 1 2½-hr cl. Prereq: 770.

**889 Field Practicum II P G 1-15**

Designed to permit students to achieve greater autonomy and to maximize skill development in the integration of social work theory and practice.

Placement 3 days wkly Au, Wi, Sp Qtrs in a human service organization in accordance with student's primary mode of intervention. Prereq: 789. Repeatable to a maximum of 21 cr hrs.

**894 Group Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: MSW or equiv with written permission of instructor. Repeatable to a maximum of 20 cr hrs, not more than 10 of which shall be in any one of the following areas.

- A— Social Work Practice
- B— Social Welfare Policy
- C— Dynamics of Social Functioning
- D— Other

**920 Seminar in Social Welfare Policies and Programs I G 5**

Analysis and evaluation of policy formulation and implementation; utilization of an analytical model to study a matrix of conditions and issues in policy development.

Au Qtr. 1 3-hr cl. Prereq: MSW or permission of instructor.

**921 Seminar in Social Welfare Policies and Programs II G 5**

Analysis of demographic, political, economic, and other influences upon social policy planning; evaluation of policy planning effectiveness.

Au Qtr. 1 3-hr cl. Prereq: 920 or permission of instructor.

**933 Seminar in Social Functioning I G 5**

Critical examination of selected biological, psychological, and social determinants of social functioning and dyadic, small group, organizational, and community levels of analysis.

Wi Qtr. 1 3-hr cl. Prereq: MSW or permission of instructor.

**934 Seminar in Social Functioning II G 5**

Discussion of problems inherent in the selection of knowledge from the social, behavioral, and biological sciences that have applicability and utility for social work practice.

Au Qtr. 1 3-hr cl. Prereq: 933 or permission of instructor.

**945 Seminar in Social Work Practice I G 5**

Examination of issues and challenges that confront social work as a profession and practice; emphasis on underlying knowledge and values.

Au Qtr. 1 3-hr cl. Prereq: MSW or permission of instructor.

**946 Seminar in Social Work Practice II G 5**

Comparative analysis of theoretical approaches and models of social work practice; emphasis on development of individual frame of reference.

Sp Qtr. 1 3-hr cl. Prereq: 945 or permission of instructor.

**970 Seminar in Social Work Research I G 5**

Examination and evaluation of research designs and their purposes; basic methodology, construction of hypothesis, data collection, and statistical methods.

Wi Qtr. 1 3-hr cl. Prereq: MSW or permission of instructor.

**971 Seminar in Social Work Research II G 5**

Continuation of 970 toward the development of a research proposal.

Sp Qtr. 1 3-hr cl. Prereq: 970 or permission of instructor.

**993 Individual Studies G 1-5**

Directed readings and tutorials related to specific problems and issues in following areas:

- A— Social Work Practice
- B— Social Welfare Policy
- C— Dynamics of Social Functioning
- D— Social Work Research
- E— Social Work Education
- F— Other

Su, Au, Wi, Sp Qtrs. Prereq: MSW or permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**995 Integrative Seminar on Social Issues G 5**

Examination of selected social issues relevant to social work with emphasis on synthesis between fields of knowledge.

Sp Qtr. 1 3-hr cl. Prereq: 921, 934, 946, and 971.

**998 Research in Social Work: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Social Work: Dissertation G Arr**

Research for dissertation purposes only.  
Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Sociology

300 Bricker Hall, 190 North Oval Mall, 292-6681

**101 Introductory Sociology U 5**

Fundamental concepts of sociology and an introduction to the analysis of social problems.

Su, Au, Wi, Sp Qtrs. 5 cl. H101 (honors) may be available to students enrolled in an honors program. Not open to students with credit for 201 or equiv or Rurl Soc 105 or equiv. BER/LAC/LAR course. SS Admis Cond course.

**202 Social Problems U 5**

Analysis of contemporary social problems.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. BER/LAC/LAR course. SS Admis Cond course.

**208†\* Contemporary Social Movements U 3**

An analysis of social movements and the issues and ideologies which underlie them.

Au Qtr. 3 cl. SS Admis Cond course.

**209 Introduction to Criminal Justice U 5**

Examination of the development and administration of criminal law and agencies (police, prosecutors, courts); emphasis on criminal proceedings and their justification. Peterson and Scott.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Criminol 209. SS Admis Cond course.

**210 Sociological Aspects of Deviance U 5**

Study of the definition, identification, treatment, and control of types of legal, moral and status deviance, such as crime, mental illness, alcoholism and other individual pathologies. Lundman.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for Criminol 210. SS Admis Cond course.

**250 Types of Sociological Inquiry U 5**

Introduction to sociological research techniques, methodological approaches, and relevant quantitative procedures. Himmelfarb, Houseknecht, and Jiobu.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs.

**294 Group Studies U 3-5**

Topics vary each quarter offered.

Au Qtr. Prereq: 101. Repeatable to a maximum of 10 cr hrs.

**298 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**298.01 Domestic****298.02 Foreign****301 Contemporary World Societies: Social Institutions and Social Change U 5**

Sociological analysis of contemporary world societies—nonindustrialized, industrializing, and industrialized—with special attention to major social institutions and patterns of social change. Bradshaw and Li.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: History 111 and 112, or 131 and 132, or 151 and 152, or 171 or 172; and 5 cr hrs in social and behavioral sciences.

**302† Technology and Global Society U 5**

Social aspects of technology, social change, and technological development; underdevelopment and the global economy. Bradshaw.

Sp Qtr. 5 cl.

**306 Sociology of Poverty U 5**

A study of low-income peoples, especially concerning the effect of poverty on them, and their consequent social participation.

Au Qtr. 5 cl. Not open to students with credit for 206. BER course. SS Admis Cond course.

**313 World Population Problems U 5**

A general non-technical introduction to population studies, emphasizing how population growth and structure have caused or aggravated social problems in various countries. Krivo.

Au Qtr. 5 cl. Not open to students with credit for 213. SS Admis Cond course.

**320 Sociology of Education U 5**

Current social trends as they affect education; backgrounds of school children, social status of teachers, role of power and bureaucracy. Corwin and Himmelfarb.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 220. SS Admis Cond course.

**330 Varieties of Modern Marriage U 5**

Examination of sociological and social-psychological research describing and interpreting emerging pluralistic patterns of man-woman and parent-child relationships. Houseknecht and Menaghan.

Su, Au, Wi, Sp Qtrs. 5 cl.

**345 Contemporary American Society U 5**

An exposition of the structural patterns of American society, using sociological theories and data but integrating them into a general view. Hamilton and Richardson.

Au Qtr. 5 cl. H345 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 545. BER/LAC/LAR course.

**366 Power and Society U 5**

A sociological analysis of power and society; theories and methods of power analysis. Jenkins.

Wi Qtr. 5 cl.

**370 Social Factors in Personality U 5**

Analysis of relationships between social structure and personality; language; its consequences for social behavior; socialization: learning of motives and social roles; personality: development, organization, and disorganization. Alonzo, Franklin, and Parcel.

Au, Sp Qtrs. 5 cl. Not open to students with credit for 470.

**380 American Ethnic Relations U 5**

Survey of the attitudes and relationships arising from the contacts of various racial and ethnic groups in the United States. Jiobu and Krivo.

Au Qtr. 5 cl. Not open to students with credit for 280 or 480. BER course. SS Admis Cond course.

**390 Cities and Urban Life U 5**

The place of the city in social organization; the emergence, nature, and problems of modern urbanism; projects based on census and field data. Krivo and Schwirian.

Au Qtr. 4 cl. Not open to students with credit for 290 or 490. BER course.

**391 The Community U 5**

Development of the modern community; approaches to the study of communities; significance of processes and value systems for community organizations and disorganization. Schwirian.

Wi Qtr. 4 cl. BER course. Not open to students with credit for 590.

**405 Collective Behavior U 5**

Examination of the dynamic social processes characteristic of mass societies through an analysis of crowds, mobs, cults, and publics. Taylor.

Wi Qtr. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 605.

**407 Social Change U 5**

Recent social changes, especially in Western civilization and the United States; types of societies in historical perspective; requirements of a good society. Bradshaw.

Au Qtr. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 207. BER/LAC/LAR course.

**410 Criminology U 5**

The nature, variation, and causes of crime and delinquency; studies of criminal liability, criminal careers, and organized racketeering. Lundman, Peterson, and Scott.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for Criminol 410. BER course.

**430 Sociology of the Family U 5**

Analysis of relationships between the family and the larger society including mate selection, status of women, and patterns of husband-wife and parent-child relationships. Houseknecht, Menaghan, and Tien.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. BER course.

**434 The Child and Society U 5**

A study of the ways in which society socializes children; current breakdown in the socializing processes and implications for the school and other educational agencies. Hinkle and Menaghan.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol.

**435 Sociology of Women U 5**

Analysis of sex-roles and social structure with emphasis on modern social movements concerned with redefining sex-role relationships. Richardson and Taylor.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol.

**450 Illness and Social Behavior U 5**

Study of cultural, social, psychological, and sociological factors in disease processes, distribution of disease, definition of illness, organization of health professions and facilities. Alonzo.

Au Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

**451 Sociology of Law U 5**

The relationship between law and social order; evolutionary aspects of law, comparative legal systems, procedural and substantive problems, emerging moral and normative issues. Peterson.

Au, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for Criminol 451.

**462 Sociology of Organizations U 5**

Functioning of large complex social groupings; goals, structures, coordination, dispersion, survival, change as seen in various organizations: e.g.—governmental, educational, religious, business, and occupational organizations. Corwin.

Au Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

**463 Social Stratification U 5**

Class distinction as a phase of social differentiation; origin and characteristics of social class; significance for modern society of class consciousness, class struggle, and social mobility. Kaufman, Tien, and Wallace.

Au, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. BER/LAC/LAR course.

**464 Sociology of Work and Industry U 5**

Analysis of work organization; control and authority relationships in the workplace; comparative studies of work and labor movements; industrial decline; automation. Jiobu and Wallace.

Wi, Sp Qtrs. 5 cl, some field trips (e.g. factory visits) may be available. Prereq: 5 cr hrs in sociol. BER course.

**465†\* Work and Leisure in Mass Society U 4**

An analysis of current relationships between work and leisure, emphasizing social implications of increased leisure time and changing conceptions of work and leisure.

Au, Wi Qtrs. 4 cl. Prereq: 5 cr hrs in sociol.

**466 Sociology of Occupations and Labor Markets U 5**

Analysis of occupational differentiation; differences in work experience and outcomes across occupations; work within organizations; work and labor markets; race and sex differences in work. Parcel.

Au Qtr. 2 2-hr cl. Prereq: 5 hrs in sociol. Not open to students with credit for this topic under 694.02.

**467 Sociology of Religion U 5**

The social role of religious institutions and beliefs, with particular reference to the United States; the relation between religion and other aspects of society. Himmelfarb.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in sociol.

**488 Introduction to Sociological Theory U 5**

Introductory statement of the nature of sociological theory, its basic problems, assumptions, major types and orientations, and principal contributions to the discipline. Hinkle, Meyer, and Wallace.

Su, Au, Wi Qtrs. 5 cl. Prereq: 5 cr hrs in sociol.

**498 Study Tour U 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**498.01 Domestic****498.02 Foreign****503 Contemporary Soviet Society U G 5**

Organization, development, and problems of the Communist Party, the collective farm, the school, professional occupations, economic planning, and other contemporary Soviet institutions. Slomczynski.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 403.

**510 Women, Crime, and the Legal System U 5**

Analysis of females as participants in and victims of crime, the treatment of women in the criminal justice system, women as workers in criminal justice fields. Peterson.

Wi Qtr. 5 cl. Prereq: 5 cr hrs in sociol or criminol.

**511 Sociology of Youth and Crime U G 5**

A sociological perspective on youth and crime; special attention to the magnitude of youth crime, theories, juvenile justice systems, and prevention and control efforts. Lundman.

Au Qtr. 5 cl. Prereq: 5 cr hrs in sociol or criminol.

**549 Quantitative Research Techniques in Sociology I U G 5**

An introduction to the application and interpretation of quantitative analysis in sociological research; emphasis on the description of social variables and hypothesis testing. Jiobu, Krivo, Menaghan, and Wallace.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 650.

**581\* The American Jewish Community U G 5**

American Jewish life-styles and organizational patterns—Jewish history, demography, institutions, religious participation, politics, relationships with non-Jews, new movements and issues. Himmelfarb.

Sp Qtr. 5 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 281. SS Admis Cond course.

**589\* Field Work in Sociology U 5****589.01 Field Work: Sociology**

Practicum in the collection of sociological data through field work; identification of research problem; development of data collection methods; data processing and analysis.

Wi Qtr. 2 cl, 2-hr labs. Prereq: 10 cr hrs in sociol and permission of instructor. Not open to students with credit for 589.

**589.02 Field Work: Criminology and Criminal Justice**

Practicum in criminology and/or the criminal justice system.

Au, Wi, Sp Qtrs. Prereq: 10 cr hrs in sociol or criminol and permission of instructor.

**601 Comparative Family Organization U G 5**

Analysis of family organizations in various societies, emphasizing the impact of changing world conditions on family and kinship structures. Houseknecht.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 432.

**602 Sociology of Sex Roles U G 5**

Sociological aspects of sex differentiation and sex-role behavior, including studies of sexual stratification and division of labor, sex-role socialization, and sex-role performance. Richardson and Taylor.

Sp Qtr. 5 cl. Prereq: 435 or grad standing.

**606 Social Movements and Collective Behavior U G 5**

An examination of theories and research on non-traditional group efforts to change social systems and institutions; emphasis on contemporary societies and movements. Jenkins and Taylor.

Au Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 710 or 805.

**608 Sociological Aspects of Mass Communication U G 5**

Examination of structure and functions of mass communication systems in contemporary mass societies, including the relationship between mass media organizations and other institutions. Curry.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in social.

**610 Sociology of Deviant Behavior U G 5**

An examination of the nature, types, and societal reactions to deviant behavior; special emphasis on the process of stigmatization and the emergence of deviant subcultures. Dinitz and Peterson.

Au Qtr. 5 cl. Prereq: 10 cr hrs in social and/or criminal or grad standing. Not open to students with credit for Criminol 610.

**611 Penology U G 5**

The treatment of adult offenders in detention and incarcerations; short and long term institutions. Dinitz and Scott.

Au, Sp Qtrs. 5 cl. Prereq: 410 or Criminol 410. Not open to students with credit for Criminol 611.

**615 Control and Prevention of Crime and Delinquency U G 5**

Analysis of the operational effectiveness of special measures and programs pointed toward the control and prevention of crime and delinquency. Lundman and Scott.

Au Qtr. 1 2-hr cl. One field project. Prereq: 610 or Criminol 610, and sr standing. Not open to students with credit for Criminol 615.

**618 Sociology of Police and Policing U G 5**

Sociological understanding of the origins of routine police conduct and misconduct; representative topics include police-citizen encounters and police abuse of discretion. Lundman.

Sp Qtr. Prereq: Criminol 310 or 410 or grad standing or permission of instructor. Not open to students with credit for Criminol 618.

**Special Topics in Cultural Anthropology: Psychological Anthropology**

See Anthropology 620.12.

**623\* Advanced Sociology of Education U G 5**

Comparisons of the structures and functions of educational systems, elementary through university; recruitment and allocation of personnel and resources, power, conflict, and boundary maintenance. Corwin.

Sp Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 523.

**629 Sociology of Health: Mental and Physical Dimensions U G 5**

Analysis of sociological and social psychological aspects of mental and physical disorders, and types of illness behavior associated with mental and physical illness. Alonzo.

Au Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 831.

**630 Medical Sociology U G 5**

Sociological analysis of the distribution of disease, and the nature of health care institutions, health professions and the delivery of health care services. Alonzo.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 730.

**635 Men in Society U G 5**

The social psychology of males, their relationships with females, other males, and society; emphasis on socialization, social roles, sexuality, etc. Franklin.

Au Qtr. 4 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 694.07 taken Au Qtr 1981, Au Qtr 1982, or Au Qtr 1983.

**640 Sociology of Everyday Life U G 5**

A basic course in ethnomethodology; a survey of the basic literature; study of the taken-for-granted, verbal and non-verbal features of social interaction; involves making observations and descriptions. G. Hinkle.

Wi Qtr. 4 cl. Prereq: 10 cr hrs in social or grad standing.

**648 Qualitative Methods in Sociology U G 5**

A survey of qualitative approaches to social research, including participant observation, intensive interviewing, and archival/documentary analysis. Taylor.

Wi Qtr. 5 cl, fieldwork. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 704.

**649 Quantitative Research Techniques in Sociology II U G 5**

Assumptions, principles, and applications of the multiple regression model in sociological practice; basic model, dummy variables, and special functional forms. Kaufman and Krivo.

Wi Qtr. 5 cl. Prereq: 549 or 650 or equiv. Not open to students with credit for 884.09 Sp Qtr 1986.

**651 Approaches to Sociological Inquiry U G 5**

Theory and practice in essentials of the research process; comparison of alternative approaches and design models; questionnaire construction, interview techniques, and related problems. Li and Parcel.

Sp Qtr. 3 cl, project. Prereq: 10 cr hrs in social or grad standing.

**652 Sociological Survey Research Methods I U G 5**

Design of sociological survey research: question format, questionnaire design, alternative modes of administration, etc; hands-on practice in Computer Assisted Telephone Interviewing (CATI).

Au Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing.

**653 Sociological Survey Research Methods II U G 5**

Administration and analysis of sociological surveys; emphasis on development, administration, and analysis of original survey of students (Ohio State Student Survey) using CATI system.

Wi Qtr. 5 cl. Prereq: 652 or written permission of instructor.

**655 Sociology of Sport U G 5**

Sport from a sociological perspective: relationship of sport to social institutions; socialization into sport; stratification within sports; sport and small group analysis. Curry.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in social. Not open to students with credit for 555.

**660 Comparative Social Organization U G 5**

A comparative analysis of organizational characteristics and functioning in different cultural settings. Corwin.

Sp Qtr. 4 cl. Prereq: 10 cr hrs in social or grad standing.

**662 Small Groups U G 5**

Analysis of group structure and processes; examination of roles, interpersonal structure, leadership; observation of groups in laboratory and non-laboratory settings. Curry.

Au Qtr. 5 cl. Prereq: 10 cr hrs in social or grad standing. Not open to students with credit for 661 or 772.

**666 Political Sociology U G 5**

Examination of structures, continuities, and processes of change; of models and building blocks; and of social contexts of power and dynamic forces altering political systems. Hamilton and Meyer.

Au Qtr. 3 cl. Prereq: 10 cr hrs in sociol or grad standing.

**667 Sociology of Elites U G 5**

Empirical studies of the "higher circles" in the United States; reviewing studies in the upper class, bourgeoisie, ruling class, and specialized elites. Hamilton.

Wi Qtr. 5 cl. Prereq: 10 cr hrs in sociol or grad standing.

**671 Population Studies I: Theory, Substance, and Techniques U G 5**

Survey of population studies covering sources of demographic data, mortality, and fertility. Li, Nambodiri, and Tien.

Wi Qtr. 3 cl. Prereq: 5 cr hrs in sociol. Not open to students with credit for 550.

**672 Population Studies II: Theory, Substance, and Techniques U G 5**

Continuation of survey of population studies covering models of population growth, population theories, migration, population estimations and projections, population problems, and policy decisions. Krivo.

Sp Qtr. 5 cl. Prereq: 671 and Math 152 or equiv recommended. Not open to students with credit for 751.

**680 Sociology of Changing Life Styles U G 5**

An in-depth look at some emerging life style patterns, such as dual-career marriages, childless marriages, single-parent families, blended families, singlehood, cohabitation, etc. Houseknecht.

Wi Qtr. 2 2-hr cl. Prereq: 10 cr hrs in sociol or grad standing.

**682 Earlier Developments in Sociological Theory U G 5**

Analysis of classical systems and their representatives, e.g., positivistic social evolutionism (Compte, Spencer, Durkheim), historical materialism (Marx-Engels), and humanistic idealistic reactions (Toennies, Simmel, M. Weber). Jenkins.

Au Qtr. 2 2-hr cl. Prereq: 10 cr hrs in sociol or grad standing.

**683 Later Developments in Sociological Theory U G 5**

Analysis of systematic orientations, e.g., social action (Znaniecki, MacIver, Parsons), functionalism (Parsons, Merton), conflict (Dahrendorf, Coser), social exchange (Blau), ethnomethodology (Garfinkel), newer structuralism (Levi-Strauss). Jenkins.

Wi Qtr. 2 2-hr cl. Not open to students with credit for 782.

**693 Individual Studies**

Su, Au, Wi, Sp Qtrs. Prereq: 10 cr hrs in sociol, or grad standing, and permission of instructor. Repeatable to a maximum of 15 cr hrs for each decimal subdivision. These courses are graded S/U.

693.01 Sociological Theory U G 1-5

693.02 Social Organization and Planning U G 1-5

693.03 Medical Sociology U G 1-5

693.04 Criminology and Criminal Justice U G 1-5

693.05 Sociology of Education U G 1-5

693.06 Race/Ethnic/Minority Relations U G 1-5

693.07 Social Psychology U G 1-5

693.08 The Family U G 1-5

693.09 Research Methodology U G 1-5

693.10 Urban/Community/Ecology U G 1-5

693.11 Labor Market/Economy and Society U G 1-5

693.12 Political Sociology U G 1-5

693.13 Population/Demography U G 1-5

693.14 Gender U G 1-5

693.15 Unclassified U G 1-15

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs.

**694 Group Studies U G 3-5**

Au, Wi, Sp Qtrs. Prereq: 10 cr hrs in sociol or grad standing. Repeatable to a maximum of 15 cr hrs for each decimal subdivision. Topics vary each qtr offered.

694.01 Sociological Theory

694.02 Social Organization

694.03 Medical Sociology

694.04 Criminology and Criminal Justice

694.05 Sociology of Education

694.06 Race/Ethnic/Minority Relations

694.07 Social Psychology

694.08 The Family

694.09 Research Methodology

694.10 Urban/Community/Ecology

694.11 Labor Markets/Economy and Society

694.12 Political Sociology

694.13 Population/Demography

694.14 Gender

694.15 Unclassified

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

698.01 Domestic

698.02 Foreign

**General Prerequisites for Courses Numbered 700**

Unless otherwise indicated, the prerequisites for 700-level courses are 30 qtr hrs in the same discipline numbered 400 or higher of which 15 hrs must be at the 600 level.

**Advanced Topics in National Security**

See NSP Std 702.

**705 Construction and Verification of Theory U G 5**

The actual practice of theory construction and its underlying logic. Nagi.

Au Qtr. 3 cl, project. Prereq: 250 or equiv. Not open to students with credit for 704.01. Repeatable to a maximum of 10 cr hrs.

**706 Experimental Research Methods U G 5**

Survey and analysis of research designs employing experimental methods to study human relations in various settings; business/industry, sports/recreation, home/family life, etc. Curry.

Wi Qtr. 3 cl, project. Prereq: 5 cr hrs in sociol.

**707 Problems in Quantitative Analysis U G 5**

A survey of advanced problems in the multivariate analysis of sociological data; topics covered include elaboration and specification, causal inference in nonexperimental research and path analysis. Nambodiri and Schwirian.

Sp Qtr. 5 cl. Prereq: 650 or equiv. Not open to students with credit for 704.03. Repeatable to a maximum of 10 cr hrs.

**708 Problems in Qualitative Analysis U G 5**

Problems and techniques of non-quantitative data analysis including case studies, participant observation, field diary, autobiography, and historical records. Richardson.

Sp Qtr. 5 cl. Prereq: 648.



**709 Historical Sociology U G 5**

Assessment of major studies in historical sociology by focusing on their internal logic, the supporting evidence, and the subsequent research. Hamilton.

Wi Qtr. 5 cl. Prereq: 648.

**711 Sociology of Work and Industry U G 5**

A survey of selected topics in sociology of industrial and work relations; control, administration, leadership, and occupations; theoretical approaches to the study of industrial relations. Wallace.

Wi Qtr. 5 cl. Not open to students with credit for 811.

**718 Advanced Criminology U G 5**

A critical study of the most important aspects of criminology. Dinitz.

Sp Qtr. Prereq: 410 or equiv.

**742\* Human Ecology U G 5**

Analysis of problems of urban structure from the ecological perspective. Schwirian.

Wi Qtr. 5 cl. Not open to students with credit for 842.

**751 Population Studies U G 5**

A more intensive introduction to demography parallel to 550; mainly for graduate students in sociology who lack undergraduate training in the field and want to continue in it. Krivo and Tien.

Au Qtr. 5 cl. Not open to students with credit for 550 or equiv.

**752 Principles and Techniques of Scale Construction U G 5**

Approaches and techniques in the development and testing of social measurement instruments. Meyer.

Wi Qtr. 3 cl, project. Prereq: 650 or equiv or Soc Work 540.

**754 Demographic Analysis U G 5**

An exposition of census data and vital statistics, demographic rates, life tables, cohort analysis, and similar elementary techniques and data sources in demography. Li and Namboodiri.

Wi Qtr. 5 cl. Prereq: 1 course in general statistics. Not open to students with credit for 619.

**755\* The Social Context of Human Fertility U G 5**

A critical and methodological analysis of fertility, with special emphasis on the social context of reproductive behavior in American society. Tien.

Au Qtr. 5 cl.

**756\* Migration and Social Mobility U G 5**

Theories and models of population mobility; determinants and consequences of the migration process; policy implications of rural-urban migration. Li.

Sp Qtr. 3 cl, 1 lab hr.

**760 International Inequality and Underdevelopment U G 5**

Sociological theories of development and research on issues in comparative development in the global system.

Wi Qtr. 2 2-hr cl. Prereq: 10 cr hrs in sociol or grad standing.

**761 Social Stratification U G 5**

A survey of major theories, issues, and empirical literature on societal stratification and inequality with particular focus on the United States. Kaufman.

Au Qtr. 5 cl. Not open to students with credit for 861.

**766 Advanced Sociology of Labor Markets and Occupations U G 5**

Theory and research covering labor market segmentation; occupational and organizational perspectives on markets; work authority and local markets; markets as structures; market effects on worker outcomes. Parcel.

Wi Qtr. 2 2-hr cl.

**770 Individual in Society U G 5**

Analysis and synthesis of the major theories and findings of social psychology. Franklin.

Wi Qtr. 5 cl.

**771\* Symbolic Interaction G 5**

Analysis of the relationship between the individual and the social structure; particular reference paid to the symbolic interaction orientation. Alonzo and G. Hinkle.

Au Qtr. 5 cl. Not open to students with credit for 871.

**780 Racial and Ethnic Differentiation U G 5**

An analysis of the origin, persistence, adaptation and change of systems and racial and ethnic differentiation. Himmelfarb and Jobbu.

Su Qtr. 3 cl.

**H783 Honors Research U 3-5**

A conference-thesis course; subject matter will vary depending upon the student's topic.

Su, Au, Wi, Sp Qtrs. Arr. This course is graded S/U.

**H783.01 Sociology**

Prereq: 4th yr standing with a grade of A in at least half of the sociol courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in sociol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 10 cr hrs, including cr hrs earned in H783. This course is graded S/U.

**H783.02 Criminology and Criminal Justice**

Prereq: 4th yr standing with a grade of A in at least half of the criminol and/or sociol courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degree BA *with distinction* in criminol. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 10 cr hrs, including cr hrs earned in Criminol H783.

**790 Social Organization of the Community U G 5**

An examination of the nature, structures, processes, and trends of social organization of modern communities. Schwirian.

Au Qtr. 3 cl.

**792 Structural Sociology U G 5**

Key concepts, issues, recent trends in the study of social structure with special emphasis on formal social organizations, social stratification, comparative social systems, groups and research methods. Corwin.

Au Qtr. 5 cl. Prereq: Grad standing in sociol.

**Studies in National Security Policy**

See NSP Std 795.

**General Prerequisites for Courses Numbered 800**

*Unless otherwise indicated, the prerequisites for 800-level courses are 30 qtr hrs in the same discipline at the 600 level or higher, of which 15 hrs must be at the 700 level.*

**800 Proseminar in Sociology G 2**

Each week an area of specialization within sociology will be discussed by a professor whose major interest is in that area; provides an overview of special topics and current issues.

Au, Wi, Sp Qtrs. 2 cl. Repeatable to a maximum of 6 cr hrs. Open only to 1st year grad students in sociol. This course is graded S/U.

**820\* Seminar in the Sociology of Education G 5**

Special problems will be considered in different quarters, including urban education, student movements, bureaucratic-professional problems, school-community relations, and innovation. Corwin and Himmelfarb.

Su Qtr. 3 cl. Repeatable to a maximum of 10 cr hrs.

**830\* Seminar in Medical Sociology: Problems in the Sociology of Health Organization G 5**

Analysis of theory and research bearing upon the role of medicine in society and the health organizations on national, community, and institutional levels. Nagi.

Sp Qtr. 3 cl. Prereq: 730 or permission of instructor.

**837\* Seminar in Public Opinion and Political Sociology G 5**

Selected problems in the study of opinions and opinion climates, with special emphasis on their relation to elections and political institutions in a cross-national context. Meyer.

Sp Qtr. 5 cl. Prereq: Permission of instructor.

**841 Sociology of Urban Sub-Communities G 5**

Examination of society and culture of sub-communities such as ethnic and racial ghettos, suburbia; generalization about the patterns of integration with larger systems.

Sp Qtr. 5 cl.

**848\* Seminar in the Sociology of Religion G 5**

An analysis of selected contemporary problems in the sociology of religion; religious organization and involvement. Himmelfarb.

Au Qtr. 3 cl.

**850 Seminar in Sociological Research Methods G 1-5**

Special topic seminars in research methodology. Jiobu, Kaufman, and Meyer.

Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

**862 Seminar in Complex Organizations G 5**

Analysis of bureaucratization, structure, boundary problems, resource allocation, organizational change and conflict. Corwin.

Au Qtr. 3 cl.

**863\* Seminar in Small Groups G 5**

A critical examination of theoretical and methodological issues in research on small groups; focus on sociological contributions. Curry.

Sp Qtr.

**882 Systematic Social Theory in Progress G 5**

Examination of the logical structure and empirical status of current and emerging theories. Hinkle.

Sp Qtr. 2 2-hr cl.

**884 Seminars in Sociology**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 15 cr hrs for each decimal subdivision.

**884.01 Sociological Theory G 1-5****884.02 Social Organization and Planning G 1-5****884.03 Medical Sociology G 1-5****884.04 Criminology and Criminal Justice G 1-5****884.06 Race/Ethnic/Minority Relations G 1-5****884.07 Social Psychology G 1-5****884.08 The Family G 1-5****884.09 Research Methodology G 1-5****884.10 Urban/Community/Ecology G 1-5****884.11 Labor Markets/Economy and Society G 1-5****884.12 Political Sociology G 1-5****884.13 Population/Demography G 1-5****884.14 Gender G 1-5****884.15 Unclassified G 1-15****888\* Seminar in the American Family G 1-5**

An examination of relevant issues, trends, and problems with emphasis on theoretical orientations and research findings. Houseknecht and Menaghan.

Sp Qtr. 5 cl.

**998 Research in Sociology: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Sociology: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999.04 Criminology and Criminal Justice****999.06 Race/Ethnic/Minority Relations****999.10 Urban/Community/Ecology****999.11 Labor Markets/Economy/Society****999.12 Political Sociology****999.13 Population/Demography****999.14 Gender****999.15 Unclassified**

## Spanish

Cunz Hall, 1841 Millikin Road, 292-5842

Students studying foreign languages at the elementary and intermediate levels typically take the sequence of courses numbered 101-102-103-104 (including the decimal subdivisions such as 101.51, etc.) and then move on to advanced courses. Students who need to satisfy the Arts and Sciences foreign language requirement must demonstrate competence at the 104 level.

Information concerning frequency and quarter of offering of courses at the 500 level and above may be obtained by contacting the department.

**101 Elementary Spanish I**

Introduction to Spanish; development of listening, reading, speaking, and writing skills.

Su, Au, Wi, Sp Qtrs. Not open to students with credit for 100.02 or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**101.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

**102 Elementary Spanish II**

Continued study of Spanish; development of listening, reading, speaking and writing skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Prereq: 100.02 or 101.01 or 5 cr hrs of 101.02 or 101.51. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**102.51 Individualized Track U 1-5**

Prereq: Grade of B- or above in 101.01 or 100.02 or 5 cr hrs of 101.02 or 101.51 or permission of instructor. Students may register for 101.51 and 102.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

**103 Intermediate Spanish I**

Continued study of Spanish; development of listening, reading, speaking, and writing skills; readings based on Spanish culture and literature.

Su, Au, Wi, Sp Qtrs. Not open to native speakers of this language through regular course enrollment or EM credit.

**103.01 Classroom Track U 5**

Prereq: 102.01 or 5 cr hrs of 102.51 or 110. Students must register for and complete 5 cr hrs during the qtr. This course is available for EM credit.

**103.51 Individualized Track U 1-5**

Prereq: Grade of B- or above in 102.01 or students may register for 102.51 and 103.51 concurrently with permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% required for advancement.

**104 Intermediate Spanish II**

Prereq: 103.01 or 5 cr hrs of 103.51 or 112. The following courses are not open to students with credit for 104, and only one of the decimal subdivisions may be taken for credit. Not open to native speakers of this language through regular course enrollment or EM credit.

**104.01 Basic Course U 5**

Reading of Spanish short stories, plays, and novels with attention to literary appreciation; development of basic language skills; course conducted in Spanish. This course is available for EM credit.

Su, Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**104.02 Conversation U 5**

Emphasis on speaking and aural comprehension; conversation materials and current newspapers.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**104.03 Culture and Civilization U 5**

Aspects of Spanish civilization: geography, history, social developments, and the arts; readings and discussion in Spanish.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**104.04 Social and Political Thought U 5**

Readings on the evolution of social and political ideas in Spanish America; texts in Spanish; discussion in Spanish and English.

Au, Wi, Sp Qtrs. 5 cl. Not open to students with credit for 104 or any other 104 decimal subdivision.

**104.51 Individualized Track U 1-5**

Spanish grammar, selected readings, literary passages; oral and written assignments used to develop and assess basic language skills in listening, speaking, reading, and writing.

Au Qtr. Arr. Prereq: 103.01 or 5 cr hrs of 103.51. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next with proficiency at the level of 80% on an oral and written exam required for advancement. No open to students with credit for 104 or any 104 decimal subdivision.

**105 Elementary Spanish Conversation and Composition U 5**

Intensive practice in oral and written Spanish, based on texts and periodicals concerned with contemporary Spain and Spanish America; grammar and idiom review.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 104. Course conducted in Spanish. Not open to students with credit for 105.01 or 105.02; or to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**110 Intensive Elementary Spanish U 5 or 10**

Elementary Spanish for students wishing to acquire the basic skills in one quarter; intensive drill in form, syntax, vocabulary, and idiom; equivalent to 101 and 102.

Au, Wi, Sp Qtrs. 10 cl. Prereq: Permission of dept. Not open to students with credit for 102; or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 101 or the equiv may not register for more than 5 cr hrs.

**111\* Intensive Intermediate Spanish U 5 or 10**

An intensive course that combines the content of 103 and 104.01 to complete the presentation of the basic Spanish grammar and to give extensive practice in the four language skills.

Su, Au, Wi, Sp Qtrs. 5 2-hr cl. Prereq: 110 or 102 or equiv with written permission of instructor. Not open to students with credit for 104 or 104 decimal subdivisions; or to native speakers of this language through regular course enrollment or EM credit. Students with credit for 103 or 112 may not register for more than 5 cr hrs. Course intended for students who wish to expedite the completion of the language requirement.

**112 Intensive Spanish U 5, 10, or 15**

Elementary and intermediate Spanish; intensive drill in forms, syntax, vocabulary, and idiom; reading of short stories and plays in Spanish.

Su Qtr. 15 cl. Prereq: Permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Full-time fees required regardless of number of cr hrs. Equiv of 101, 102, 103. Students may not register for any other course if they enroll in 112. Students with credit for 103 or equiv may not register for credit. Students with credit for 101 and 102 will enroll for 5 cr hrs. Students with credit for 101 only will enroll for 10 cr hrs. Students with no credit in Spanish will enroll for 15 cr hrs. Regardless of cr hrs enrolled a student will attend class throughout entire quarter. Withdrawal from the course means forfeiture of all cr hrs. No audit. FL Admis Cond course.

**150 Introduction to the Culture and Literature of Spain and Portugal U 5**

Introduction to the principal developments of the culture of Spain and of Portugal through literature, art, music, film, and folklore.

Au, Sp Qtrs. 4-5 cl. Not open to students with credit for 271 or 272. BER/LAC/LAR course.

**151 Introduction to Latin American Culture and Literature U 5**

Introduction to the culture of Spanish America and Brazil through literature, art, music, film, and folklore.

Wi Qtr. 4-5 cl. Not open to students with credit for 273. BER/LAC/LAR course.

**162 Elementary-Intermediate Spanish for Selected Students U 5**

Wi Qtr. 5 cl. Prereq: Grade of A in 101 and permission of dept. Not open to native speakers of this language through regular course enrollment or EM credit. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

**163 Elementary-Intermediate Spanish for Selected Students U 5**

Continuation of 162.

Sp Qtr. 5 cl. Prereq: 162. Not open to native speakers of this language through regular course enrollment or EM credit. Successful completion of 101-162-163 fulfills the Arts and Sciences foreign language requirement and satisfies prereq for 400-level literature courses.

**271 Spanish Literature in Translation: Medieval and Golden Age U 5**

Selection of major works in Spanish literature from the medieval period through the Golden Age in translation.

Au Qtr. 5 cl. Prereq: English 110 or 111 or equiv. Not open to Spanish majors. BER/LAC course.

**293 Individual Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**294 Group Studies U 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of dept. Repeatable to a maximum of 30 cr hrs.

**401 Review Grammar U 5**

Review of major grammatical principles, with extensive oral and written practice.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 105.

**402 Intermediate Spanish Conversation U 3**

Practice in speaking Spanish: vocabulary building, basic syntactic structures, pronunciation.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: 401 and 404 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit.

**403 Intermediate Spanish Composition U 3**

Spanish prose forms and practice in writing descriptive, narrative, and personal compositions; letters, essays, and precis.

Su (1st term), Au, Sp Qtrs. 4 cl. Prereq: 401 and 404. Not open to native speakers of this language through regular course enrollment or EM credit.

**404 Spanish Pronunciation U 3**

Practice with corrective exercises; some attention to problems of teaching pronunciation.

Au, Wi, Sp Qtrs. 4 cl. Prereq: 104. Not open to students with native pronunciation.

**450 Introduction to the Study of Literature in Spanish U 5**

Intensive study of selected prose, poetry, and drama from Spain and Spanish America.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 401. Not open to students with credit for 421 or 422 or 423. Required for Spanish majors. This course is available for EM credit.

**498 Study Tour U 15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**498.01 Domestic****498.02 Foreign****551 Masterpieces of Spanish Golden Age Literature U G 5**

Introductory critical study of major literary works from the 16th and 17th centuries in Spain.

Au Qtr. 4 or 5 cl. Prereq: 450. Not open to students with credit for 422.

**552 Masterpieces of Modern Spanish Literature U G 5**

Introductory critical study of major literary works from the 19th and 20th centuries in Spain.

Wi Qtr. 4 or 5 cl. Prereq: 450. Not open to students with credit for 421.

**553 Masterpieces of Modern Spanish American Literature U G 5**

Introductory critical study of major literary works from the 19th and 20th centuries in Spanish America.

Sp Qtr. 4 or 5 cl. Prereq: 450. Not open to students with credit for 423.

**560 Introduction to Spanish American Culture U G 5**

Major elements in the culture of the peoples of Spanish America.

Wi Qtr. 5 cl. Prereq: 402 or 403. Taught in Spanish. Intended for majors in foreign language educ and Romance languages. Not open to students with credit for 640.

**561 Introduction to the Culture of Spain U G 5**

Major developments in the culture of Spain.

Sp Qtr. 5 cl. Prereq: 402 or 403. Taught in Spanish. Intended for majors in foreign language educ and Romance languages. Not open to students with credit for 641.

**571 Basic Spanish for Graduate Students G 5**

Designed primarily for students who have no formal preparation in Spanish covering basic grammar and vocabulary.

Au Qtr. 5 cl. Prereq: Grad standing. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit.

**572 Spanish for Research I G 3**

Wi Qtr. 3 cl. Prereq: Grade of C or above in 571, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit. Repeatable to a maximum of 9 or hrs. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a dictionary reading knowledge in fulfillment of PhD language requirement.

**573 Spanish for Research II G 3**

Sp Qtr. 3 cl. Prereq: Grade of A or B in 572, or equiv preparation demonstrated by a placement test. Credit does not apply to the minimum number of hrs required for the master's or doctoral degree. No audit. Repeatable to a maximum of 9 or hrs. Satisfactory completion of this course (grade of A or B) may be accepted by the student's dept as evidence of a thorough reading knowledge in fulfillment of PhD language requirement.

**601 Modern Spanish Syntax U G 5**

Study of modern Spanish grammar; modern tendencies in syntactic analysis.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: 402, 403, and 450.

**602 Advanced Spanish Conversation U G 3**

Practice in speaking Spanish; building of specialized vocabulary; reinforcement of complex syntactic structures; emphasis on pronunciation.

Su (2nd term), Wi, Sp Qtrs. 4 cl. Prereq: 402. Not open to native speakers of this language through regular course enrollment or EM credit. Conducted in Spanish.

**603 Advanced Spanish Composition and Translation U G 3**

Translation from Spanish to English and from English to Spanish; analysis of different prose styles; practice in writing fluent Spanish compositions.

Su (2nd term), Au, Sp Qtrs. 3 cl. Prereq: 601.

**604 Spanish Phonetics U G 5**

Analysis of the phonological structure of Spanish and a comparison with English; practical problems of teaching pronunciation.

Au, Sp Qtrs. 4 cl, 1 hr lab. Prereq: 404 or permission of instructor.

**610 Contrastive Structures of Spanish and English U G 5**

Phonetics, phonemics, morphology, and syntax of Spanish contrasted with English.

Au Qtr. 5 cl. Prereq: 401, 402, 403, 404, and 450.

**631† Spanish Literature U G 2-5**

Su Qtr. 5 cl. Prereq: 450. Repeatable to a maximum of 15 or hrs.

**650 Senior Seminar in Spanish or Spanish American Literature U G 5**

Intensive study of a major author, literary work, or theme; topic varies, for example: Cervantes, Spanish literature of the Civil War, novels of the Mexican Revolution.

Au, Wi, Sp Qtrs. 4 or 5 cl. Prereq: Two of the following: 551, 552, 553. Repeatable to a maximum of 15 or hrs. Required for Spanish majors.

**660\* Senior Seminar in Hispanic Culture U G 5**

Intensive study of a major theme or problem in Hispanic culture; topic varies, for example: Post-Franco Spain, American Revolutionary thought.

Sp Qtr. 4 or 5 cl. Prereq: 560 or 561. Repeatable to a maximum of 15 or hrs.

**693 Individual Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 30 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**704 Spanish Phonology U G 5**

Application of modern theoretical approaches to the study of the sound system of Spanish.

Sp Qtr. 4 or 5 cl. Prereq: 604 or permission of instructor.

**751 Medieval Spanish Literature U G 5**

History of Spanish literature from 1100 to 1500 with emphasis on representative authors and literary works.

Wi Qtr. 4 or 5 cl. Prereq: 650 or grad standing. Not open to students with credit for 720 or 820.

**752 Spanish Golden Age Literature U G 5**

History of Spanish literature from 1500 to 1700 with emphasis on representative authors and literary works.

Au Qtr. 4 or 5 cl. Prereq: 650 or grad standing.

**753 Spanish Literature of the 18th and 19th Centuries U G 5**

History of Spanish literature from 1700 to 1900 with emphasis on representative authors and literary works.

Wi Qtr. 4 or 5 cl. Prereq: 650 or grad standing.

**754 20th-Century Spanish Literature U G 5**

History of Spanish literature from 1900 to the present with emphasis on representative authors and literary works.

Wi Qtr. 4 or 5 cl. Prereq: 650 or grad standing.

**755 Colonial and 19th-Century Spanish American Literature U G 5**

History of Spanish American literature from the colonial period to 1900 with emphasis on representative authors and works.

Sp Qtr. 4 or 5 cl. Prereq: 650 or grad standing.

**756 20th-Century Spanish American Literature U G 5**

History of Spanish American literature from 1900 to the present.

Sp Qtr. 4 or 5 cl. Prereq: 650 or grad standing.

**760 Topics in Spanish American Culture and Civilization U G 5**

Analysis of Spanish American culture through the study of selected topics in literature, film, and the arts; topics vary.

Wi Qtr. 2 2-hr cl. Prereq: 560 or permission of instructor. Open only to grad students and to srs majoring in Spanish by permission of instructor. Repeatable to a maximum of 15 cr hrs.

**761\* Topics in Spanish Culture and Civilization U G 5**

Analysis of Spanish culture through the study of selected topics in literature, film, and the arts; topic varies.

Sp Qtr. 2 2-hr cl. Prereq: 561 and grad standing, or sr standing in Spanish with permission of instructor; or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

This course offers undergraduates with special aptitudes a greater opportunity to do independent study than is possible in the ordinary course.

Su, Au, Wi, Sp Qtrs. Conference, library or phonetics laboratory arr. Prereq: 4th yr standing with a record of A in at least half of the Spanish courses and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**790 Foundations of Contemporary Critical Theory U G 5**

Interdisciplinary survey of the theoretical bases of the major contemporary approaches to the study of literature; readings in Marx, Freud, Derrida, Cixous, and others.

Wi Qtr. 2 2-hr or 5 cl. Prereq: Jr or sr or grad standing. Cross-listed in Comparative Studies in the Humanities, English, French, German, and Italian.

**792 Interdepartmental Studies in the Humanities U G 3-5**

Two or more departments present colloquia on subjects of mutual interest; topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**801 Teaching Spanish at the College Level G 5**

Methods and techniques for teaching Spanish language at the college level.

Au Qtr. Two wks intensive workshop previous to the beginning of qtr followed by a 2 hr wkly cl. Prereq: Teaching associate in the Dept of Romance Languages and Literatures or permission of instructor. Not open to students with credit for Ed-T&P 801.03. For students enrolled in this course, the minimum number of cr hrs required for graduation is increased by 5 hrs. Cross-listed in Education: T&P as 801.03.

**811 History of the Spanish Language G 5**

Basic concepts of historical linguistics; the major factors of change in the history of the Spanish language from Roman times to the present.

2 2-hr cl. Prereq: MA candidacy or permission of instructor.

**812 Old Spanish I G 5**

The development of Old Spanish phonology and morphology with an introduction to the reading of Old Spanish texts.

2 2-hr cl. Prereq: 811 or permission of instructor.

**813 Old Spanish II G 5**

A continuation of Old Spanish I, with attention to syntax, vocabulary, and dialectology.

2 2-hr cl. Prereq: 812 or permission of instructor.

**814†\* The Structure of the Spanish Language G 5**

Examination of the structure of Spanish; the contributions of statistics, computers and generative (transformational) grammar to the study of language.

Sp Qtr 5 cl. Prereq: 610 or permission of instructor.

**851 Studies in Medieval Spanish Literature G 5**

Intensive exploration of a special topic or problem; topic varies, for example: medieval epic poetry, medieval lyric poetry.

2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level. Repeatable to a maximum of 20 cr hrs.

**852 Studies in Spanish Golden Age Literature G 5**

Intensive exploration of a special topic or problem; topic varies, for example: Renaissance and Baroque poetry, Picaresque novel, Golden Age drama.

2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level. Repeatable to a maximum of 20 cr hrs.

**853\* Studies in Spanish Literature of the 18th and 19th Centuries G 5**

Intensive exploration of a special topic or problem; topic varies, for example: literature and society in the 18th century, romantic poetry and drama, realist and naturalist novel.  
2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level.  
Repeatable to a maximum of 20 cr hrs.

**854 Studies in 20th-Century Spanish Literature G 5**

Intensive exploration of a special topic or problem; topic varies, for example: the generation of 1898, contemporary poetry, post-Civil War novel.  
2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level.  
Repeatable to a maximum of 20 cr hrs.

**855 Studies in Colonial and 19th-Century Spanish American Literature G 5**

Intensive exploration of a special topic or problem; topic varies, for example: 16th century chronicles, romanticism, modernist poetry.  
2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level.  
Repeatable to a maximum of 20 cr hrs.

**856 Studies in 20th-Century Spanish American Literature G 5**

Intensive exploration of a special topic or problem; topic varies, for example: contemporary poetry, novel until 1945, novel after 1945.  
2 2-hr cl. Prereq: 10 cr hrs in Spanish at the grad level.  
Repeatable to a maximum of 20 cr hrs.

**861 Seminar in Spanish Literature G 3-5**

Research topic to be announced.

Su (1st term), Au Qtrs. Prereq: Permission of instructor. Not open to students with 20 cr hrs of 831. Repeatable to a maximum of 20 cr hrs.

**862 Seminar in Spanish Literature G 2-5**

Research topic to be announced.

Su (2nd term), Wi Qtrs. Prereq: Permission of instructor. Not open to students with 20 cr hrs of 832. Repeatable to a maximum of 20 cr hrs.

**863 Seminar in Spanish Literature G 3-5**

Research topic to be announced.

Sp Qtr. Prereq: Permission of instructor. Not open to students with 20 cr hrs of 833. Repeatable to a maximum of 20 cr hrs including cr hrs in 831, 832, and 833.

**885 Introduction to Methods in the History and Criticism of Literature G 5**

Selected readings in basic literary history, criticism, and theory, with practice in the use of standard bibliographical aids to scholarship.

Au Qtr. 5 cl.

**886 Bibliography and Method G 3**

Introduction to problems, tools, and methods of linguistic and literary research.

**890 Interdepartmental Studies in Critical Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.) in literary theory.

Sp Qtr. 2 2-hr or 5 cl. Prereq: Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs. Cross-listed in Comparative Studies in the Humanities, English, French, German, and Women's Studies.

**893 Individual Studies G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**894 Group Studies G 1-15**

Investigation of minor problems in the various fields of Spanish literature and language.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 30 cr hrs.

**899 Interdepartmental Seminar G 3-5**

Two or more departments present seminars on subjects of mutual interest: topics to be announced.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor(s). Repeatable to a maximum of 15 cr hrs with permission of dept.

**999 Research in Spanish Language or Literature G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Speech and Hearing Science

324 Derby Hall, 154 North Oval Mall, 292-8207

See also courses in Communication.

**035 American Speech for International Students U 5**

Assignment to both English and the appropriate speech and hearing science course is made on the basis of examinations given at the beginning of each quarter to all new students whose native language is not English.

Au, Wi, Sp Qtrs. 5 cl. 5 cr hrs will be added to graduation requirements. Often taken in conjunction with English 106. This course is graded S/U.

**040 Personal Speech and Hearing Rehabilitation U 2**

Personal speech and hearing rehabilitation for students with articulation, voice, stuttering, language, or hearing problems.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Credit shall not count toward graduation. For students with speech or hearing disorders. Repeatable. This course is graded S/U.

**135 Voice and Diction U 3**

Introductory study of the principles of a satisfactory speaking voice; designed for students concerned about the adequacy of their speech.

Au, Wi, Sp Qtrs. 3 cl. VPA Admis Cond course.

**230 Introduction to Communication and Its Disorders U 3**

Survey of the topics, methodologies, and applications of speech and hearing science in normal and aberrant communication; lectures and readings.

Au, Wi, Sp Qtrs. 3 cl.

**235 Speech Functions and Responsibilities of the Teacher U 3**

A study of speech and hearing deviations commonly found in the classroom and of the role of the teacher.

Su, Au, Wi, Sp. Qtrs. 3 cl.

**245 Principles of Phonetics U 4**

The available descriptions of the sounds of speech and a comparative study of the systems of representing the sounds.

Au Qtr. 3 cl, 2 hr lab. Prereq or concur: 230 or permission of instructor.

**338 Anatomy and Physiology of the Speech and Voice Mechanism U 4**

The speech and voice mechanism, anatomy and physiology of oral, pharyngeal and respiratory structures involved in sound production for communication.

Au Qtr. 4 cl. Prereq or concur: College-level biology, human anatomy, and physiology recommended.

**342 Anatomy and Physiology of the Auditory and Vestibular Mechanism U 3**

The anatomical properties and physiological processes of the system of hearing and balance in man.

Au Qtr. 3 cl. Prereq or concur: College-level biology, human anatomy, and physiology.

**430 Normal Development of Communication in Children U 4**

Introduction to the development of communication in normal children.

Wi Qtr. 4 cl. Prereq: 230 or permission of instructor.

**454 Speech Science U 4**

Normal speech production and perception with emphasis on phonatory and articulatory processes and speech acoustics.

Wi Qtr. 3 cl, 2 lab hrs. Prereq: 245, 338, and Physics 501; or equivalents.

**456 Hearing Science U 3**

The stimulus processing capabilities of the normal auditory system.

Wi Qtr. 3 cl. Prereq: 342 and Physics 501, or equivalents.

**540 Introduction to Audiology U G 5**

The nature, causes, identification, and rehabilitative treatment of persons with hearing disorders.

Sp Qtr. 5 cl. Prereq: 456.

**550 Introduction to Communication Disorders for Nurses U G 3**

The nature, (re)habilitation, identification, and prevention of communication disorders common to the nursing caseload.

Wi Qtr. 3 cl. Prereq: Jr standing or above in nursing, or permission of instructor.

**560 Articulation U G 3**

Etiology, evaluation, and management of articulation disorders.

Sp Qtr. 3 cl. Prereq: 245 or Linguist 201, and 338 or college-level anatomy.

**565 Observation in Communication Disorders U G 2**

Observation in appraisal and treatment of communication disorders.

Au, Wi, Sp Qtrs. 1 cl, 2 1-hr labs. Repeatable to a maximum of 6 cr hrs in any combination of decimal subdivisions, including cr hrs earned in 755.01 and 755.02.

**565.01 Speech and Language Pathology**

Observation of clinical management of children and adults with speech and language disorders.

Prereq: 560.

**565.02 Audiology**

Observation of clinical management of children and adults with hearing disorders.

Prereq: 540.

**General Prerequisites for Courses Numbered 600-700**

*A general foundation in undergrad courses in normal and disordered communication and related sciences is assumed in addition to listed specific prerequisites. Two exceptions are 714 and 716; other exceptions at the discretion of instructor.*

**624 Neurology of the Speech and Hearing Mechanism U G 5**

The neuroanatomical and physiological features involved with human communication.

Au Qtr. 5 cl. Prereq: Sr standing in speech and hearing science or grad standing.

**632 Audiological Habilitation I U G 3**

A study of auditory training, speech reading, and the speech and language deficits of the hearing impaired.

Au Qtr. 3 cl.

**635 Introductory Instrumentation for Speech and Hearing Science U G 3**

Fundamental concepts of electronics with application to instrumentation for speech and hearing.

Au Qtr. 3 hr cl. Prereq: 540.

**636 Audiological Evaluation I U G 4**

A study of the basic techniques in hearing assessment in clinical practice.

Au Qtr. 3 cl, 1 2-hr lab. Prereq: 540 and prereq or concur 635.

**640 Disorders of Communication Associated with Craniofacial Anomalies U G 3**

Evaluation and treatment of communication disorders related to craniofacial anomalies, emphasis on research pertaining to cleft palate.

Wi Qtr. 3 cl. Prereq: 624.

**642 Audiological Evaluation II U G 3**

Detailed treatment of theoretical and practical considerations for assessment of site of auditory lesion.

Wi Qtr. 3 cl. Prereq: 636.

**645 Pediatric Audiology I U G 3**

Etiology and assessment of hearing loss in children.

Su Qtr. 3 cl. Prereq: 636.

**646 Audiological Habilitation II U G 3**

Academic, social, emotional, vocational and adjustment problems associated with hearing loss in children and adults.

Sp Qtr. 3 cl. Prereq: 632.

**647 Pediatric Audiology II U G 3**

Specialized assessment techniques appropriate for the difficult-to-test child.

Au Qtr. 3 cl. Prereq: 645.

**652 Stuttering: Theories and Therapies U G 3**

Theories, principles, and procedures for the appraisal and treatment of persons with dysfluencies in speech.

Sp Qtr. 3 cl. Prereq: Sr standing in speech and hearing science or grad standing.

**653 Communication-Language Disorders in Children U G 3**

An integrated series concentrating on clinical aspects of language and communicative function.

**653.01 Communication Development and Disorders in Infants and Young Children**

Development of interaction and communication in preverbal and minimally verbal children with emphasis on adult-child interaction.

Au Qtr. 3 cl. Prereq: 430 or equiv. Not open to students with credit for this topic under 653, 797A, 940, or 950.

**653.02 Language Development and Disorders in Preschool and Older Children**

Social and cognitive approaches to language disorders in preschool and school-aged children in the areas of syntax, semantics, and pragmatics.

Wi Qtr. 3 cl. Prereq: 653.01 or equiv. Not open to students with credit for 665.

**653.03 Communication-Language Intervention in Infants and Young Children**

Survey, demonstration, and practice of clinical approaches to communicatively delayed children with a focus on parent, teacher, and clinician roles.

Su Qtr. 3 cl. Prereq: 653.01 or equiv. Not open to students with credit for this topic under 665, 797C, 940, or 950.

**653.04 Language Intervention in Preschool and Older Children**

Identification, assessment, and remediation strategies for children and adolescents with language-learning problems.

Sp Qtr. 3 cl. Prereq: 653.02 or equiv. Not open to students with credit for 666.

**655 Speech Pathology: Appraisal U G 3**

Basic principles, procedures, and techniques in the evaluation and reporting of speech and language disorders.

Wi Qtr. 3 cl; Prereq: Sr standing in speech and hearing science or grad standing.

**659 Voice Disorders U G 3**

Etiology, evaluation, and management of voice disorders.  
Wi Qtr. 3 cl. Prereq: Sr standing in speech and hearing science or grad standing.

**692 Workshops U G 1-8**

Intensive study of a clinical area newly expanded within the field; geared for practicing clinicians to update information and increase skill levels.

Su Qtr. Arr. Prereq: Written permission of workshop director. Repeatable to a maximum of 12 cr hrs.

**693 Individual Studies U G 1-5**

Conference, library, and laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**698† Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****710 Clinical Approaches to Articulation and Phonological Disorders U G 3**

Approaches to understanding the nature, assessment, and remediation of articulation and phonological disorders in children.

Au Qtr. 3 cl. Prereq: 430 and 560, or equivalents.

**714 Non-Verbal Options in Communication Habilitation U G 4**

Various non-verbal aids and systems available for use in clinical intervention for the communicatively impaired.

Sp Qtr. 4 cl.

**716 English Language Based Sign Systems U G 2**

Review of extant systems with concentrated practice with one to achieve fluency.

Au Qtr. 2 cl. Prereq: 714. Repeatable to a maximum of 4 cr hrs.

**720 Community and Industrial Audiology U G 3**

The effect of noise on hearing, physiological and psychological function, productivity and communication; federal and state regulations reviewed and effects on communities discussed.

Wi Qtr. 3 cl.

**725 Interviewing and Counseling the Communicatively Handicapped U G 3**

The structure, function, and importance of the clinical interviewing and counseling process for the speech and language pathologist or audiologist.

Au Qtr. 3 cl. Prereq: 655 or 632 and 636.

**735 Hearing Aids U G 4**

Electroacoustic characteristics and analysis of hearing aids; hearing aid selection evaluation, procurement, fitting, and orientation.

Wi Qtr. 3 cl, 1 2-hr lab.

**736 Disorders of Communication Associated with Neuropathologies U G 3**

The nature, diagnosis, and treatment of speech and language manifestations of neurological damage.

**736.01 Aphasia and Dysarthria**

Wi Qtr. 3 cl. Prereq: 624.

**736.02 Aphasia Assessment**

Sp Qtr. 3 cl. Prereq: 736.01.

**H783 Honors Research U 3-15**

A program of independent study for the student with special aptitudes; individual conferences and reports.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the sph/hrng courses and an average of B in the remainder; permission of the instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**794 Group Studies U G 3**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**797 Interdepartmental Seminars U P G 3**

Two or more departments may collaborate in presenting seminars of mutual interest; topics to be announced.

Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

A— Language Disorders in Children

B— Audiometric Aspects of Mental Retardation

C— Interdisciplinary Clinical Team Functioning

D— Interdisciplinary Approaches to Families of Handicapped Children

E— Prevention of Developmental Disabilities

F— Community Services and Program Management

G— Interdisciplinary Clinical Team Practicum

**820 Acoustic Phonetics G 3**

An introduction to the acoustic characteristics of human speech sounds, the acoustic theory of speech production, and spectrographic analysis.

Wi Qtr. 3 cl, 2 hrs lab. Prereq: 245 and Linguist 601, or equivalents. Not open to students with credit for this topic under 940 or 950.

**832\* Experimental Phonetics G 5**

Experimental investigations of acoustic, physiological, and psychological aspects of speech.

Sp Qtr. 3 cl, 2 2-hr labs. Repeatable to a maximum of 10 cr hrs.

**844 Practicum in Communication Disorders G 1-5**

Practicum with children and adults having speech, language, or hearing problems.

Su, Au, Wi, Sp Qtrs. 1 cl, 3 clinical hrs per wk per cr hr. Repeatable to a maximum of 20 cr hrs in any combination of decimal subdivisions.

**844.01 Audiological Evaluation**

Prereq: 636 or permission of instructor.

**844.02 Audiological Habilitation**

Prereq: 632.

**844.03 Speech and Language Evaluation**

Prereq: 655 or permission of instructor.

**844.04 Speech and Language Management**

Prereq: Permission of instructor.

**845 Clinical Internship: Speech, Language, and Hearing G 12**

Full-time experience in approved clinical setting to partially fulfill requirements for Plan B nonthesis option.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Completion of 45 grad cr hrs and 40 hrs of clinical practicum. Prior approval of grad committee required. This course is graded S/U.

**848 Interdisciplinary Functioning in Disorders of Oral Communication G 3**

The diagnosis and treatment of profound speech and hearing disorders and the joint rehabilitation treatment accorded pathological ear and vocal mechanisms by ancillary disciplines.

Su Qtr. 4 cl. Prereq: At least 3 cr hrs in 844, or equiv with written permission of instructor.

**857 Physiological Acoustics G 3**

Physiological processes associated with human hearing with information on the acoustical, mechanical, technical, and electrophysiological events involved in the processing and coding of auditory stimuli.

Sp Qtr. 3 cl.



**858 Psychoacoustics G 5**

Theoretical concepts and psychophysical data relative to hearing and related laboratory experiments.

Wi Qtr. 3 cl, 2 2-hr labs.

**940 Advanced Studies in Speech and Hearing Science G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

**950 Seminar in Speech and Hearing Science G 3**

Prereq: Permission of instructor. Repeatable to a maximum of 45 cr hrs.

**998 Research in Speech and Hearing Science: Thesis G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 5 cr hrs. This course is graded S/U.

**999 Research in Speech and Hearing Science: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Statistics

141 Cockins Hall, 1958 Neil Avenue, 292-2866

**125 Elementary Mathematical Statistics U 5**

Elementary principles of probability and introduction to the use of the binomial and normal distributions.

Su, Au, Wi, Sp Qtrs. 5 cl. Prereq: Placement in math course code R. Not open to students with credit for any of the following Econ 442, Ed-T&P 786, Mol Gen 650, Polit Sc 685, Psych 220, 510, or Soc Work 570 or 571.

**133 Statistics for the Business Sciences U 4**

Introduction to the basic concepts of probability and statistics; sample statistics, discrete and continuous probability distributions; confidence intervals, and estimation.

Su, Au, Wi, Sp Qtrs. 4 cl. Prereq: Math 132. Not open to students with credit for 123 or Math 120.05 or 123.

**223† Elementary Decision Theory U 5**

Descriptive statistics, probability, utility, Bayes strategies, minimax strategies, and statistical inference.

Sp Qtr. 5 cl. Prereq: Math 116 or 131 or 150.

**421 Introduction to Statistics U 5**

Combinatorial probability, fundamental concepts of probability distributions, sample statistics, estimation and testing hypotheses, roots of statistical theory.

Au, Sp Qtrs. Prereq: Math 254 or written permission of chairperson.

**425 Probability and Statistics I U 5**

Elements of discrete and continuous probability; introduction to estimation and testing of hypotheses.

Su, Au, Wi, Sp Qtrs. Prereq: Math 254 or permission of chairperson.

**426 Probability and Statistics II U 5**

Continuation of 425.

Su, Au, Wi, Sp Qtrs. Prereq: 425.

**427 Introduction to Probability and Statistics for Engineering and the Sciences I U 3**

Introduction to probability, discrete and continuous random variables, expected value, and sampling distributions.

Au, Wi Qtrs. 3 cl. Prereq: Math 254 or permission of chairperson. Not open to students with credit for 425. This course is not intended to stand alone as an introduction to probability and statistics. It should be followed by 428.

**428 Introduction to Probability and Statistics for Engineering and the Sciences II U 3**

Continuation of 427; point and interval estimation; hypothesis tests for proportions, means, variances, and goodness-of-fit; least squares regression.

Wi, Sp Qtrs. 3 cl. Prereq: 427. Not open to students with credit for 426.

**485† Senior Seminar in Statistics U 3**

Student presentation of selected topics under the guidance of a faculty member.

Au Qtr. 3 cl. Prereq: Sr undergrad majors in stat or in mathematical sciences, or written permission of instructor.

**494 Group Studies U 3-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**518† Statistical Theory in Medical Research I U G 3**

Fundamental concepts of probability, random variables, statistical inference, regression and correlation analysis; topics selected from bioassay, life table techniques, computers in medicine.

Au Qtr. 3 cl. Prereq: Permission of instructor or grad students in medical sciences.

**519† Statistical Theory in Medical Research II U G 3**

Continuation of 518.

Wi Qtr. 3 cl. Prereq: 518.

**520 Mathematical Statistics I U G 5**

Probability, random variables, discrete and continuous distributions; binomial, Poisson, normal, gamma (chi-square), t, F, distributions; change of variable and moment-generating function techniques; order statistics; limit theorems.

Su, Au, Wi Qtrs. 5 cl. Prereq: Math 254 or written permission of chairperson. Not open to students with credit for 620.

**521 Mathematical Statistics II U G 5**

Confidence intervals; minimum variance unbiased estimation, maximum likelihood estimation; Neyman-Pearson theorem, uniformly most powerful tests, likelihood ratio tests, chi-square and F tests, nonparametric tests.

Su, Sp Qtrs. 5 cl. Prereq: 520. Not open to students with credit for 621.

**525 Statistical Methods U G 5**

Basic concepts of probability and statistical inference; application to models involving binomial, Poisson, and normal distributions, and linear regression.

Au, Sp Qtrs. 5 cl. Prereq: Math 254 or equiv and permission of instructor; or Math 254 or equiv and grad standing.

**528 Data Analysis I U G 3**

Non-calculus treatment of descriptive statistics, statistical inference, goodness of fit, use of t, X<sup>2</sup> in one sample situation.

Su, Au, Wi Qtrs. 2 cl, lab hrs arr. Prereq: Permission of instructor or grad standing. Not open to students with more than 5 cr hrs in stat.

**529 Data Analysis II U G 3**

Two sample tests, non-parametric one and two sample procedures, regression analysis, one and two way analysis of variance.

Su, Wi, Sp Qtrs. 2 cl, lab hrs arr. Prereq: 528.

**530 Data Analysis III U G 4**

Multiple regression models; diagnostics, inferences, and variable selection; ANOVA with several factors, mixed models, nesting.

Sp Qtr. 4 cl. Prereq: 529 or permission of instructor.

**593 Individual Studies U G 2-5**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**600 Statistics Laboratory U G 1-5**

Experience is given the student in working with real data through association with current projects in the Statistics Laboratory.

Su, Au, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**602 Head Start in Statistics U G 5**

Basic concepts of probability and statistical inference, sampling theory, estimation, regression, and applications.

Su Qtr. 5 cl. Prereq: Grad standing in stat or permission of instructor.

**620 Statistical Theory I U G 4**

The first of a three-course sequence covering the theory of statistical inference, probability, random variables, estimation, tests of hypothesis.

Au Qtr. 4 cl. Prereq or concur: Math 548 or 550. Not open to students with credit for 520.

**621 Statistical Theory II U G 4**

Continuation of 620.

Wi Qtr. 4 cl. Prereq: 620 or written permission of instructor. Not open to students with credit for 521.

**622 Statistical Theory III U G 4**

Continuation of 621.

Sp Qtr. 4 cl. Prereq: 621. Not open to students with credit for 521.

**623 Theory of Statistical Analysis U G 5**

Estimation, hypothesis tests, best tests, likelihood ratio tests, confidence sets, sufficiency, efficient estimators.

Wi Qtr. 5 cl. Prereq: 620 or permission of instructor. Not open to students with credit for 621 or 622.

**632 Applied Stochastic Processes I U G 3**

Normal processes and covariance stationary processes, counting processes and Poisson processes, renewal processes.

Au Qtr. 3 cl. Prereq: 520 or 525 or 620.

**633 Applied Stochastic Process II U G 3**

Branching process, queueing theory, stationary processes and renewal theory.

Wi Qtr. 3 cl. Prereq: 632.

**635 Statistical Analysis of Time Series U G 3**

Time series models; estimation of the spectral density function; transformations of time series; prediction theory applications.

Sp Qtr. Prereq: 521 or 525 or 623 or permission of instructor.

**641 Linear Models U G 3**

The general linear model for regression and experimental designs; properties of least square estimates; distribution of quadratic forms and the analysis of variance table.

Au Qtr. 3 cl. Prereq: 426 or 521, and an elementary knowledge of matrix theory and notation.

**Geostatistics Laboratory**

See Geol&Min 641. Offered in cooperation with Statistics.

**645 Applied Regression Analysis U G 5**

Simple linear regression, checking for departures from model assumptions, multiple linear regression, polynomial regression, use of dummy variables, model building, and evaluation.

Su, Au, Sp Qtrs. 5 cl. Prereq: 426 or 529 or equiv. Not open to students with credit for 645.01 or 645.02.

**651 Survey Sampling Methods U G 3**

Sampling from finite populations, domains of study, stratification, ratio and regression estimates, systematic sampling, one- and two-stage cluster sampling.

Wi Qtr. 3 cl. Prereq: 426 or 521 or permission of instructor.

**655 Multivariate Data Analysis U G 5**

Graphical analysis of multivariate procedures, clustering and classification procedures, multivariate normal procedures, correlation and regression in multivariate analysis, modern data analytic techniques for multivariate data, applications.

Su Qtr. 5 cl. Prereq: 519, 529, or equiv.

**656 Applied Multivariate Analysis U G 5**

Multivariate statistical procedures specially related to the normal distribution multivariate analysis of variance, classification, principal components and elements of factor analysis, applications, nonparametric multivariate procedures.

Wi, Sp Qtrs. 5 cl. Prereq: 645 or equiv.

**661 Applied Nonparametric Statistics U G 5**

Noncalculus treatment of nonparametric tests, confidence intervals, estimation; topics include one- and two-sample problems, one- and two-way analysis of variance, multiple comparisons, correlation.

Su, Au, Sp Qtrs. 5 cl. Prereq: 426 or 521 or 529 or equiv.

**663\* Statistical Methods in Reliability U G 5**

Statistical failure models, estimation techniques for censored samples from reliability distributions, testing reliability hypotheses, Bayesian estimation, accelerated life testing.

Sp Qtr. 3 1½-hr cl. Prereq: 426 or equiv.

**664†\* Principles of Statistical Quality Control U G 5**

Acceptance sampling—plans for attributes and variables, control charts—Shewhart, empirical Bayes and CUSUM, continuous sampling plans, reliability sampling plans.

Sp Qtr. 5 cl. Prereq: 521 or 623 or equiv.

**665 Discrete Data Analysis U G 4**

Introduces qualitative or categorical data analysis, contingency tables; cross-sectional, prospective, retrospective and controlled comparative trials; sample size determination, combining evidence, and misclassification errors.

Sp Qtr. 4 cl. Prereq: 528 and 529, or permission of instructor.

**671†\* Simulation and Monte Carlo Techniques U G 5**

The use of digital computer program in simulating the operating characteristics of a complex system and in approximating solutions by random sampling; programming applications.

Wi Qtr. 5 cl. Prereq: 425 or 520 or 525 or 529 or equiv and some knowledge of computer programming, or permission of instructor. Not open to students with credit for 672 or 673.

**672 Simulation Techniques U G 3**

This course covers the simulation topics of Stat 671.

Wi Qtr. 3 cl. Prereq: 425 or 520 or 525 or 529 or equiv and some knowledge of computer programming, or permission of instructor. Not open to students with credit for 671.

**673 Monte Carlo Techniques U G 3**

This course covers the Monte Carlo topics of Stat 671.

Su, Au Qtrs. 3 cl. Prereq: 425 or 520 or 525 or 529 or equiv and some knowledge of computer programming, or permission of instructor. Not open to students with credit for 671.

**693 Individual Studies U G 1-5**

Individual conferences, assigned readings, and reports on minor investigations.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies U G 2-5**

Designed to give groups of students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**720†\* Distribution Theory U G 3**

Important distributions, independent statistics, characterization of distribution by independence, constant regression and other properties, contiguous, infinitely divisible and stable distributions.

Wi Qtr. 3 cl. Prereq: 521.

**722 Theory of Probability I U G 4**

Introduction to basic concepts of measure theoretic probability; convergence concepts, conditioning, laws of large numbers, characteristic functions, and central limit theorem.

Au Qtr. 4 cl. Prereq: Math 653. Not open to students with credit for Math 722. Cross-listed in Mathematics.

**725\* Sequential Statistical Methods U G 3**

Wald's SPRT, its characteristics and generalizations; sequential estimates, intervals, designs, and multiple-decisions; nonparametric, Bayes, and optimal sequential procedures.

Wi Qtr. 3 cl. Prereq: 521 or 623.

**742 Analysis of Variance U G 3**

Theory of the general linear model; least square estimates and properties, especially in non-full rank models; analysis of variance technique; factorial designs.

Au Qtr. 3 cl. Prereq: 521 or 623, and Math 471 or 601.

**745\* Multiple Comparisons Procedures U G 3**

Tests of homogeneity versus multiple comparisons, all pairwise multiple comparisons, multiple comparisons with a control, multiple comparisons with the best treatment.

Sp Qtr. 3 cl. Prereq: 742 or permission of instructor.

**746 Design and Analysis of Experiments U G 3**

A continuation of 742; various experimental designs; analysis of covariance, mixed and random models.

Sp Qtr. 3 cl. Prereq: 742.

**755 Multivariate Analysis I U G 3**

Multivariate normal distribution, Wishart distribution, Hotelling's  $T^2$ , multivariate analysis of variance, multiple correlation, roots of determinant equations, discriminant functions, and applications.

Wi Qtr. 3 cl. Prereq: 521 or 623, and Math 471 or 601.

**756 Multivariate Analysis II U G 3**

Continuation of 755.

Sp Qtr. 3 cl. Prereq: 755.

**761 Nonparametric Statistics I U G 3**

Exact distributions and moments of order statistics, probability integral transformation, coverages, tolerance intervals, empirical distribution function, ranking methods, asymptotic relative efficiency, distribution-free tests.

Au Qtr. 3 cl. Prereq: 521 or 623.

**763 Nonparametric Statistics II U G 3**

Distribution-free tests for: two-sample problem, ANOVA and multiple comparisons, rank correlation, slopes in linear regression, broad alternatives; distribution-free confidence intervals; nonparametric point estimation.

Wi Qtr. 3 cl. Prereq: 761.

**764†\* Order Statistics U G 4**

Distribution theory in continuous and discrete cases, moments, order statistics in statistical inference, asymptotic theory.

Sp Qtr. 4 cl. Prereq: 622 or permission of instructor.

**777†\* Optimizing Methods in Statistics U G 3**

Survey of classical optimizing techniques with applications in statistics, mathematical programming and constrained estimation, variational methods and dynamic programming applied to statistical problems, miscellaneous applications.

Wi Qtr. 3 cl. Prereq: Permission of instructor.

**H783 Honors Research U 3-5**

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 or hrs. This course is graded S/U.

**801 Seminar on Research Topics in Statistics G 2**

Lectures on current research by each graduate faculty member in statistics.

Sp Qtr. 1 2-hr cl. Prereq: 2nd yr standing in stat PhD program or permission of instructor. Repeatable to a maximum of 4 or hrs. This course is graded S/U.

**821 Statistical Inference I G 3**

Classical and modern statistical inference from advanced point of view, estimation, principles of maximum likelihood, asymptotic theory; completeness, sufficiency and invariance.

Wi Qtr. 3 cl. Prereq: 623 and Math 722.

**822 Statistical Inference II G 3**

Sp Qtr. 3 cl. Prereq: 821.

**824 Statistical Decision Theory I G 3**

Introduction to the theory of games, statistical games, admissibility and completeness, complete class theorem, principles of sufficiency and invariance, sequential games.

Au Qtr. 3 cl. Prereq: Permission of instructor.

**825†\* Statistical Decision Theory II G 3**

Continuation of 824.

Wi Qtr. 3 cl. Prereq: 824.

**828†\* Ranking, Selection, and Multiple-Decision G 3**

Ranking and selection: indifference-zone and subset; multivariate, nonparametric, multivariate nonparametric, multiple-comparisons, and ordered parameters problems; optimality, robustness, efficiency, and applications.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

**832 Applied Probability Models G 3**

Birth and death processes, Queueing Theory, Branching processes and other applied probability models.

Wi Qtr. 3 cl. Prereq: Math 722.

**834\* Statistical Inference for Stochastic Models G 3**

Theory of statistical inference for Markov Chains and other applied probability models.

Sp Qtr. 3 cl. Prereq: 832.

**847†\* Advanced Design of Experiments G 3**

Partially balanced designs, factorial experiments, confounding and fractional replications, response surface designs.

Sp Qtr. Prereq: 746.

**881 Advanced Topics in Mathematical Statistics I G 3**

Topics to be taken from the following: multivariate analysis, stochastic processes, analysis of variance, components of variance models, advanced test design.

Su, Au Qtrs. 3 cl. Prereq: Grad standing in stat. Repeatable to a maximum of 9 or hrs.

**882 Advanced Topics in Mathematical Statistics II G 3**

Continuation of 881.

Su, Wi, Sp Qtrs. 3 cl. Prereq: Grad standing in stat. Repeatable to a maximum of 9 or hrs.

**888†\* Large Sample Theory G 3**

Mann-Wald theory of stochastic order relationships; asymptotic distribution of maximum likelihood estimates and likelihood ratio statistic, large deviation theory, asymptotic theory of well-known statistics.

Sp Qtr. 3 cl. Prereq: 822.

**893 Advanced Individual Studies G 1-5**

Individual conferences, assigned readings, and reports on investigations.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**894 Advanced Group Studies G 2-5**

Designed to give groups of advanced students an opportunity to pursue special studies not otherwise offered.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 cr hrs.

**895 Statistics Seminar G 1**

Topics range over the current research interests of statisticians from around the world; some lectures are of an expository nature.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of dept. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**999 Research G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Surgery

N-747 Doan Hall, 410 West 10th Avenue, 293-8701

**601 Experimental Surgery U P 2**

Designed to teach and develop basic surgical principles applicable to all physicians; experience with anatomical relationships, gained through surgical approaches.

Au, Wi, Sp Qtrs. 2 3-or 4-hr cl per week for 4 wks. Prereq: Permission of instructor and completion of required surgical rotation.

**790 Research Studies in Surgery P 6, 12, 18 G 3-5**

1, 2, 3, or 4 months (prof cr). Su, Au, Wi, Sp Qtrs (grad cr). Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs for grad credit. This course is graded S/U.

**790.08 Plastic Surgery**

1, 2, 3, or 4 months; offered all months. Repeatable to a maximum of 24 cr hrs for professional credit.

**791 Clinical Studies in Surgery**

Prereq: Permission of instructor.

**791.07 General Surgery P 12 or 24**

Offered all months. Repeatable to a maximum of 24 cr hrs.

**791.09 Thoracic Surgery P 6**

1 month, offered all months.

**850 Seminar in Surgery G 3 or 5**

Group and individual discussions of current surgical problems and their management; discussions of basic and applied topics. Surgery staff.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research in Surgery G Arr**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Surveying

404 Cockins Hall, 1958 Neil Avenue, 292-6753

**203 Introduction to Surveying U 3**

Basic surveying concepts; surveying instrumentation; the art of field data acquisition; planning and execution of field surveys; applications to professional surveying practice, engineering, and other disciplines.

Au Qtr. 2 cl, 1 3-hr lab. Prereq or concur: Math 151; or written permission of instructor. Not open to students with credit for 201 or 302.

**301 Surveying Measurements and Computations U 4**

Surveying measurement theory; analysis of measurements; computation and adjustment on a plane, with PC applications.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 203; prereq or concur: Math 152 and En Graph 143.

**403 History of Surveying and Mapping U 3**

History of Earth measurement and methods; historical connections with other sciences; history of land survey systems in the U.S.; milestones in technology; and associations.

Au Qtr. 3 cl. Not open to students with credit for 300.

**407 Construction Surveying U 4**

Route surveying and geometric design; topographic site surveys and mapping; civil engineering and construction surveys; earthwork computations; layout of industrial plants, buildings, cables, pipelines, and manufacturing machinery.

Sp Qtr. 3 cl, 1 3-hr labs. Prereq: 301 or Civil En 202.

**450 Surveying Data Adjustment and Analysis U 5**

Review of statistical concepts; propagation of variances and covariances; least squares adjustment of problems in surveying; analyses of results from least squares adjustments.

Sp Qtr. 4 cl, 1 3-hr lab. Prereq: 301 and Math 153.

**506 Introduction to Photogrammetry U G 4**

Basic concepts of photogrammetry; overview of current practices; theory and procedures pertaining to single photo and two photo mapping applications; map compilation using analog stereo-plotter.

Au, Wi Qtrs. 3 cl, 1 3-hr lab. Prereq: 301 or Civil En 202 or Geod Sci 202; and prereq or concur: Math 153 and Physics 133 or permission of instructor. Not open to students with credit for 414 or Geod Sci 506.

**507 Land Subdivision Analysis U G 3**

Process of subdividing and platting land; analysis of soils, topography, terrain, earthwork, geometry, and other variables for land subdivision; plat preparation; layout of development plans.

Sp Qtr. 3 cl. Prereq: 407 and Civil En 510 or equiv.

**509 Surveying Astronomy U G 3**

Celestial sphere and its coordinate systems; sidereal, universal, and atomic time; time conversions; ephemerides; instrumentation for astronomical observations in surveying; determination of azimuth, latitude, and longitude.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: 511.

**510 Topics in Professional Practice U G 2**

Topics in applicational areas of surveying from the point of view of the practitioner and the consumer of land related data.

Sp Qtr. 1 2-hr cl. Prereq: 301.

**511 Geodetic Control Surveying U G 4**

Overview of geodetic surveying; modern methods and instrumentation in control surveys; standards and specifications horizontal and vertical control; data as infrastructure of LIS and GIS.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 407 or equiv or grad standing in geod sci or permission of instructor. Not open to students with credit for 508.

**515 Photogrammetric Mapping and Surveying U G 4**

Basic analytical procedures; principles, applications of aerial triangulation; mapping with analog, computer assisted and controlled equipment; image based maps; mapping with space systems; terrestrial photogrammetry.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 450, 506, 511, or permission of instructor. Not open to students with credit for 514.

**524 Boundary Location Surveys U G 5**

Land surveyor's role; analysis of evidence and procedures for boundary locations; retracement principles for sequence, simultaneous and public lands surveys; laws on surveying practices; ethics; professionalism.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 301 and 403; prereq or concur: Bus-Fin 775. Not open to students with credit for 601 and 602.

**606† Surveying Projects U G 5**

Planning, execution, and analysis of surveying projects, integrating background in geodetic, engineering, photogrammetric, cartographic, and land surveying; oral, written, and graphical presentation of complete projects.

Su Qtr. 5 4-hr labs. Prereq: 407, 509, 515, and 524.

**609 Surveying with Satellites U G 3**

Surveying with Earth artificial satellites, global positioning system, relative positioning using interferometric techniques, kinematic surveying.

Wi Qtr. 2 cl, 1 3-hr lab. Prereq: 450 and 511.

**625 Cadastral Information Systems U G 3**

Land tenure, the historical evolution of the cadastre concept and its relation to the documentation of land rights; components of multipurpose cadastre, conceptual models, design, implementation problems, future outlook, and LIS.

Au Qtr. 3 cl. Prereq: 524 or permission of instructor. Not open to students with credit for 525.

## Swahili

486 University Hall, 230 North Oval Mall, 292-3700

**101 Elementary Swahili I U 5**

Development of basic listening, reading, speaking, and writing skills.

5 cl. Not open to students with credit for Black St 201; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**102 Elementary Swahili II U 5**

Continuation of 101.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 101 or equiv. Not open to students with credit for Black St 202; or to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond course.

**103 Intermediate Swahili I U 5**

Further development of listening, reading, speaking, and writing skills; readings based on Swahili culture and literature.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 102 or equiv. Not open to students with credit for Black St 203; or to native speakers of this language through regular course enrollment or EM credit.

**104 Intermediate Swahili II U 5**

Balanced use of basic language skills; emphasis on speaking and aural comprehension; further exposure to Swahili culture through reading of current newspapers, short stories, plays, and novels.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 103 or equiv. Not open to students with credit for Black St 204; or to native speakers of this language through regular course enrollment or EM credit.

**401† Advanced Swahili Grammar U 5**

Review of fundamental principles of grammar and syntax; exercises in Swahili.

Sp Qtr. 5 cl. Prereq: 104 or permission of instructor.

**402† Advanced Swahili, Grammar and Composition U 3**

Introduction to advanced Swahili composition and grammar.

Wi Qtr. 3 cl. Prereq: 401 or permission of instructor.

## Swedish

314 Cunz Hall, 1841 Millikin Road, 292-6985

**101 Elementary Swedish I****101.01 Classroom Track U 5**

Development of aural comprehension, speaking, reading, and writing skills.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**102 Elementary Swedish II****102.01 Classroom Track U 5**

Continuation of development of aural comprehension, speaking, reading, and writing skills.

Wi Qtr. 5 cl. Prereq: 101.01 or equiv or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**103 Intermediate Swedish I****103.01 Classroom Track U 5**

Balanced use of basic language skills; review of aural comprehension basics, speaking, reading, and writing.

Sp Qtr. 5 cl. Prereq: 102.01 or equiv or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**104 Intermediate Swedish II****104.01 Classroom Track U 5**

Conclusion of intermediate Swedish; extensive practice in spoken and written Swedish.

Au Qtr. 5 cl. Prereq: 103.01 or equiv; or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. No audit.

**201 Swedish Conversation and Composition U 5**

Practice in basic written and spoken Swedish, emphasis on study of word forms and sentence structure, themes and oral presentations on topics of everyday life.

Wi Qtr. 5 cl. Prereq: 104 or equiv or permission of instructor. No audit.

**293 Individual Studies U 2-5**

Independent study of advanced Swedish language texts not covered in other course offerings.

Au, Wi, Sp Qtrs. Prereq: 104 or equiv or permission of instructor. Repeatable to a maximum of 10 cr hrs. Taught in Swedish. This course is graded S/U.

**294 Group Studies U 2-5**

Special topics to be announced in the quarter previous to the one in which the course is offered.

Wi, Sp Qtrs. 2-5 cl. Prereq: 104 or equiv or permission of instructor. Repeatable to a maximum of 15 cr hrs. Taught in Swedish.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

# Textiles and Clothing

262 Campbell Hall, 1787 Neil Avenue, 292-8063

## 074 Construction Techniques U 1

Basic construction techniques needed by students for whom 374.01 is required.

Au, Wi Qtrs. 1 2-hr lab. Prereq: Clothing Placement Test taken and results received prior to quarter of enrollment. Credit does not apply for graduation.

## 270 Clothing Selection and Costume Design U 3

An application of design elements and principles to clothing appropriate for personal coloring, figure, personality, and professional orientation.

Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Art 190, 290 or Hist Art 111 (or equiv with written permission of instructor). This course is available for EM credit. VPA Admis Cond course.

## 272 Clothing and Humanity U 3

Emphasis is placed on the significance and use of textiles and clothing to individuals and families in contemporary society.

Au, Sp Qtrs. 3 cl. Prereq: 5 cr hrs of sociol or psych. SS Admis Cond course.

## 289 Introductory Field Experience U 3 or 5

Ten weeks' practical experience or equivalent in approved retail establishment or other enterprise related to student's major interest.

Su, Au, Wi, Sp Qtrs. Prereq: Minimum of 9 cr hrs in major, written permission of instructor. This course is graded S/U.

## 294 Group Studies U 2, 3, or 5

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

## 370 Fashion Design and Illustration U 3

Creative approach to the study of clothing through fashion illustration and costume design; student will be prepared to communicate fashion information in various ways.

Wi, Sp Qtrs. 3 2-hrs lab. Prereq: 270 or equiv with written permission of instructor; 3rd yr standing.

## 371 Textiles I U 5

Fiber properties, yarn, and fabric construction color, and finishes as they relate to performance, care, and consumer satisfaction.

Au, Wi, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 2nd yr standing.

## 374 Clothing I

Prereq: 270 and skill in basic construction; 371 recommended but not required. Students must achieve the minimum score or above on Clothing Placement Test or complete Construction Techniques (074) before enrolling in 374.

### 374.01 Principles of Fit and Construction U 4

Adaptation of standard patterns and construction of garments for individual proportions; analysis of fit and construction of ready-to-wear.

Wi, Sp Qtrs. 2 cl, 4-hrs lab.

### 374.02 Flat Pattern Design U 2

Theory and application of flat pattern design principles.

Au Qtr. 1 cl, 2-hrs lab. Prereq: 374.01

## 375 Ready-to-Wear Analysis U 3

Examination and evaluation of ready-to-wear apparel and its details for construction, style, quality, and fit.

Au, Wi, Sp Qtrs. 3 cl. Prereq: 270 and 371.

## 570 Fashion and the Apparel Industry U 5

Fashion, the ready-to-wear market, and current issues and developments in the textile and apparel industries.

Au, Sp Qtrs. 5 cl. Prereq: 3rd yr standing.

## 574 Tailoring U 5

Evaluation and application of construction techniques as applied to tailored garments; quality-price relationship; utilization of materials and resources.

Wi Qtr. 2 cl, 6-hrs lab. Prereq: 374.01.

## 576 Textile and Apparel Industries U 3

Forces affecting the textile and apparel industries and their impact on the economy and consumers.

Wi Qtr. 2 1½-hr cl. Prereq: 371 and Econ 400 or permission of instructor.

## 589 Field Work U 15

Cooperative field experience in textiles and clothing at junior executive level; investigation and analysis of assigned problems.

Su, Au, Wi, Sp Qtrs. Prereq: 2.25 cum pt-hr ratio, 4th yr standing, 595, 16 hrs in major, txtl&clo faculty recommendation, and written permission of instructor. No other courses should be taken during qtr of field work without written permission of field work supervisor. This course is graded S/U.

## 593 Individual Studies U 1-5

Problems in various phases of textiles and clothing related to individual's program.

Su, Au, Wi, Sp Qtrs. Regular conferences. H593 (honors) may be available to students enrolled in college honors program or eligible for enrollment. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

## 595 Professional Development in Textiles and Clothing U 2

The professional: career opportunities and goals, position securement, professional organizations, and continued personal development.

Au, Wi Qtrs. 2 cl. Prereq: 270, 570, 3rd yr standing in txtl&clo, Communic 105 or 110. Recommended: 595 not to be taken more than 3 qtrs prior to 589.

## 670 Textiles II U G 5

Study of physical and chemical properties of fibers, yarn and fabric construction, and color and functional finishes; procedures used in textile evaluation.

Au, Sp Qtrs. 4 cl, 1 2-hr lab. Prereq: 371, 10 cr hrs of chemistry, and 3rd yr standing.

## 671 Textile Analysis and Evaluation U G 3

Experience in planning and conducting textile tests and in evaluating resulting data; development, present status, and importance of textile testing.

Wi Qtr. 1 cl, 2 2-hr labs. Prereq: 670 and 4th yr standing.

## 672 History of Costume and Textiles U G 5

A chronological study of costume and textiles from ancient civilization to modern times, with consideration of cultural forces that affected the development.

Au, Wi Qtrs. 5 cl. Prereq: 371 and 3rd yr standing.

## 674 Design by Draping U G 5

Techniques of draping applied to basic design cuts and terminating with creative design executed in fashion fabric.

Wi Qtr. 2 cl, 3 2-hr lab. Prereq: 374.01 or equiv equiv with written permission of instructor; 374.02 is recommended but not required.

## 675 Fashion Analysis U G 3

An examination of fashion theories and the evolution of fashion in the 20th century applied to the merchandising of fashion.

Wi, Sp Qtrs. 3 cl. Prereq: 570 and 672.

## 678 Preservation and Restoration of Historic Textiles and Apparel U G 3

Study of techniques and procedures to preserve and restore textiles and apparel of historic value.

Su Qtr. 1 2-hr cl, 2 2-hr labs and arr hrs. Prereq: 10 cr hrs in 600 level and above textiles and clothing courses or equiv.

**690 Workshop U G 1-4**

Intensive study of a topic of common concern to the participants for 1 to 3 weeks. May be an off-campus study tour or an on-campus full-time group meeting.

Prereq: Written permission of instructor. Repeatable to a maximum of 12 or hrs. Travel and subsistence costs for off-campus workshops will be borne by the student. These courses are graded S/U.

**690.01 Textiles**

**690.02 Clothing**

**690.03 Merchandising**

**694 Group Studies U G 1-5**

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**698 Study Tour u G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic**

**698.02 Foreign**

**698.03 New York U 2**

Concentrated on-site study of the fashion industry and apparel market with tours of laboratories, designer's workrooms, buying offices, and other related apparel/textile organizations.

Sp Qtr. Prereq: 19 cr hrs of txtl&clo courses. The workshop will occur during the week preceding the qtr the course is offered. Students are required to attend preparation meetings the qtr prior to the tour. Open only to txtl&clo majors. Application deadline is first week of Wi Qtr.

**772 Costume and Culture U G 3**

National and regional dress in relation to culture, available resources, and technology.

Wi Qtr. 2 1½-hr cl. Prereq: 10 hrs at the 600 level and above, or written permission of instructor.

**777 Introduction to Textiles and Clothing Research U G 3**

An introduction to the literature in textiles and clothing with emphasis on evaluation of research and identification of a research problem.

Au Qtr. 1 2-hr cl. Prereq or concur: H Ec Edu 743 or equiv with written permission of instructor. Not open to students with credit for 877.

**793 Individual Studies U G 1-5**

Problems in various phases of textiles and clothing related to individual's program.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**797 Interdepartmental Seminar U G 2-4**

Two or more departments may collaborate in presenting seminars in subjects of mutual interest; topics to be announced.

Repeatable by permission.

**870\* Theories of Fashion G 3**

Theories underlying fashion change, and an analysis of fashion as a social and economic force.

Su, Sp Qtrs. 2 1½-hr cl or 1 2½-hr cl. Prereq: Research methods or written permission of instructor; 12 or hrs at the 600 level and above.

**873 Educational Trends in Textiles and Clothing G 3**

Issues, methods, and concerns related to textiles and clothing programs in higher education, past, present, and future.

Au Qtr. 1 2½-hr cl. Prereq: 10 or hrs in 600-level courses or equiv or with written permission of instructor.

**875\* Social Psychological Aspects of Clothing G 3**

A study of dress and adornment as they relate to human behavior.

Su, Sp Qtrs. 2 1½-hr cl or 1 2½-hr cl. Prereq: Research methods, 12 or hrs at the 600 level and above, or written permission of instructor.

**876 Textiles and Clothing Industries: Economic Appraisal G 3**

Impact of the textiles and clothing industries on the consumer and the economy.

Wi Qtr. 1 2½-hr cl. Prereq: 571 or 670; 5 or hrs in econ; or written permission of instructor.

**878 History of Textiles G 3**

The development of textiles in prehistoric, ancient, medieval, and modern history, with special emphasis on Western European textiles.

Su Qtr. 1 2-hr cl, hrs arr. Prereq: 672 or written permission of instructor.

**879 Current Topics in Textiles and Clothing G 1-3**

Analysis of current developments, issues, and trends in textiles, clothing, and merchandising; topics to be announced.

Su, Wi Qtrs. 1-3 cl. Prereq: 12 cr hrs at the 600 level and above, including research methods; or written permission of instructor. Repeatable to a maximum of 9 cr hrs.

**879.01 Textiles**

**879.02 Clothing**

**879.03 Merchandising**

**894 Group Studies G 2, 3, or 5**

Selected topics in textiles and clothing.

Prereq: Open to students who meet dept's stated prereqs. Repeatable to a maximum of 10 cr hrs.

**993 Individual Studies G 1-5**

Problems in various phases of textiles and clothing related to individual's program.

Su, Au, Wi, Sp Qtrs. 1 or more conf. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**998 Research: Thesis G Arr**

Research for master's thesis.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**999 Research: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Theatre

1089 Drake Union, 1849 Cannon Drive, 292-5821

**100 Introduction to Theatre U 5**

A study of the theatre with emphasis upon its cultural and social influences in our society.

Su, Au, Wi, Sp Qtrs. H100 (honors) may be available to students enrolled in an honors program or by permission of dept. BER/LAC/LAR course. VPA Admis Cond course.

**205 Technical Production Practicum U 1**

Provides experience in technical production activities.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs including cr hrs earned in decimal subdivisions. VPA Admis Cond course.

**210 Fundamentals of Script Analysis U 3**

Fundamental principles for intensive study of the playscript as the basis of production.

Wi Qtr. Prereq: 200. VPA Admis Cond course.

**220 Technical Production Fundamentals I U 3**

Basic aspects of scenery design construction; theory, process, equipment, materials, and skills.

Au, Wi, Sp Qtrs. 2 cl, 2 lab hrs. VPA Admis Cond course.

**221 Technical Production Fundamentals II U 3**

Basic aspects of lighting design and technology, theory, process, equipment, materials, and skills.

Au, Wi Qtrs. 2 cl, 2 lab hrs. VPA Admis Cond course.

**222 Technical Production Fundamentals III U 3**

Basic aspects of costume design and construction; equipment, theory, process, equipment, materials, and skills.

Wi, Sp Qtrs. 2 cl, 2 lab hrs. VPA Admis Cond course.

**250 Introduction to Stage Makeup U 2**

Practical application of the theories and techniques of theatrical makeup.

Au, Wi, Sp Qtrs. 2 cl. Prereq: Permission of instructor. Not open to students with credit for 350.

**251 Intermediate Stage Makeup U 2**

Theories and techniques of stage makeup with emphasis on three-dimensional techniques and presentational theatre styles.

Wi Qtr. 2 2-hr labs. Prereq: 250.

**271 Great Ages of the Theatre U 5**

Concepts and characteristics of the great periods of the theatre of the western world.

Au, Wi, Sp Qtrs. H271 (honors) may be available to students enrolled in an honors program or by permission of dept.

Prereq: English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement. BER/LAC/LAR course. VPA Admis Cond course.

**280 Acting Fundamentals I U 3**

Basic acting techniques; imagination, concentration, human psychology as applied to creation of character and development of stage presence.

Au Qtr. 4 lab hrs. VPA Admis Cond course.

**310 Stage Directing U 3**

Techniques of play analysis, interpretation, composition, movement, rhythm and tempo; their integration in stage direction.

Au, Wi Qtrs. 3 2-hr cl. Prereq: 210 and 281, or permission of instructor.

**325 Stage Lighting I U 3**

Study of the electrical, mechanical, and electronic elements of stage lighting and the fundamentals of stage lighting design.

Au Qtr. 2 2-hr cl. Prereq: 221 or equiv.

**341 Stage Design Drafting U 3**

Principles of mechanical drawing as applied to theatrical design and technology.

Au Qtr. 2 2-hr labs. Prereq: 220.

**380 Acting Studio IA U 3**

Continuing study of Stanislavsky system of actor training.

Au Qtr. 3 2-hr cl. Prereq: 282 or equiv and written permission of instructor. Enrollment limited to theatre BFA major in acting specialization.

**381 Acting Studio IB U 3**

Continuation of 380 with emphasis on characterization as it relates to the play.

Wi Qtr. 3 2-hr cl. Prereq: 380 and written permission of instructor. Enrollment limited to theatre BFA majors in acting specialization.

**382 Acting Studio IC U 3**

Continuation of 381 with emphasis on scene study.

Sp Qtr. 3 2-hr cl. Prereq: 381 and written permission of instructor. Enrollment limited to theatre BFA majors in acting specialization.

**383 Speech and Voice Studio I U 3**

Basic study and training in voice production, phonetic transcription, and vocal expressiveness.

Au Qtr. 2 2-hr cl.

**384 Speech and Voice Studio II U 2**

Introduction to phonetics: emphasis on shaping sound.

Wi Qtr. 2 2-hr cl. Prereq: 383.

**385 Speech and Voice Studio III U 2**

Individual voice problems: phonetic transcription and sound appreciation.

Sp Qtr. 2 2-hr cl. Prereq: 384.

**386 Stage Movement Studio I U 3**

Fundamentals of movement training; particular attention on physical awareness, body alignment, and physical principles of acting.

Au Qtr. 2 2-hr cl.

**387 Stage Movement Studio II U 2**

Introduction to mask work: continuation of 386.

Wi Qtr. 2 2-hr cl. Prereq: 386.

**388 Stage Movement Studio III U 2**

Introduction to stage combat: continuation of 387.

Sp Qtr. 2 2-hr cl. Prereq: 387.

**405 Theatre Practicum II U 1-3**

Provides experience in theatrical performance and production activities at an intermediate level.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 18 or hrs in any combination of decimal subdivisions.

**405.01 Stage Direction/Management****405.02 Technical Production****405.04 Stage Design****405.05 Costuming/Makeup****405.08 Acting****405.09 Theatre Management****405.10 General****405.12 Lighting**

Provides experience in theatrical performance and production at an intermediate level.

Prereq: Written permission of instructor.

**460 Seminar in Theatre U 3**

Study and examination of the arts of the theatre and their interrelationships as they are used to interpret man and society, past and present.

Sp Qtr. 3 cl. Prereq: Sr standing in theatre.

**480 Acting Studio IV U 3**

Advanced method acting: focus on scene work, on poetic realism and emphasis on a process approach to characterization from a neutral actor base.

Au Qtr. 3 1½-hr cl. Prereq: 382.

**481 Acting Studio V U 3**

Verse and epic acting techniques; an introduction to Shakespeare and Brecht as a styled approach to characterization.

Wi Qtr. 3 1½-hr cl. Prereq: 480.

**482 Acting Studio VI U 3**

Specificity and the modern stage: scene work focused on post-modernism and surrealism emphasizing specificity and detail in characterization through an improvisational approach.

Sp Qtr. 3 1½-hr cl. Prereq: 481.



**483 Speech and Voice Studio IV U 2**

Voice and speech maintenance; techniques of scansion, psychology of sound, verse forms and structures for the performance of verse plays.

Au Qtr. 2 2-hr cl. Prereq: 385.

**484 Speech and Voice Studio V U 2**

Voice and speech maintenance: techniques taught in 483 applied to vocal performance of plays of Shakespeare.

Wi Qtr. 2 2-hr cl. Prereq: 483.

**485 Speech and Voice Studio VI U 2**

Voice and speech maintenance: techniques specific to the performance of the voice and language problems of the Elizabethan and restoration periods.

Sp Qtr. 2 2-hr cl. Prereq: 484.

**486 Stage Movement Studio IV U 2**

Advanced mask work with emphasis on centering.

Au Qtr. 2 2-hr cl. Prereq: 383.

**487 Stage Movement Studio V U 2**

Rhythm and circus techniques: utilizing both individual and ensemble approaches.

Wi Qtr. 2 2-hr cl. Prereq: 486.

**488 Stage Movement Studio VI U 2**

Movement problems and scenic elements: advanced work in stage combat.

Sp Qtr. 2 2-hr cl. Prereq: 487.

**494 Group Studies U 1-3**

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 9 cr hrs.

**529 Senior Project in Design or Technical Theatre U 3**

Individual project in design or technical theatre.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing in BFA program in theatre. Student assigned design or technical responsibility for major departmental production.

**531 Theatre Repertory I U G 3**

Survey of representative world drama from classical Greece to the 17th century.

Au Qtr. 3 cl. BER/LAC course.

**532 Theatre Repertory II U G 3**

Survey of representative western drama from the 17th century through the rise of realism.

Wi Qtr. 3 cl. BER/LAC course.

**533 Theatre Repertory III U G 3**

Survey of representative western drama since the rise of realism.

Sp Qtr. 3 cl. BER/LAC course.

**580 Acting Studio VII U 3**

Performing Shakespeare: study and practice of acting technique necessary to play Shakespeare.

Au Qtr. 3 1½-hr cl. Prereq: 482.

**581 Acting Studio VIII U 3**

Period styles: study and practice of acting technique necessary to portray characters from different theatrical periods.

Wi Qtr. 3 1½-hr cl. Prereq: 580.

**582 Acting Studio IX U 3**

Comic technique: study and practice of acting techniques of comedy.

Sp Qtr. 3 1½-hr cl. Prereq: 581.

**583 Speech and Voice Studio VII U 2**

Applied phonetics: phonetic transcription for stage dialects.

Au Qtr. 2 2-hr cl. Prereq: 485.

**584 Speech and Voice Studio VIII U 2**

Stage dialects: practical study of basic dialects for the stage.

Wi Qtr. 2 2-hr cl. Prereq: 583.

**585 Speech and Voice Studio IX U 2**

Character voices: practical study of basic vocal techniques for characterization.

Sp Qtr. 2 2-hr cl. Prereq: 584.

**600 Professional Aspects of Theatre U G 3**

Study of the professional theatre as a business; contracts, unions, the theatre marketplace; preparation of resumes, portfolios, audition pieces, interview.

Au Qtr. 3 cl. Prereq: 4th yr standing in theatre or final yr of grad study.

**601 Theatre Management U G 3**

Principles, practices, and techniques of theatre and stage management and a survey of modern management practices.

Wi Qtr. Prereq: 220 and 221; or equivs.

**610 Advanced Stage Directing U G 3**

Principles, techniques, and practice of advanced direction and integration of technical elements in theatrical production.

Sp Qtr. 3 2-hr cl. Prereq: 310 and permission of instructor.

**621 Advanced Theatre Graphics U G 3**

Technical graphics and drafting procedures for production of scenery and lighting, design, and shop drawings.

Sp Qtr. 1 2-hr cl. Prereq: 341 or equiv.

**622 Metals as a Scenic Element U G 3**

Introduction to metal products and fabrication techniques for scenery and properties.

Wi Qtr. 3 cl. Prereq: 220.

**623 Advanced Technical Production U G 3**

Consideration of methods and materials for stage rigging, mechanics, and non-traditional scenic materials.

Sp Qtr. Prereq: 341 or permission of instructor.

**624 Technical Direction U G 3**

Study of technical direction and production management; budget, personnel, schedule, other logistic problems in technical production.

Wi Qtr. 3 cl. Prereq: 220, 221, and written permission of instructor.

**625 Lighting Design I U G 3**

A study of light as a design medium for the stage; preparation of lighting designs for various stages.

Au Qtr. Prereq: 325 or equiv.

**626 Theatre Sound Techniques U G 3**

A survey of equipment and operational techniques used to provide sound support for theatrical productions.

Wi Qtr. 2 2-hr cl, 20 lab hrs arr. Prereq: 221.

**640 Decorative Arts for Theatre U G 3**

Condensed survey of decorative arts, ancient to modern; emphasis on interiors, furniture, textiles, and colors and their adaptation to stage use.

Wi Qtr.

**641 Stage Design Media U G 3**

Techniques of rendering for stage design in various media.

Au Qtr. Prereq: Permission of instructor.

**642 Scene Painting and Watercolor U G 3**

Techniques used in scene painting and watercolor; mixing and matching colors, rendering texture and form, enlarging painter's elevations; types of paints used in scene painting.

Au Qtr. Prereq: 641. Repeatable to a maximum of 6 cr hrs.

**643 Stage Design I U G 3**

Investigation of 20th-century design and rendering techniques and their application to the stage; experience in researching and designing projects.

Au Qtr. 2 cl, indiv conferences. Prereq: 341 or equiv with written permission of instructor.

**644 Intermediate Stage Design II U G 3**

Presentation of the design concept in three-dimensional media; emphasis on designing for nonproscenium production.

Wi Qtr. 1 2-hr cl. Prereq: 643 or equiv with written permission of instructor.

**645 Modern Stage Design Styles U G 3**

Study of the application of major stylistic trends in scenic design to modern theatrical productions through lecture-discussion and specific design projects.

Sp Qtr. Arr. Prereq: 644 or equiv with written permission of instructor.

**651 Intermediate Stage Costume Construction U G 3**

Methods of pattern development and construction techniques for creating historical stage costumes.

Sp Qtr. 2 cl hrs, 2 lab hrs. Prereq: 222 or written permission of instructor.

**652 Advanced Costume Construction for the Theatre U G 3**

The study of the materials, techniques, and procedures used in the design and construction of period stage costume, properties, and accessories.

Sp Qtr. 2 cl, 2 hrs lab. Prereq: 651.

**656 Costume Design for the Stage U G 3**

The study of the theories, principles, and process by which costumes are designed for a theatrical production.

Au Qtr. 2 cl, 2 lab hrs. Prereq: 100 or equiv with written permission of instructor.

**657 History of Costuming for the Stage U G 3**

Study of historical periods of clothing most often used in play production with emphasis on the relationship of period clothing to social department and movement.

Wi Qtr. 2 cl hrs, 2 lab hrs.

**658 Intermediate Costume Design U G 3**

Methods of stylization of costume design for drama, ballet, opera, musical comedy, and children's theatre.

Sp Qtr. 2 cl, 2 lab hrs. Prereq: 656 and 657.

**660 Play Writing U G 5**

Laboratory course in play writing; student plays developed from original idea through scenario into final production script with limited production of selected works.

Au, Wi Qtrs. Prereq: Basic knowledge of dramatic literature and permission of instructor. Repeatable to a maximum of 10 cr hrs including credit for English 667.

**671 History of the Theatre I U G 3**

Greek, Roman, medieval, Renaissance, and early Baroque theatre.

Au Qtr. 3 cl.

**672 History of the Theatre II U G 3**

Late Baroque theatre on the continent and England; romanticism; early forms of realistic theatre in Europe.

Wi Qtr. 3 cl.

**673 History of the Theatre III U G 3**

Western European theatre from the appearance of naturalism through the theatre of the absurd.

Su, Sp Qtrs. 3 cl.

**674 Contemporary Theatre History U G 3**

Contemporary continental, English, and American theatre, post World War II to the present.

Sp Qtr.

**678 American Theatre History II U G 3**

Development of the American theatre from World War I to the present; consideration of principal playwrights, actors, directors, and designers.

Sp Qtr. 3 cl. Not open to students with credit for 675 or 675.02.

**689 Field Work in Theatre U G 3-15**

Planned production or management experience in an off-campus professional, educational, community theatre or other agency under supervision.

Su, Au, Wi, Sp Qtrs. Prereq: Advanced undergrad or grad standing; written permission of adviser. Repeatable to a maximum of 15 cr hrs.

**692 Workshop U G 1-5**

Concentrated study of selected area of theatre.

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of workshop instructor. Repeatable to a maximum of 15 cr hrs in any combination of decimal subdivisions.

**692.09 Theatre Management****693 Individual Studies U G 1-5**

Conference, library, and laboratory work.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs.

**698 Study Tour U G 1-15**

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

**698.01 Domestic****698.02 Foreign****725 Advanced Stage Lighting Design U G 3**

Study and analysis of lighting design styles in relation to different forms of theatre arts; emphasis on practical problems.

Wi Qtr. 2 2-hr cl, 20 lab hrs arr. Prereq: 625.

**727 Advanced Lighting Technology U G 3**

Study of current and future lighting technology in the area of control systems and stage lighting equipment as it applies to advanced lighting design.

Sp Qtr. 2 2-hr cl. Prereq: 625 or equiv.

**762 Theatre Styles U G 3**

Study and analysis of significant styles of production in the theatre.

Au Qtr. 3 cl. Prereq: Permission of instructor. Not open to students with credit for 862 prior to Au 1985.

**771 Advanced Stage Movement Studio I U G 2**

Advanced mask work: focus on neutrality.

Au Qtr. 2 2-hr cl. Prereq: Grad standing and audition; or permission of instructor and audition.

**772 Advanced Stage Movement Studio II U G 2**

Physical comedy: focus on various historical and theatrical styles.

Wi Qtr. 2 2-hr cl. Prereq: 771.

**773 Advanced Stage Movement Studio III U G 2**

Stage combat: application to dramatic literature.

Sp Qtr. 2 2-hr cl. Prereq: 772.

**780 Advanced Acting Theory U G 3**

A study of the major theories of the art of acting and their application.

Sp Qtr. Prereq: Permission of instructor.

**H783 Honors Research U 3-5**

An individual program of study, with conferences, reports, and honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing; a grade of A in at least half of the theatre courses taken and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee or the Arts Honors Committee whichever is relevant to the student's program. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**786 Advanced Speech and Voice Studio I U G 2**

Installation of a unified voice/speech system: individual problems with emphasis on Standard American Preferred Speech.

Au Qtr. 2 2-hr cl. Prereq: Audition and grad standing.

**787 Advanced Speech and Voice Studio II U G 2**

Phonetics and psychology of sound: continuation of 786.

Wi Qtr. 2 cl. Prereq: 786.

**788 Advanced Speech and Voice Studio III U G 2**

Character work: applying phonetics and psychology of sound.

Sp Qtr. 2 cl. Prereq: 787.

**790 Advanced Acting Studio I U G 3**

Method characterization: the actor is trained towards neutrality and introduced to process characterization; scene study from poetic realism.

Au Qtr. 3 1½-hr cl. Prereq: Grad standing and audition; or permission of instructor and audition.

**791 Advanced Acting Studio II U G 3**

Shakespeare and epic styles: focus on extending the actor's range and use of strategy and on the use of language for characterization.

Wi Qtr. 3 1½-hr cl. Prereq: 790.

**792 Advanced Acting Studio III U G 3**

Comedy and comic technique: training focuses on improvisation as a basis of character analysis; scene study from realism, post-modernism, and farce.

Sp Qtr. 3 1½-hr cl. Prereq: 791.

**800 Advanced Studies in Theatre G 3 or 5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions.

800.01 Stage Direction/Management

800.03 Dramatic Literature

800.05 Costuming/Makeup

800.08 Acting

800.09 Theatre Management

**801 Research Methods G 3**

Introduction to graduate study: methods and tools of research in all areas of theatre.

Su, Au Qtrs. 2 2-hr cl, lab arr.

**802 Seminars in Theatre G 2-5**

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions.

802.03 Dramatic Literature

802.06 Criticism, Theory, Playwriting

802.08 Acting

**805 Graduate Theatre Practicum G 1-5**

Individual theatrical performance and production activities at an advanced level under faculty supervision.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of adviser.

Repeatable to a maximum of 40 cr hrs in any combination of decimal subdivisions. These courses are graded S/U.

805.01 Stage Direction/Management

805.02 Technical Production/Lighting

805.03 Dramaturgy

**805.04 Stage Design****805.05 Costuming/Makeup****805.08 Acting****810 Directing Period Drama G 3**

Advanced problems in directing.

Wi Qtr. Prereq: 610, 671, 672, 673, and 762 or equiv.

**812 Directing Workshop G 1**

Advanced concepts of directing and production processes.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: 610 and permission of instructor. Progress (P) graded; letter grade awarded upon completion of three qtrs with one cr hr each qtr.

**825 Advanced Stage Lighting Design II G 3**

Advanced study of lighting design and its creative application to modern theatre practice.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 725 or permission of instructor.

**830 Comparative Comedy G 3**

Variations in the form of the comic genre from Greek farce to contemporary comedy.

Au Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs.

**831 Comparative Tragedy G 3**

Variations in the form of the tragic genre from Aeschylus to the present.

Wi Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs.

**832 Comparative Melodrama G 3**

Variations in the melodramatic form from Euripides to the present.

Sp Qtr. 3 cl. Prereq: 531, 532, 533, and 860 or equivs.

**833 Seminal Modern Drama G 3**

Consideration of modern dramatists who have most influenced the content and the technique of contemporary drama.

Au Qtr.

**834 Contemporary Drama G 3**

Consideration of the most significant post-World War II dramatists.

Wi Qtr. 3 cl.

**845 Advanced Scene Design G 3**

Study of historic and modern scene design and application to modern theatrical stage practices; experience in executing creative and interpretive project designs.

Su, Au, Wi, Sp Qtrs. Prereq: 645 or equiv and permission of instructor. Repeatable to a maximum of 9 cr hrs.

**855 Advanced Stage Costume Design G 3**

Theory, methods, and materials of costume design with emphasis on design problems for the stage.

Su, Au, Wi, Sp Qtrs. Prereq: 658 or equiv with written permission. Repeatable to a maximum of 9 cr hrs.

**860 Theatrical Criticism I G 3**

Detailed analysis of the classical sources of critical theory of the theatre.

Wi Qtr. 3 cl. Prereq: 762 or permission of instructor.

**861 Theatrical Criticism II G 3**

Concentrated analysis of critical theories presented in chapters 12 through 20 of Aristotle's *Poetics* and the examination of neoclassical and romantic theories and critics.

Sp Qtr. 3 cl. Prereq: 860 or written permission of instructor.

**863 Theatrical Criticism III G 3**

Detailed analysis of critical theories of the 20th century, especially since 1945.

3 cl. Prereq: 861 taken after Au Qtr 1985 or permission of instructor. Not open to students with credit for 861 prior to Au Qtr 1985.

**870 Greek, Roman, and Medieval Theatre G 3**

Advanced study and directed research in Greek, Roman, and Medieval theatre and drama.

Au Qtr. Prereq: 671 or equiv.

**872 European Renaissance Theatre and Baroque Theatre G 3**

Advanced study and directed research in European Renaissance theatre and Baroque theatre and drama.

Wi Qtr. Prereq: 671 and 672 or equivalents.

**873 18th and 19th Century Theatre G 3**

Advanced study and directed research in European and American theatre and drama through the beginning of the twentieth century.

Sp Qtr. Prereq: 671, 672 and 673, or equivalents.

**880 Advanced Acting Studio IV G 3**

Presentational performance: technique of outer direction and of creating character duality through mask.

Au Qtr. 3 1½-hr cl. Prereq: 792.

**881 Advanced Acting Studio V G 3**

Period styles: exploration of acting conventions of classical periods; characterizations through manners, deportment, costumes, and properties; use of heightened language.

Wi Qtr. 3 1½-hr cl. Prereq: 880.

**882 Advanced Acting Studio VI G 3**

Applied styles: exploration of acting techniques and conventions of comedy, tragedy, farce, melodrama, and tragicomedy.

Sp Qtr. 3 1½-hr cl. Prereq: 881.

**883 Advanced Speech and Voice Studio IV G 2**

Voice and speech maintenance: development of skills in vocal performance of verse drama.

Au Qtr. 2 2-hr cl. Prereq: 785.

**884 Advanced Speech and Voice Studio V G 2**

Vocal technique for Shakespearean comedy: development of the techniques for the vocal performance of high and low comic plays of Shakespeare.

Wi Qtr. 2 2-hr cl. Prereq: 883.

**885 Advanced Speech and Voice Studio VI G 2**

Vocal techniques for Restoration and Greek drama: development of the techniques for the vocal performance of characters from the plays of the Restoration and Classical Greek periods.

Sp Qtr. 2 2-hr cl. Prereq: 884.

**886 Advanced Stage Movement Studio IV G 2**

Synthesizing the mask: Physical alignment and mask work with the synthesis of mask and other scenic design elements.

Au Qtr. 2 2-hr cl. Prereq: 773.

**887 Advanced Stage Movement Studio V G 2**

Caricatured self-mask: study of the personal clown with the caricatured self-mask.

Wi Qtr. 2 2-hr cl. Prereq: 886.

**888 Advanced Stage Movement Studio VI G 2**

Graphing movement principles: review of specific movement principles, graphing them for the acting process.

Sp Qtr. 2 2-hr cl. Prereq: 887.

**893 Individual Studies G 3-5**

Su, Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**980 Advanced Acting Studio VII G 3**

Rehearsal techniques: special emphasis on the style, research, and characterization proper to the plays in the concurrent repertory season.

Au Qtr. 3 1½-hr cl. Prereq: 882.

**981 Advanced Acting Studio VIII G 3**

Rehearsal techniques: special emphasis on concurrent plays in repertory company season.

Wi Qtr. 3 1½-hr cl. Prereq: 980.

**982 Advanced Acting Studio IX G 3**

Rehearsal techniques: special emphasis on concurrent plays in repertory company season.

Sp Qtr. 3 1½-hr cl. Prereq: 981.

**983 Advanced Speech and Voice Studio VII G 2**

Applied phonetics: advanced study of phonetic transcription and structural awareness.

Au Qtr. 2 2-hr cl. Prereq: 885.

**984 Advanced Speech and Voice Studio VIII G 2**

Stage dialects: process and practical application of phonetic and structural variations in performing dialects.

Wi Qtr. 2 2-hr cl. Prereq: 983.

**985 Advanced Speech and Voice Studio IX G 2**

Character voices: process and practical application of phonetic and structural variations in performing character voices.

Sp Qtr. 2 2-hr cl. Prereq: 984.

**995 Proseminar G 1**

Reading and directed research in theatre history, criticism and literature, and an examination of the theoretical and social dimensions of the theatrical art.

Au, Wi, Sp Qtrs. Arr. Repeatable to a maximum of 18 cr hrs. This course is graded S/U.

**998 Research in Theatre: Thesis G 1-6**

Research for thesis purposes only.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**999 Research in Theatre: Dissertation G Arr**

Research for dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Turkish

256 Cunz Hall, 1841 Millikin Road, 292-9255

**101 Elementary Turkish I U 5**

Introduction to Turkish; development of listening, reading, speaking, and writing skills.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**102 Elementary Turkish II U 5**

Further development of listening, reading, speaking, and writing skills.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**103 Intermediate Turkish I U 5**

Development of listening, reading, speaking, and writing skills; reading of simplified literary texts about Turkish culture.

Sp Qtr. 5 cl. Prereq: 102. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**104 Intermediate Turkish II U 5**

Reading of Turkish short stories and poems with attention to literary and cultural appreciation; development of basic language skills.

Au Qtr. 5 cl. Prereq: 103. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**Masterpieces of Near Eastern Literatures in Translation**

See JANELL 272.

**293 Individual Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Special topics announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**372 Turkish Literature in Translation U 5**

A study of Turkish literature and the history of its discourses, genres, and styles.

Wi, Sp Qtrs. 5 cl.

**401 Advanced Turkish I U 5**

Extensive reading from literary texts, with practice in conversation and composition.

Wi Qtr. 5 cl. Prereq: 104 or equiv. Not open to students with credit for 294 Wi Qtr 83 or Wi Qtr 84.

**402 Advanced Turkish II U 5**

The study of nineteenth- and twentieth-century literary texts, with advanced composition and translation.

Sp Qtr. 5 cl. Prereq: 401 or equiv. Not open to students with credit for 294 Sp Qtr 83 or Sp Qtr 84.

**403 Introduction to Ottoman U 5**

A study of Ottoman orthography, textual conventions, and style between the 15th and 20th centuries.

Wi Qtr. 5 cl. Prereq: 104 or permission of instructor.

**651 Modern Turkish Poetry and Prose U G 5**

Selected topics in poetry and prose of the 20th century; conducted in Turkish.

Au, Sp Qtrs. 5 cl. Prereq: 402 or permission of instructor.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Special topics announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**H783 Honors Research U 3-5**

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation *with distinction*, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

# Ukrainian

232 Cunz Hall, 1841 Millikin Road, 292-6733

**101†\* Elementary Ukrainian I**

Development of oral and written language skills.

Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**101.01 Classroom Track U 5**

Au Qtr. 5 cl.

**101.51 Individualized Track U 1-5**

Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 hrs before the end of the qtr may proceed to 102.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement.

**102†\* Elementary Ukrainian II**

Development of oral and written language skills.

Prereq: 101 or 101.01 or 5 cr hrs of 101.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. FL Admis Cond courses.

**102.01 Classroom Track U 5**

Wi Qtr. 5 cl.

**102.51 Individualized Track U 1-5**

Prereq: 101 or 101.01 or 5 cr hrs of 101.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Students who complete 5 cr hrs before the end of the qtr may proceed to 103.51. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 101.51 and 102.51 concurrently with permission of instructor.

**103† Intermediate Ukrainian I****103.51 Individualized Track U 1-5**

Development of all four skills: listening comprehension, speaking, reading, and writing.

Su Qtr. Prereq: 102.01 or 5 cr hrs of 102.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 102.51 and 103.51 concurrently with permission of instructor.

**104† Intermedidate Ukrainian II****104.51 Individualized Track U 1-5**

Continuation of 103.51; development of the four skills.

Su, Au, Wi, Sp Qtrs. Prereq: 5 cr hrs of 103.51 or permission of instructor. Not open to native speakers of this language through regular course enrollment or EM credit. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 103.51 and 104.51 concurrently with permission of instructor.

**111†\* Intensive Intermediate Ukrainian U 10**

Readings, oral and written practice, grammar review.

Sp Qtr. 10 cl. Prereq: 102 or equiv. Not open to native speakers of this language through regular course enrollment or EM credit. Equiv to the third and fourth courses of the foreign language sequence.

**405 Advanced Ukrainian I****405.51 Individualized Track U 1-5**

Continued development of the four skills based primarily on reading selections from the contemporary Ukrainian press.

Su Qtr. Prereq: 5 cr hrs of 104.51 or 111 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 104.51 and 405.51 concurrently with permission of instructor.

## 407 Advanced Ukrainian II

**407.51 Individualized Track U 1-5**  
Continuation of 405.51.

Su Qtr. Prereq: 5 cr hrs of 405.51 or permission of instructor. Students register for and complete from 1 to 5 cr hrs during the qtr. Progress is sequential from one cr hr to the next, with proficiency at the level of 80% required for advancement. Students may register for 405.51 and 407.51 concurrently with permission of instructor.

## University College

110 Enarson Hall, 154 West 12th Avenue, 292-6344

### 100 University Survey U 1

Introduction to the University community; strategies for successful transition to and participation in that community; institutional context of academic programs; education and learning as life-long processes; University resources and procedures.

Su, Au, Wi, Sp Qtrs. 2 1-hr cl. H100 (honors) decimal subdivisions may be available to students enrolled in an honors program or by permission of college. Students schedule a section of University Survey corresponding to their curricular academic program. Not open to students with credit for Agr 100, Arts Col 100, Arts&Sci 100, Engineer 100, Home Ec 100, or Nat Res 100. These courses are graded S/U.

- 100.01 Business Survey
- 100.03 Agriculture Survey
- 100.05 Allied Medical Professions Survey
- 100.07 Architecture Survey
- 100.09 Art Survey
- 100.11 Arts and Sciences Survey
- 100.13 Dentistry Survey
- 100.15 Dental Hygiene Survey
- 100.17 Education Survey
- 100.19 Engineering Survey
- 100.21 General Baccalaureate Survey
- 100.23 Home Economics Survey
- 100.25 Medicine Survey
- 100.27 Music Survey
- 100.28 Natural Resources Survey
- 100.29 Nursing Survey
- 100.31 Optometry Survey
- 100.33 Pharmacy Survey
- 100.35 Social Work Survey
- 100.37 Veterinary Medicine Survey

## Veterinary Anatomy and Cellular Biology

A-100 Sisson Hall, 1900 Coffey Road, 292-2091

### 400 Veterinary Anatomy U 5

Lectures and demonstrations in the various anatomical systems of domestic animals.

Au Qtr. 5 cl. Prereq: Zoology 201 or equiv. Not open to students with credit for 100.

### 693 Individual Studies P G 2-5

Training in laboratory investigation of special problems. Graduate faculty.

Su, Au, Wi, Sp Qtrs. 1 cl, 6-15 lab hrs. Prereq: VM Coll 530 and 531. Repeatable to a maximum of 18 cr hrs.

### 700 Applied Functional Neuroanatomy I P G 3

Study of structure and function of autonomic, peripheral, and central nervous systems of infraprimates, with references to primates, as related to clinical neurology, neuropathology,

neurosurgery, or neurobiological research. Anatomy faculty.

Wi Qtr. 3 cl. Prereq: VM Coll 603, Anatomy 704 or equiv, and permission of dept.

### 701\* Applied Functional Neuroanatomy II P G 3

An application of the structure and function of the central nervous system of the infraprimates, with reference to primates. Anatomy faculty.

Sp Qtr. 3 cl. Prereq: VM Coll 603, Anatomy 704 or equiv, and permission of dept.

### 710\* Anatomy of Avian and Sub-Primate Laboratory Animals P G 3

A comparative anatomical study of the various systems of the avian species and common sub-human primates used in laboratory investigation.

Sp Qtr. 2 cl, 1 3-hr lab. Prereq: VM Coll 520 and 521 or equiv course work in anatomy.

### 794 Group Studies in Veterinary Anatomy P G 2-6

Provides flexibility in the veterinary professional program by offering selected topics in veterinary anatomy. Anatomy faculty.

Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs for prof cr and 2-8 cr hrs for grad cr.

#### 794.01 Equine Surgical Anatomy P G 3

Emphasis on blood and nerve supply to common surgical sites; special emphasis involving methods of anesthetizing selected surgical areas and areas useful in diagnostic procedures for lameness.

Wi Qtr. 1 cl, 1 3-hr lab. Prereq: VM Coll 521 or equiv, and permission of instructor.

#### 794.02\* Ophthalmic Anatomy P G 2

The comparative anatomy, histology, neuroanatomy, and embryology of the orbit and its contents in mammals, birds, and reptiles.

Sp Qtr. Prereq: VM Coll 612 or equiv and permission of instructor.

#### 794.10 Surgical Anatomy of the Dog and Cat P G 4

Surgical and clinical anatomy of the dog and cat as studied by dissection, lecture, prosection, and palpation.

Sp Qtr. 2 cl, 2 2-hr labs.

### 799 Seminar in Veterinary Anatomy P G 1 or 2

Presentation of new scientific knowledge in the morphological sciences by faculty and graduate students. Anatomy faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Grad or professional standing in vet anat. Repeatable to a maximum of 16 cr hrs.

### 801 Anatomical Techniques G 2-5

Theory and practice of macroscopic, microscopic, and scanning electron microscopic methods, including specimen preparation for microcirculation studies, fixing, imbedding, sectioning, mounting, and staining of animal tissue. Special emphasis is placed upon techniques for the preparation of microcorrosion casts for SEM study. Graduate faculty.

Su, Au, Wi, Sp Qtrs. 1 cl, 6-15 lab hrs. Prereq: VM Coll 521, 531 or equiv and permission of instructor. Repeatable to a maximum of 15 cr hrs.

### 802 Advanced Veterinary Anatomy G 3-5

Advanced topographical anatomy of domestic animals studied by lecture, prosection, and dissection. Graduate faculty.

1 cl, 1 hr prosection, 2-6 lab hrs. Prereq: Vet med 3rd yr standing, veterinary gross anatomy, and permission of instructor.

### 999 Research in Veterinary Anatomy G Arr 1-18

Research for dissertation or thesis purposes only. Graduate faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. This course is graded S/U.

# Veterinary Clinical Sciences

1010 Veterinary Hospital, 1935 Coffey Road, 292-7105

## 655 Photography in the Practice of Veterinary Medicine P 3

Common medical photography principles applied in such areas as patient documentation, surgery, gross specimen photography, ophthalmology, and radiography reduction. Au, Sp Qtrs. 3 cl.

## 694 Group Studies P G 1-4

Su, Au, Wi, Sp Qtrs. Prereq: Vet med 2nd, 3rd or 4th yr standing. Repeatable to a maximum of 20 cr hrs.

## 710 Applied Veterinary Medicine Options

A series of clinical studies offered as electives for 4th year Vet Med students to arrange into an elective program in conjunction with a faculty adviser.

Su, Au, Wi, Sp Qtrs. Clinics, seminars, ward rounds, and 24-hr patient care responsibilities. Prereq: Vet med 4th yr standing. Repeatable to a maximum of 6 cr hrs.

### 710.01 Receiving/Out-Patient Clinic P 2, 3

Clinical instruction designed to improve the student's proficiency in client relations, diagnosis, treatment, and prevention of diseases in out-patients.

### 710.02 Small Animal Medicine P 2 or 3

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of small animals.

### 710.03 Small Animal Surgery P 2 or 3

The application of principles of surgery to treatment of diseases of companion animals.

### 710.04 Food Animal Medicine and Surgery P 2 or 3

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of food animals.

### 710.05 Equine Medicine and Surgery P 2 or 3

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of the horse.

### 710.06 Field Service P 2 or 3

The application of the principles of management, diagnosis, treatment, and prevention of disease in farm and exotic animals in the environment in which they are produced.

Field trips to facilities for patient care, case discussions, seminars, and 24-hr patient care responsibilities.

### 710.07 Veterinary Clinical Radiology P 2, 3

Diagnostic and therapeutic techniques that will broaden the student's knowledge in clinical diagnosis and treatment.

### 710.08 Clinical Microbiology P 2, 3

Assignment of patients for in-depth study of diagnosis and course of disease with emphasis on selection and interpretation of laboratory parameters; emphasis on microbiologic and immunologic methods for diagnosis and evaluation of infectious disease.

### 710.09 Clinical Anesthesiology P 2, 3

The application of principles of anesthesiology.

### 710.12 Veterinary Clinical Ophthalmology P 2, 3

Application of principles of diagnosis and treatment of diseases of the eye to patients of all species.

### 710.13 Applied Theriogenology P 2 or 3

Application of principles of diagnosis, treatment, and prevention of diseases of the the reproductive system of all species.

Sp Qtr.

## 725 Canine and Feline Dentistry P G 1

Lectures, demonstrations, and laboratories covering prophylactic care, and extraction of teeth, endodontic and prosthodontic therapy.

Sp Qtr. Prereq: Vet med 3rd or 4th yr standing or permission of instructor.

## 727 Diseases of Pet Birds and Aquarium Fish P G 2

Aspects of pet bird practice including restraint, nutrition, disease problems, therapy, radiology, anesthesia, and surgery of budgerigars, and other species of pet caged birds; includes laboratory utilizing live birds enabling students to practice techniques; management, nutrition, and common disease problems of aquarium fish will be discussed.

Wi Qtr. 2 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing or written permission of instructor.

## 728 Veterinary Anesthesiology Laboratory P G 2

Application of the principles of anesthesiology in the common domestic animals.

Sp Qtr. 2 lab hrs. Prereq: Vet med 2nd and 4th yr standing.

## 730\* Surgical Diseases of Horses P G 4

Current concepts of diagnosis and treatment of diseases of the horse with emphasis on lameness and surgery.

Wi Qtr. 4 cl. Prereq: 3rd or 4th yr standing on elective qtr.

## 731 Topics in Equine Medicine P G 1

A seminar course covering recent "classic" articles from the literature.

Sp Qtr. 1 cl. Prereq: Vet med 3rd or 4th yr standing.

## 736 Diseases of Sheep P G 3

Lecture, discussion, and demonstration of diagnosis, treatment, and prevention of sheep diseases including field surgery and management; goat diseases may also be discussed; time permitting one or more labs will be held.

Wi Qtr. Prereq: 2nd, 3rd, or 4th yr standing.

## 738 Pleasure Horse Medicine P 1

Review of prevention, diagnosis, and treatment of diseases which are common problems of pleasure horses.

Au Qtr. Prereq: Vet med 2nd, 3rd, or 4th yr standing.

## 740\* Analysis of Pharmacological Systems I P G 3

Analysis of several pharmacological systems using a combination of classical mathematical analysis, model building, and newer analog and digital techniques.

Sp Qtr. 3 cl. Prereq: Permission of instructor.

## 741 Zoo Animal Medicine P 1

Discussion and illustrations covering chemical restraint, maintenance of animal health, disease prevention and treatment, past history discussions, and other duties confronting zoo veterinarians.

Wi Qtr. 1 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing.

## 742\* Analysis of Pharmacological Systems II P G 3

Continuation of 740; comparison of existing methods for estimating kinetic parameters.

Su Qtr. 3 cl. Prereq: Permission of instructor.

## 745 Applications of Microcomputers to Veterinary Medicine P 2

Hardware, software, and applications to veterinary medicine.

Wi Qtr 2 cl. Prereq: Vet med 4th yr standing.

## 750 Veterinary Practice and Hospital Management P 2

Basic principles of hospital and practice management including insurance, partnerships, corporations, accounting, taxes, employees, and general management procedures.

Wi Qtr. Prereq: Vet med 4th yr standing.

## 760 Specialized Study in Veterinary Medicine P 1-16

Field or lab study encompassing the various areas in the field of veterinary medicine through a direct preceptorship with qualified professionals.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Vet med 4th yr standing and permission of instructor. To be taken during elective qtr. Cross listed in all veterinary medicine depts. Repeatable to a maximum of 16 cr hrs. This course is graded S/U.

**764 Design and Analysis of Comparative Biomedical Research I P G 3**

Theory and application of basic statistical concepts as they affect design, analysis, and interpretation of biomedical research.

Au Qtr. 3 cl. Prereq: Vet med 2nd, 3rd or 4th yr standing; or permission of instructor. Not open to students with credit for 640 or Prev Med 764 or Vet Prev 764. Cross-listed in Preventive Medicine and Veterinary Preventive Medicine.

**767 Advanced Nephrology/Urology P G 2**

Study of diseases of the upper and lower urinary tracts; emphasis on diagnosis and treatment; clinical cases will be discussed.

Wi Qtr. 1 cl. Prereq: Vet med 3rd or 4th yr standing.

**770 Orthopedic Conference P G 2**

Practical application of advanced surgical techniques for treatment of diseases of the skeletal system requiring surgery.

Sp Qtr. 2 conferences per week. Prereq: Vet med 4th yr standing or permission of instructor.

**775 Design and Analysis of Comparative Biomedical Research II P G 3**

Continuation of 764.

Wi Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing; or permission of instructor. Not open to students with credit for 641 or Vet Prev 775.

**780 Diagnostic Contrast Radiology P G 1-8**

Routine contrast studies of the digestive, urinary, and nervous systems, with emphasis on techniques and contrast materials; small groups of students will perform each of the procedures.

Au, Wi, Sp Qtrs. Prereq: Vet med 3rd or 4th year or grad standing.

**782\* Pharmacology of Cardiac Drugs P G 3**

Clinical evaluation, pharmacokinetics, and pharmacotherapy of cardiac dysrhythmias.

Wi Qtr. 2 cl. Prereq: 3rd or 4th yr or grad standing. Not open to students with credit for Vet Phys 782. Cross listed in Veterinary Physiology and Pharmacology.

**790 Advanced Theriogenology Seminar P G 1**

Review of current theriogenology literature placing primary emphasis on experimental design, procedures, and scientific conclusions of reported work; each student will orally describe and prepare a written research protocol.

Au, Wi, Sp Qtrs. Prereq: Grad standing or permission of instructor. Repeatable to maximum of 15 cr hrs.

**791 Reproductive Techniques P G 2**

Au, Wi Qtrs. Prereq: Vet med 3rd yr standing.

**791.01 Equine Reproductive Studies**

Presents equine techniques and explanations for when to perform the procedures and how to interpret results. 8 lab hrs.

**791.02 Bovine Reproductive Techniques**

Evaluation of the bovine reproductive system including pregnancy diagnosis, breeding soundness evaluation, and artificial insemination techniques.

1 cl, 1-2 hr cl.

**792 Reproduction Laboratory, Bovine P G 2**

A laboratory for the application of diagnostic and therapeutic techniques for diseases of the reproductive system of domestic animals.

Sp Qtr. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 18 cr hrs.

**793 Individual Studies P G 1-8**

A supervised critical investigation of some aspects of animal disease about which there is a mutual curiosity on the part of both the student and faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Vet med 3rd or 4th yr standing, adequate clinical training and written permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**794 Group Studies in Veterinary Clinical Sciences P G 1-8**

Su, Au, Wi, Sp Qtrs. Prereq: Vet med 4th yr standing or written permission of instructor. Repeatable to a maximum of 30 cr hrs.

**794.19 Advanced Topics in Equine Surgery**

Practical application of advanced surgical techniques for treatment of diseases of horses.

**794.20\* Advanced Equine Lameness**

Study of the methods used for diagnosis and treatment of diseases causing lameness in horses; includes radiographic and surgical techniques.

**794.23 Advanced Gastroenterology**

Study of diagnosis, treatment, and prevention of diseases of the gastrointestinal system.

**850 Seminar in Veterinary Clinical Sciences G 1**

Su, Au, Wi, Sp Qtrs. 1 hr per wk in seminar. Prereq: The degree Doctor of Veterinary Medicine. Repeatable to a maximum of 10 cr hrs.

**999 Research in Veterinary Clinical Sciences G Arr 1-18**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Veterinary Medicine, College of

101A Sisson Hall, 1900 Coffey Road, 292-1171

**510 Principles of Epidemiology P 3**

Epidemiologic principles and methodology as applied to infectious and noninfectious diseases; analysis of host, agent, and environmental factors in disease causation; introduction to retrospective and prospective studies used in studying etiologic factors involved in disease occurrence.

Au Qtr. 3 cl. Prereq: Vet med 1st yr standing.

**520 Topographic Anatomy (Canine) P 5**

Body and its components as forms, relationships, and mechanical functioning.

Au Qtr. 2 cl, 3 2-hr labs. Prereq: Vet med 1st yr standing.

**521 Topographic Anatomy (Equine) P 4**

Continuation of 520.

Wi Qtr. Prereq: Vet Med 1st yr standing.

**522 Topographic Anatomy (Food Animals) P 4**

Continuation of 521.

Sp Qtr. 2 cl, 2 lab hrs. Prereq: Vet med 1st yr standing.

**525 Principles of Radiology P 1**

Study of the basic principles of radiology, including positioning, exposure and processing, radiation biology, and radiation safety.

Wi Qtr. Prereq: 1st yr standing in College of Vet med.

**530 Microscopic and Developmental Anatomy I P 5**

Study of microscopic and ultrastructural features of cells and tissues, as well as basic fetal development.

Au Qtr. Prereq: Vet med 1st yr standing.

**531 Microscopic and Developmental Anatomy II P 4**

Correlated study of the development, microscopic structure, and ultrastructural morphology of organ systems.

Wi Qtr. Prereq: Vet med 1st yr standing.

**540 Structure and Function of Cells P 5**

Introduction to structure and function at cellular level including physiological principles of homeostasis, energetics, metabolism, enzymes, nutrition, and growth.

Au Qtr. Prereq: Vet med 1st yr standing.



**550 Comparative Biology of Disease P 5**

An interdisciplinary study of the interactions between disease producing agents, body systems, tissues, cells, subcellular units, and selected drugs.

Prereq: Vet med 1st yr standing.

**550.01 Comparative Biology of Disease I**

Wi Qtr.

**550.02 Comparative Biology of Disease II**

Wi Qtr.

**560 Introduction to Veterinary Profession: Ethics and Jurisprudence P 1**

Problems faced by the practicing veterinarian in relation to the Ohio code, the law, ethics, and communications.

Au Qtr. 1 cl. Prereq: Vet med 1st yr standing.

**561 Pharmacology P 5**

Basic principles of pharmacology, therapeutics, and chemotherapy of disease.

Sp Qtr. 5 cl. Prereq: Vet med 1st yr standing.

**562 Introduction to Anesthesiology P 2**

Introduction to anesthesia.

Wi Qtr. Prereq: Vet med 2nd yr standing.

**563 Introduction to Surgery P 2**

Introduction to surgery.

Sp Qtr. 2 cl, or 1 cl and 1 lab. Prereq: Vet med 2nd yr standing.

**600 Cardiovascular System P 6**

A comparative study of the structure, function, and dysfunction of the cardiovascular system including arrhythmias, abnormal flow, congenital disease, etiologic agents, diagnostic methods, and therapeutic approaches.

Au Qtr. Prereq: Vet med 2nd yr standing.

**601 Respiratory System P 5**

A comparative study of the structure, function, and dysfunction of the respiratory system including reaction to injury, ventilation defects, pneumonias, neoplastic disease, radiological diagnosis, and therapeutic approaches.

Au Qtr. 5 cl. Prereq: Vet med 2nd yr standing.

**602 Urinary System P 6**

A comparative study of the structure, function, and dysfunction of the urinary system including diseases of the kidney, bladder, and urethra, and their diagnosis and treatment.

Wi Qtr. Prereq: Vet med 2nd yr standing.

**603 Neurobiology P 4****603.01 Neurobiology I**

Comparative study of structure, stressing functional anatomy, normal physiology, and the examination of the nervous system.

Sp Qtr. 4 cl. Prereq: Vet med 1st yr standing.

**603.02 Neurobiology II**

Continuation of 603.01.

Au Qtr. 4 cl. Prereq: Vet med 2nd yr standing.

**604 Endocrine System P 5**

A comparative study of the structures, function, and dysfunction of the endocrine system including diseases of each endocrine organ and their relationships to whole body functions.

Sp Qtr. 5 cl. Prereq: Vet med 1st yr standing.

**605 Reproductive System P 6**

A comparative study of the structure, function, and dysfunction of the reproductive system including etiologic, pathogenic, pathophysiologic, therapeutic, and preventive aspects of reproductive diseases.

Sp Qtr. 5 cl, 2 labs. Prereq: Vet med 2nd yr standing.

**606 Integumentary System P 5**

A comparative study of the structure, function, and dysfunction of the integumentary system including important infectious and parasitic diseases, diagnosis, treatment, and prevention.

Sp Qtr. 5 cl, or 4 cl and 2 labs. Prereq: Vet med 2nd yr standing.

**607 Musculoskeletal System P 5**

A comparative study of the structure, function, and dysfunction of the musculoskeletal system including congenital and acquired diseases, their radiographic diagnosis, treatment, and prevention.

Wi Qtr. 5 cl. Prereq: Vet med 2nd yr standing.

**609 Digestive System**

Prereq: Vet med 2nd yr standing.

**609.01 Digestive System I P 4**

A comprehensive study of the upper gastrointestinal tract of domestic animals including gastrointestinal parasitology.

Wi Qtr. 4 cl or equiv lab hrs.

**609.02 Digestive System II P 4**

A comprehensive study of the lower gastrointestinal tract including clinical gastroenterology.

Sp Qtr. 4 cl.

**611 Veterinary Public Health P 4**

Introduction to the epidemiology and importance of the various zoonoses common to both animals and man with emphasis on the role of the veterinarian in the prevention and control of these diseases; meat/food hygiene and environmental factors affecting health.

Sp Qtr. 3 cl, 2 lab hrs. Prereq: Vet med 3rd yr standing.

**612 Introduction to Veterinary Ophthalmology P 2**

Developmental anatomy, comparative anatomy, histology, and physiology of the eye and adnexa of domestic animals will be studied.

Sp Qtr. Prereq: Vet med 2nd yr standing.

**618 Hemic-Lymphatic System P 5**

A comparative study of the hemic-lymphatic system with emphasis on dysfunction immunologic diseases diagnosis, treatment and prevention of hemopoietic disease.

Au Qtr. Prereq: Vet med 2nd yr standing.

**620 Applied Veterinary Medicine I P 4**

Clinical instruction in surgery and medicine; application of surgical techniques to treatment of diseases of small companion animals.

Au, Wi, Qtrs. 16 lab hrs/wk. Prereq: Vet med 3rd yr standing.

**621 Applied Veterinary Medicine II P 4**

Laboratory instruction in microbiology, parasitology and radiology; instruction and self study in minor techniques for large animals.

Au, Wi Qtrs. 12-16 lab hrs/wk. Prereq: Vet med 3rd yr standing.

**622 Applied Veterinary Medicine Clinics P 4**

Clinical instruction in each clinical service; patient care, ward rounds, seminars in each section.

Sp Qtr. 9-noon daily. Clinics with patient care responsibility, ward rounds, and conferences. Prereq: Vet med 3rd yr standing. This course is graded S/U.

**624 Small Animal Medicine I P 5**

Problem solving approach to the study of principles of diagnosis, treatment, and prevention of disease of small companion animals.

Au Qtr. 5 cl. Prereq: Vet med 3rd yr standing.

**625 Small Animal Medicine II P 5**

Continuation of 624.

Wi Qtr. 5 cl. Prereq: Vet med 3rd yr standing.

**628 Small Animal Surgery P 5**

Study of the principles of surgery applied to treatment of diseases of small companion animals.

Au Qtr. 5 cl. Prereq: Vet med 3rd yr standing.

**630 Equine Medicine and Surgery I P 4**

Problem solving approach to the study of diseases of horses; application of basic principles to the diagnosis, treatment, and prevention of diseases.

Au Qtr. 4 cl. Prereq: Vet med 3rd yr standing.

**631 Equine Medicine and Surgery II P 4**

Continuation of 630.

Wi Qtr. 4 cl/week. Prereq: Vet med 3rd yr standing.

**632 Ruminant Medicine and Surgery I P 5**

Study of diseases of ruminants; problem solving approach will be used; diagnosis, treatment, and prevention.

Wi Qtr. 5 cl. Prereq: Vet med 3rd yr standing.

**633 Ruminant Medicine and Surgery II P 5**

Continuation of 632.

Sp Qtr 5 cl. Prereq: Vet med 3rd yr standing.

**640 Veterinary Toxicology P 2**

Study of toxic substances affecting domestic animals including major types of poisons, sources, mechanisms of action, diagnosis, and treatment

Au Qtr. 2 cl Prereq: Vet med 3rd yr standing.

**642 Avian Medicine P 2**

Study of the diagnosis, treatment, and prevention of diseases of poultry and pet birds.

Wi Qtr. 2 cl. Prereq: Vet med 3rd yr standing.

**644 Diseases of Swine P 3**

Problem solving approach to the study of the principles of diagnosis, treatment, and prevention of diseases of swine.

Sp Qtr. 3 cl. Prereq: Vet med 3rd yr standing.

**646 Laboratory Animal Medicine P 2**

Study of diseases of laboratory animals with a focus on prevention, control, and eradication.

Sp Qtr 2 cl. Prereq: Vet med 3rd yr standing.

**650 Legal Aspects of Practice Management P 1**

Basic concepts of the law as it pertains to the veterinarian to include contracts, applicable statutes and federal laws, malpractice, and liability.

Sp Qtr. 1 cl. Prereq: Vet med 3rd yr standing.

**689 Practicum in Veterinary Medicine P 0**

Applied veterinary experiences offered to fourth year veterinary students which enhance their skills in areas such as medicine, surgery, dentistry, research, etc.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Vet med 4th yr standing on elective qtr. This course is graded S/U.

**694 Group Studies in Veterinary Medicine P 1-3**

Group studies in areas of general veterinary medicine such as international veterinary medicine, education, etc.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 1st yr standing in Vet med. This course is graded S/U.

**700 Applied Veterinary Medicine**

A series of clinical studies offered fourth-year veterinary medical students as part of the core curriculum. Staff.

Su, Au, Wi, Sp Qtrs. Clinics, seminars, case discussions, and 24-hr patient care responsibilities. Prereq: Vet med 4th yr standing. Repeatable to a maximum of 32 cr hrs.

**700.01 Outpatient Clinics P 3**

Clinical instruction in client relations, diagnosis, treatment, and prevention of diseases in out-patients.

**700.02 Small Animal Medicine P 5**

Clinical instruction and experience in the diagnosis, treatment, and prevention of diseases of small companion animals.

**700.03 Small Animal Surgery P 5**

The application of principles of surgery to treatment of diseases of companion small animals.

**700.04 Food Animal Medicine and Surgery P 5**

Application of principles of diagnosis, treatment, and prevention of diseases of food animals.

**700.05 Equine Medicine and Surgery P 5**

Application of principles of diagnosis, treatment, and prevention of diseases of equine patients.

**700.06 Field Service P 5**

The application of the principles of management, diagnosis, treatment, and prevention of disease in farm and exotic animals in the environment in which they are produced.

**700.07 Radiology P 3**

Application of radiological principles to diagnosis of diseases of animals.

**700.08 Applied Preventive Medicine P 5**

Intensive practical training in preventive medicine applied to public health and animal health; emphasis on herd health management, food hygiene, laboratory animals, public service, and control of livestock and poultry diseases.

Seminars, field trips, problem solving.

**700.09 Clinical Anesthesiology P 3**

4-8 clinic hrs per day with 24 hr patient care responsibility.

**700.11 Intensive Care Clinics P 2**

Application of principles of diagnosis and therapy to acutely ill companion animal patients.

**700.12 Veterinary Clinical Ophthalmology P 2**

Application of principles of diagnosis and treatment of diseases of the eye to patients of all species.

**700.14 Applied Pathology P 3**

Training in gross dissection and interpretation of gross and microscopic pathologic lesions in animals.

## Veterinary Pathobiology

207 Goss Laboratory, 1925 Coffey Road, 292-5661

**640\* Pathobiology P G 4**

Presentation of up-to-date seminars on topics in comparative cellular pathology by faculty in the College of Veterinary Medicine and Medicine. Capen and Barth.

Wi Qtrs. Prereq: Permission of instructor. Offered in cooperation with Pathology.

**693 Individual Studies P G 1-10**

Laboratory, library, conference, and reports concerning animal disease problems. Capen and graduate faculty.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to maximum of 50 cr hrs. This course is graded S/U.

**710 Applied Veterinary Clinical Pathology P 1**

Designed to familiarize the senior veterinary student with the preparation and cytologic interpretation of blood films, body cavity fluids, and tissue aspirations and imprints. Wellman.

Su, Au, Wi, Sp Qtrs. Prereq: Vet med 4th yr standing on elective qtr.

**720\* Comparative Oncology P G 3-5**

Histogenetic classification of spontaneous neoplasms in domestic and laboratory animals by major body systems, emphasizing differential macroscopic, histopathogenic, and ultrastructural characteristics with appropriate clinical and functional correlations. Weisbrode and graduate faculty.

Au Qtr. Prereq: Permission of instructor.

**730 Immunology of Parasitic Infections P G 3**

A discussion of the role of immunity in the production, course, pathogenicity, diagnosis, and control of parasitic infections of man and/or domestic animals. Barriga.

Au Qtr. 2 cl. Prereq: Basic course in parasitology and immunology; permission of instructor. Repeatable to a maximum of 6 cr hrs. Content varies according to major interests of class. Protozoa-arthropods taught in odd yrs; helminths in even yrs. Not open to students with credit for Microbiol 730. Cross-listed in Microbiology.

**740 Laboratory Medicine P G 1-10**

Advanced training in veterinary hematology, cytology, and clinical chemistry; independent study use of laboratory methods for the characterization of clinicopathologic change in hospitalized patients. Kociba.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: DVM degree and grad standing. Repeatable to a maximum of 35 cr hrs.

**760 Specialized Study in Veterinary Medicine P 1-16**

Field or lab study encompassing the various areas in the field of veterinary medicine through a direct preceptorship with qualified professionals.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Vet med 4th yr standing and permission of instructor. To be taken during elective qtr. Cross listed in all veterinary medicine depts. Repeatable to a maximum of 16 cr hrs. This course is graded S/U.

**794 Group Studies in Veterinary Pathobiology****794.01 Applied Pathology P G 2**

Correlation of functional morphological, and chemical abnormalities in disease of domestic and companion animals. Weisbrode.

Sp Qtr. Prereq: Permission of instructor.

**794.06 Applied Veterinary Medical Virology P G 3**

Major viral pathogens of domestic animals are discussed and illustrated; principles of virology applicable to the recognition, differentiation, and prevention of diseases of animals are presented. Blakeslee.

Au Qtr. Prereq: Permission of instructor.

**794.07 Diseases of Poultry and Game Birds P G 3**

A study of the etiology, recognition, prevention, and control of the important diseases of poultry and related game birds. Swayne and Long.

Au, Wi Qtrs.

**794.09 Advanced Gross Pathology P G 1-5**

Advanced training in gross dissection and interpretation of gross lesions in animals. Weisbrode.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing in vet med.

**794.10 Basic Histopathology P G 3**

Introductory basic pathological changes emphasizing identification, correlation to gross appearance, significance, and resolution. Weisbrode.

Wi Qtr. Prereq: 2nd yr standing. Each student will be provided a microscopical slide study set and a microscope.

**795 Seminar in Veterinary Clinical Pathology P G 1, 2**

Case presentation with emphasis on clinicopathologic correlations; specimen evaluation, literature searches, preparation of clinicopathologic case reports, and preparation of visual aids. Kociba.

Su, Au, Wi, Sp Qtrs. 1 cl. Prereq: Permission of instructor. Repeatable to a maximum of 18 cr hrs.

**810\* Advanced Systemic Pathology G 3-5**

An advanced study of animal diseases as they affect all organ systems of the body. Stromberg and Weisbrode.

Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs.

**815 Veterinary Surgical Pathology G 3-5**

Biopsy methods and diagnosis; surgical specimens are studied, and emphasis is placed upon the correlation of lesions and functional pathology. Rosol and Rojko.

Su, Au, Wi, Sp Qtrs. Prereq: Enrollment in grad program in vet path; DVM and experience in basic histopathology; permission of instructor. Not open to students with credit for 715

**850 Seminar in Veterinary Pathobiology G 1**

Capen and graduate faculty.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 20 cr hrs.

**999 Research in Veterinary Pathobiology G 1-18**

Research for thesis or dissertation purposes only. Capen and graduate faculty.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Veterinary Physiology and Pharmacology

309 Sisson Hall, 1900 Coffey Road, 292-1391

**410 Animal Physiology U 5**

Consideration of concepts and principles involved in the function of various body systems in domestic animals. Williams.

Au, Wi Qtrs. 5 cl. Prereq: Chem 102 or 122.

**411 Animal Physiology U 5**

Comparative study of physiological concepts and principles involved in endocrinology, metabolism, and reproduction in various species of domestic animals. Williams.

Wi, Sp Qtrs. 5 cl. Prereq: Chem 102 or 122.

**599\* Humane Preparation of Animals for Physiologic Investigation U G 3**

Selection of species, pre-anesthetics, anesthetics, minor surgical procedures, cardiac catheterization, radiography, postmortem examination, and drug therapy as applied to physiologic investigations. Hamlin.

Sp Qtr. Prereq: Advanced standing in zoology or Physiol 600 or equiv; permission of instructor. Not open to vet med students.

**693 Individual Studies P G 3-15**

Laboratory and library investigations concerning animal physiology and pharmacology problems. Staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs. This course is graded S/U.

**694 Group Studies P G 2-5**

Staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs.

**730 Endocrinology P G 5**

A study of functions of the thyroid, parathyroid, pituitary, adrenal, pancreas, gonads, and other organs with possible endocrine functions. Saiduddin.

Au Qtr. 4 cl, 1 lab. Prereq: Physiol 312 or equiv, organic chem, and permission of instructor. Not open to students with credit for Physiol 730. Cross-listed in Physiology.

**746 Bioanalytical Chemistry G 4**

A study of methods for isolating, identifying, and quantitating drugs and drug metabolites in biological tissues with emphasis on chromatographic techniques. Sams.

Sp Qtr. 4 1-hr lectures/demonstrations. Prereq: Chem 242 or permission of instructor.

**760 Specialized Study in Veterinary Medicine P 1-16**

Field or lab study encompassing the various areas in the field of veterinary medicine through a direct preceptorship with qualified professionals. Staff.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Vet med 4th yr standing and permission of instructor. To be taken during elective qtr. Cross-listed in all veterinary medicine depts. Repeatable to a maximum of 16 cr hrs. This course is graded S/U.

**778 Applied Veterinary Pharmacology P G 3**

General principles of pharmacology, emphasizing those drugs used in the practice of veterinary medicine; application of various techniques and methods of evaluating drug response in animals. Strauch.

Wi Qtr. 2 cl, 2 hr lab. Prereq: Vet med 2nd yr standing or permission of instructor.

**780\* Clinical Pharmacology of Antimicrobial Drugs P G 3**

A detailed study of the basic principles and clinical pharmacology of antimicrobial and antiparasitic drugs in veterinary medicine; special consideration given to toxicities, drug-drug interactions and idiosyncrasies.

Sp Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, 4th yr standing or grad standing.

# 781\* Principles of Veterinary Clinical Pharmacology P G 3

Principles of clinical pharmacology and application of kinetic parameters to drug therapy in domestic animals; basis for choice of drug and dosage regimen.

Au Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, 4th yr standing, or grad standing.

# 782\* Pharmacology of Cardiac Drugs P G 3

Clinical evaluation, pharmacokinetics, and pharmacotherapy of cardiac dysrhythmias. Sams and Muir.

Wi Qtr. 2 cl. Prereq: 3rd or 4th yr or grad standing. Not open to students with credit for Vet Clin 782. Cross-listed in Veterinary Clinical Sciences.

# 790 Comparative Cardiovascular Physiology P G 3

Comparative electrocardiography emphasizing fundamentals and clinical interpretations. Hamlin.

Au Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing; or permission of instructor.

# 791 Heart Sounds, Murmurs, and Pulse Curves P G 3

Comparative hemodynamics and cardiovascular sound emphasizing apex and echocardiograms and pressure pulses, origins of heart sounds and murmurs, clinical interpretation and clinical pathological correlation. Hamlin.

Wi Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing or permission of instructor.

# 792\* Signs, Symptoms, and Treatment of Cardiopulmonary Disease P G 3

Advanced comparative cardiovascular physiology with emphasis upon circulatory response to stress of various congenital and acquired cardiovascular defects. Hamlin.

Sp Qtr. 3 cl. Prereq: Vet med 2nd, 3rd, or 4th yr standing; or permission of instructor.

# 794 Group Studies P G 1-6

Group studies course in areas of comparative physiology and pharmacology. Staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

## 794.20 Economics of Food Animal Health P G 3

Discussion of economic principles as they apply to the evaluation of food animal preventive medicine programs and disease.

Wi Qtr. Prereq: Vet med 3rd or 4th yr standing.

# 795\* Advanced Comparative Electrocardiography P G 3-5

Cellular and cardiac electrophysiologic and clinical features of complex cardiac arrhythmias and conduction disturbances. Hamlin.

Wi Qtr. 3 cl and additional work for 5 or hrs. Prereq: 790 or permission of instructor.

# 796\* Techniques in Comparative Reproductive Physiology and Pharmacology P G 3

Laboratory methods in the study of various phenomenon associated with reproduction and pharmacology of sex steroids and gonadotropins. Saiduddin.

Sp Qtr. 3 2-hr labs. Prereq: Vet med and Med 3rd and 4th yr standing, grad, or permission of instructor.

# 799 Seminar P G 2

Lectures and conferences on selected topics in veterinary physiology and pharmacology. Staff.

Au, Wi, Sp Qtrs. 1 2-hr conf and lec. Prereq: Permission of instructor. Repeatable to a maximum of 30 or hrs.

# 999 Research in Veterinary Physiology and Pharmacology G 1-18

Research for thesis or dissertation purposes only. Staff.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Veterinary Preventive Medicine

239 Sisson Hall, 1900 Coffey Road, 292-1206

# 200 Basic Animal Hygiene U 3

Causes of disease and the relationship of these causes to the animal's environment. Gordon and Hoblet.

Au Qtr.'3 cl.

# 201 Applied Animal Hygiene U 3

Various common diseases responsible for losses to the livestock industry, with emphasis on control. Gordon and Hoblet.

Wi Qtr 3 cl. Prereq: 200 or equiv.

# 650 Methods for the Critical Review of Biomedical Literature P G 2

Methods and practice in analyzing strengths and weaknesses of published research and clinical papers; methods and practice in writing scientific critiques. Silverman.

Au, Wi Qtrs. 1 2-hr cl. Prereq: Professional student in any health discipline or grad standing. This course is graded S/U.

# 693 Individual Studies P G 2-5

Laboratory and library investigations of animal disease problems involving veterinary preventive medicine. Staff.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor.

Repeatable to a maximum of 20 or hrs. This course is graded S/U.

# 694 Group Studies P G 2-5

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 10 or hrs.

# 711 Applied Veterinary Medicine Options P 2 or 3

A series of field studies offered as electives for fourth year veterinary students to arrange into an elective program in conjunction with a faculty adviser.

Su, Au, Wi, Sp Qtrs.

## 711.01 Herd Health Problems

Field instruction and experience in comprehensive disease prevention, nutritional, reproductive, and economic services in modern confinement and conventional livestock production. Heider.

## 711.02 Public Service Problems

Instruction and experience in animal and human disease (zoonoses) prevention, control, and eradication as provided by public service veterinarians in local, state, and national agencies. Monfort.

## 711.03 Laboratory Animal Problems

Instruction and experience in diagnosis and prevention of laboratory animal disease in operating, breeding, and experimental colonies of various species. Silverman.

# 715\* Veterinary Public Service P G 3

Practice of public service directed at animal and public health in international, national, state, and local agencies with emphasis on planning, decision making, and budgeting; interaction of veterinarian and other health workers. Dorn.

Au Qtr.

# 760 Specialized Study in Veterinary Medicine P 1-16

Field or lab study encompassing the various areas in the field of veterinary medicine through a direct preceptorship with qualified professionals.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Vet med 4th yr standing and permission of instructor. To be taken during elective qtr. Cross listed in all veterinary medicine depts. Repeatable to a maximum of 16 or hrs. This course is graded S/U.

# 780\* Veterinary Epidemiology P G 3

The use of descriptive and analytical epidemiologic methods in the solution of infectious and noninfectious disease problems affecting various animal populations. Hueston.

Sp Qtr. 3 cl. Prereq: 764, Prev med 800 or equiv, or enrolled as prof or grad student in med or vet med.

**785 Biological Research Techniques P G 3**

Lectures and laboratory exercises in laboratory techniques commonly used in biological research. Bech-Nielsen.

Su, Au, Wi, Sp Qtrs. 2 2-hr cl. and lab. Prereq: Advanced standing in biological sciences. Micrbiol 601, 602, or equiv, and permission of instructor.

**794 Group Studies**

A course providing small group instruction in the topics designated.

Su, Au, Wi, Sp Qtrs. Repeatable to a maximum of 30 cr hrs.

**794.01 Public Health-Organization, Environmental Health, Food-Borne Illnesses P G 1-8**

Deals with the application of public health principles to the solution of community problems. Monfort.

Au, Wi, Sp Qtrs 2 cl. Prereq: Permission of instructor.

**794.03 Prevention of Communicable Diseases P G 3**

Discussion of the epidemiology of communicable diseases of animals and fundamental approaches used by state and federal animal health agencies for prevention, control, and eradication. Bech-Nielsen.

Wi Qtr. 3 cl. Prereq: Vet med 2nd, 3rd or 4th yr standing.

**794.04 Food-Borne Illnesses and Human Health P G 2-4**

Detailed study of principal zoonotic diseases transmitted by meat foods and food-borne intoxications and infections as related to personal hygiene of food handlers and sanitary food handling practices; the epidemiological approach to problem solving. Gordon.

Wi Qtr. Prereq: Vet med 3rd or 4th yr standing.

**794.05 Applied Food Hygiene P G 2-4**

Ante-mortem and post-mortem inspection procedures; disposition of diseased carcasses and parts—applied pathology as relates to meat inspection. Meat chemistry and processing; environmental sanitation; food microbiology. Gordon.

Au Qtr. Prereq: Vet med 3rd or 4th yr standing.

**794.07 Environmental Sanitation P G 3**

Students are provided an environmental sanitation book; discussions related to animal and food hygiene will concentrate on housing, ventilation, waste disposal, soil, water, air, etc. Gordon.

Sp Qtr. Prereq: Vet med 3rd or 4th yr standing.

**794.09 Disease Control in Dairy Cattle P G 4**

Principles and applications of preventive medicine in establishing and maintaining dairy herd health programs and laboratory practices in mastitis control. Hoblet.

Sp Qtr. 2 2-hr cl, 1 2-hr lab. Prereq: Vet med 3rd or 4th yr standing, and VM Coll 605.

**794.11 Laboratory Animal Medicine P G 2**

Diseases of sub-human primates, rodents, and exotic animals utilized in biomedical research and teaching; includes preventive medicine and public health as it applies to animal facilities. Stills.

Wi Qtr. 2 cl. Prereq: Vet med 3rd or 4th yr or grad standing or permission of instructor.

**794.18 Nutrition of Food Producing Animals P G 2**

Familiarization with current feeding practices for normal animals; proper use of feeds-nutrients-additives for maximum economic production and prevention of nutritional and metabolic disease.

Sp Qtr. 2 cl. Prereq: Vet med 3rd or 4th yr standing.

**794.20 Economics of Food Animal Health P G 3**

Discussion of economic principles as they apply to the evaluation of food animal preventive medicine programs and disease.

Wi Qtr. Prereq: Vet med 3rd or 4th yr standing.

**850 Seminar in Veterinary Preventive Medicine**

Au, Wi, Sp Qtrs. Repeatable to a maximum of 3 cr hrs.

**850.01 Seminar in Veterinary Preventive Medicine G 1****850.02\* Topics in Veterinary Preventive Medicine G 1**

This course is graded S/U.

**850.03 Seminar in Veterinary Preventive Medicine G 2**

Group discussions of appropriate methodology and statistical analysis to meet objectives of investigators presenting seminars.

Au, Wi Qtrs. 2 cl. Prereq: Grad standing with DVM degree. Repeatable to a maximum of 4 cr hrs.

**999 Research in Veterinary Preventive Medicine G Arr 1-18**

Research thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

## Vocational Education, Comprehensive

**881 Vocational Education Seminar G 1-3**

An interdisciplinary seminar on state-of-the-art trends, and issues in comprehensive vocational education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**893 Individual Studies in Vocational Education G 1-3**

Individual research and study on approved topics in comprehensive vocational education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**894 Group Studies in Vocational Education G 1-3**

Selected topics directly related to comprehensive vocational education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 12 cr hrs.

**999 Research in Vocational Education G Arr**

Individual dissertation research on problems of significance in comprehensive vocational education.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of adviser. Repeatable. This course is graded S/U.

## Welding Engineering

124 Welding Engineering Laboratories, 190 West 19th Avenue, 292-6841

**293 Individual Studies in Welding Engineering U 1-5**

Topics in welding engineering of individual interest at the undergraduate level; must be arranged with a member of the department faculty.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs. This course is graded S/U.

**302 Introduction to Welding Engineering I U 3**

The principles of welding engineering including material affects, design, and quality assurance.

Wi Qtr. 3 cl. Prereq: Physics 133; a minimum cumulative pt-hr ratio of 2.00 and acceptance as Weld Eng major or written permission of chairperson.

**303 Introduction to Welding Engineering II U 3**

Continuation of 302 with emphasis on welding processes.

Sp Qtr. 3 cl. Prereq: 302 or written permission of chairperson.

**350 Introductory Welding Laboratory I U 1**

Demonstration of a fundamental working knowledge of manual arc welding.

Wi Qtr. 1 3-hr lab. Prereq or concur: 302 and acceptance as a Weld Eng major or written permission of chairperson.

**351 Introductory Welding Laboratory II U 1**

Demonstration of a fundamental working knowledge of semi-automatic arc welding.

Sp Qtr. 1 3-hr lab. Prereq or concur: 303 and acceptance as a Weld Eng major or written permission of chairperson.

**489 Industrial Experience I U 1**

Experience in an industrial organization and the submitting of an acceptable report on the work done.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. One qtr full time or equiv part-time field experience.

**494 Group Studies in Welding Engineering U 1-15**

Special studies not otherwise offered; topic varies; students should consult departmental current course listing.

Su, Au, Wi, Sp Qtrs. Prereq: 201 or 202 or permission of instructor. Repeatable to a maximum of 15 cr hrs including cr hrs earned in 694.

**501 Principles of Arc Welding Systems U G 4**

Study of the system aspects of arc welding processes; includes theory and experimentation with power sources, welding arcs, controls, and performance characteristics. Richardson.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 303 and prereq or concur: Elec Eng 500. Safety related equipment and procedures required.

**502 Resistance Welding U G 4**

Theory and operation of resistance welding equipment, controls, schedules, and applications. Dickinson.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq or concur: 303. Safety related equipment and procedures required.

**504 Welding and Joining Process U G 3**

The fundamentals and applications of high energy density welding, brazing, soldering, solid state welding, and adhesive bonding. Albright.

Au Qtr. 3 cl. Prereq: 303.

**540 The Application of Welding Engineering U G 3**

Engineering fundamentals of design, materials, processes, and quality assurance as related to welding.

Au Qtr. 3 cl. Prereq: 3rd year standing in ENG or permission of instructor.

**557 Advanced Topics in Robotic Programming U G 1**

Detailed projects are completed on a single robotic welding system; these projects help provide the understanding required to evaluate and select robotic systems for robotic welding systems.

Au, Wi, Sp Qtrs. 1 cl, 3 lab hrs. Prereq: 656 or permission of instructor. Repeatable to a maximum of 2 cr hrs.

**557.01 Hobart L-10 Welding Robot**

Seam tracking, interfacing an indexing table, and other advanced functions are used in developing a robot program of weld at a number of different fixtures.

**557.02 Milacron T3 Welding Robot**

An arc welding production cell centered around the Milacron T3 robot is built; students consider jig placements, parameter selection for FCAW, and program development.

**557.03 American Welding Robot**

Programming a robot for resistance welding; in this robot system the robot handles the part, not the welding process.

**557.04 CLOOS Welding Robot**

Offline robot programming, seven axis welding system, and pulse GMAW are all available on this robot system; students will develop a robot program using all these functions.

**557.05 GMF Welding Robot**

Offline robot programming using a graphics workstation allowing all the robot welding functions to be developed without halting production with the actual robot.

**601 Arc Welding Process Applications U G 4**

Manual, semi-automatic arc welding processes with emphasis on process physics and applications. Albright.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 501. Safety related equipment and procedures required.

**605 Principles of Welding Process Control U G 3**

Study of principles and practical application of control systems and control elements of welding processes. Richardson.

Sp Qtr. 3 cl. Prereq: 601 and Math 415.

**610 Physics of Welding U G 4**

The application of basic physical and chemical principles in welding processes with emphasis on heat transfer, distortion, residual stress, chemical-metallurgical reactions, and testing methods. Baeslack.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: Metal En 550 Safety related equipment and procedures required.

**611 Welding Metallurgy I U G 4**

Application of metallurgical principles in welding; weldability of metals with emphasis on carbon and low alloy steels; laboratory involves physical and metallographic examinations of welds. Howden.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 610 and Metal En 551. Safety related equipment and procedures required.

**612 Welding Metallurgy II U G 4**

The welding metallurgy of non-eutectoid alloys, including stainless steels, nickel alloys, and aluminum alloys; welding procedure development. Baeslack.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 611. Safety related equipment and procedures required.

**620 Welding Design I U G 3**

Analysis and design of welded connections; interactions of the welds, structural members and applied loads; development of welding procedures for shop fabrication and field erection. Bendatar.

Au Qtr. 3 cl. Prereq: Eng Mech 420.

**621 Welding Design II U G 3**

Welding design of curved beams, stiffened plates, tubular frames, pressure vessels, torsional and rotating members, and machine bases; redesign of castings and forgings as weldments. Tsai.

Wi Qtr. 3 cl. Prereq: 620 and Mech Eng 561.

**622 Welding Design III U G 3**

Toughness, static, and fatigue strength of weld metal; design of weldments considering heat flow, residual stresses, and distortion. Tsai.

Sp Qtr. 3 cl. Prereq: 610, 621, and Mech Eng 562.

**631 Nondestructive Evaluation U G 4**

Principles, equipment, techniques, and interpretation of nondestructive tests with X-rays, radioisotopes, magnetic fields, penetrants, and ultrasonics; eddy currents, and other probing media. Rokhlina.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 4th yr standing in ENG or equiv with written permission of instructor; or 3rd yr standing with selection of NDE option. Safety related equipment and procedures required.

**634 Introduction to Ultrasonics U G 4**

Ultrasonic waves in solids and fluids; ultrasonic generators and systems; physical ultrasonics; applications of ultrasonics. Adler.

Au Qtr. 4 cl. Prereq: Math 255 or 416; Eng Mech 215 or 420. Not open to students with credit for Eng Mech 634. Cross-listed in Engineering Mechanics.

**635 Fundamentals of Radiography U G 4**

Intended for engineering students who require knowledge of non-destructive testing methods; basic industrial radiographic methods such as film and real time, radiography, and image analysis are included.

Sp Qtr. 3 cl, 1-hr lab. Prereq: 631 or written permission of instructor.

**636 Fundamentals of Optical and Electromagnetic NDE U G 4**

An introduction to basic principles of optics and electromagnetic fields and waves will be given with special emphasis on application of these principles to nondestructive evaluation.

Wi Qtr. 3 cl, 3-hr lab. Prereq: 631 or written permission of instructor.

**637 Computer-Aided Design and Testing in NDE U G 3**

Principles of computer modeling and design of NDE testing procedures; computer automation and measurements in NDE. Sp Qtr. 3 cl. Prereq: 631, En Graph 200; or written permission of instructor.

**641 Welding Codes, Specifications, and Standards U G 3**

Consideration of the welding requirements in a variety of industry and government documents including examples from the aircraft, automotive, maritime, piping, and pressure vessel fields.

Au Qtr. 3 cl. Prereq: 4th yr standing in ENG or permission of instructor.

**642 Welding Production U G 3**

Welding facilities management; including plant location/layout; material handling/preparation; welding project management, including cost estimation; and welding people management.

Au Qtr. 3 cl. Prereq: 4th yr standing in ENG, or permission of instructor.

**656 Robot Programming and Operations U G 1**

Types and applications of industrial robot systems; lab experience in robot operation and programming. Richardson.

Au, Wi, Sp Qtrs. 1 3-hr lab. Prereq: Weld Eng or Ind Eng major and written permission of instructor.

**681 Nondestructive Evaluation Seminar U G 1**

Theory and application of nondestructive evaluation as presented in lectures by faculty, staff, graduate students, and guest speakers.

Au, Wi, Sp Qtrs. 1 cl. Prereq: 4th yr standing in ENG. Repeatable to a maximum of 6 cr hrs. This course is graded S/U.

**695 Seminar in Welding Engineering U G 1**

Lectures and discussions covering a range of topics presented by faculty, graduate students, and guest speakers; includes visits to selected industrial sites.

Wi Qtr. 1 cl. Prereq: 4th yr standing in ENG or equiv with written permission of instructor. Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

**701\* Solid State Welding U G 3**

The welding and joining of metals in the solid state with emphasis on processes and metallurgical principles. Albright.

Sp Qtr. 3 cl. Prereq: Metal En 550 or permission of instructor.

**703 Brazing and Soldering U G 3**

Brazing and soldering processes with emphasis on physical and metallurgical principles, materials, design, and application considerations. Howden.

Au Qtr. 3 cl. Prereq: 504 or permission of instructor.

**704 High Energy Density Welding Processes U G 3**

Theory and practices in laser, electron beam, plasma, and other high energy density welding processes; process demonstrations. Albright.

Au Qtr. 3 cl. Prereq: 504.

**705†\* Advanced Welding Process Control Systems U G 3**

Principles of continuously variable and digital control systems for manual, mechanized, automatic, and feedback operation of arc, resistance, and advanced welding processes. Richardson.

Wi Qtr. 3 cl. Prereq: 605.

**713 Joining of Specialty Metals U G 3**

Theory and practice of joining specialty metals is presented, with emphasis on joinability, joining processes, and procedures and applications.

Wi Qtr. 2 1-hr cl, 1 2-hr lab. Prereq: 610

**714 Weldability U G 3**

Weldability of alloy systems—steels, stainless steels, nickel, aluminum, and titanium alloys—with reference to basic metallurgical phenomena, weldability testing, and interpretation; individual projects and presentations. Baeslack.

Sp Qtr. 3 cl. Prereq: 611; prereq or concur: 612.

**723 Analysis of Welding Systems U G 3**

Development of an analytical and empirical base for the selection of optimum parameters in the design and fabrication of welded structures. Tsai.

Au Qtr. 3 cl. Prereq: 622.

**732 Ultrasonic Nondestructive Evaluation U G 4**

Principles of ultrasonic wave interaction with material structures with emphasis on nondestructive measurements of material discontinuities, properties, and non-uniformities. Adler.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 631 or permission of instructor, and Math 255 or 256 or 416.

**733 Electromagnetic Nondestructive Evaluation U G 4**

Fundamentals of electromagnetic fields and waves with emphasis on eddy current NDE methods; electromagnetic generation of ultrasonic waves and optical methods. Adler.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 631 or permission of instructor, and Math 255 or 256 or 416.

**736 Health and Safety U G 3**

Major health and safety hazards associated with welding and cutting; radiation, fumes, gases, and noise; discussion of hazard origin, technological control, physiological effects, and regulatory control. Howden.

Sp Qtr. 3 cl. Prereq: 601 or permission of instructor.

**740 Fitness-for-Service of Welded Structures U G 3**

The interrelationship of design, fabrication, nondestructive evaluation, fracture mechanics, and reliability concepts in establishing the overall fitness-for-purpose of welded structures. Graff.

Sp Qtr. 3 cl. Prereq: 620 or permission of instructor.

**755†\* Welding Process Control Laboratory U G 1**

Laboratory experiments in basic instrumentation and control systems for welding processes such as arc, resistance, electron-beam, and others. Richardson.

Wi Qtr. 1 3-hr lab. Concur: 705.

**793 Individual Studies in Welding Engineering U G 1-15**

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**795 Graduate Seminar U G 1**

Presentations and discussion by graduate students and involved outside speakers on thesis research and current problems in welding engineering.

Au, Wi, Sp Qtrs. 1 cl. Prereq: Grad or sr standing in weld eng. Repeatable to a maximum of 12 cr hrs. This course is graded S/U.

**799 Thesis U 2-15**

Undergraduate research providing an opportunity to publish a report in appropriate technical publications.

Au, Wi, Sp Qtrs. Prereq: 4th yr standing in ENG and permission of instructor. Repeatable to a maximum of 15 cr hrs.

**801\* Welding Arc Physics G 3**

Theoretical study of the physics of welding arcs including processes of current maintenance and heat dissipation, arc radiation and spectre, arc stability, magnetic fields, and flows. Richardson.

Wi Qtr. 3 cl. Prereq: 501.

**821 Residual Stresses and Distortion in Weldments G 3**

A study of the formation mechanisms of residual stresses and distortions; mathematical formulations and experimental analysis methods for distortion control. Tsai.

Wi Qtr. 3 cl. Prereq: 723.

**835 Advanced NDE Methods G 4**

Modern physical principles as basis for quantitative nondestructive evaluation techniques; includes wave-matter interaction, ultrasound interaction with light, optical, and acoustical holography. Adler.

Au Qtr. 3 cl, 1 3-hr lab. Prereq: 631, 732, and 733, or permission of instructor; and Math 512.

**894 Group Studies in Welding Engineering G 2-5**

Special topics in welding engineering; the particular topic, credit hours, and the instructor will be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Written permission of instructor. Repeatable to a maximum of 10 cr hrs.

**999 Research in Welding Engineering G Arr**

Research for thesis or dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.

**294 Group Studies U 1-5**

Special studies not otherwise offered.

5 cl. Repeatable to a maximum of 15 cr hrs.

**H296 Topics in Women's Studies U 5**

In-depth study in women's studies focusing on current issues in feminist analysis.

Repeatable to maximum of 10 cr hrs.

**300 Issues in Women's Health U 5**

An interdisciplinary inquiry into the issues affecting women's health and the politics of gender in the medical health care profession.

Su, Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 201 or 202 recommended.

**301 Women and Addiction: A Feminist Perspective U 5**

An interdisciplinary feminist focus on addictive consequences of sex-role socialization, substance abuse, addiction in intimate relationships, and eating disorders; medical/social consequences of addiction among women.

Su, Au, Wi, Sp Qtrs. 2 2½-hr cl. Prereq: 201 or 202 recommended. Not open to students with credit for this topic under 294 Su Qtr 1984 or 1985.

**Women and Religion**

See Comp Std 315.

**Women and Film**

See Comp Std 317.

**400 American Women's Movement U 5**

An interdisciplinary analysis of the American women's movement, including historical, literary, sociological, and theoretical perspectives.

Au, Sp Qtrs. 2 2½-hr or 5 cl. Prereq: 201 or 202.

**Sociology of Women**

See Sociol 435.

**494 Group Studies U 2-5**

Special studies not otherwise offered; topic varies; students should consult department current course listing.

Au, Sp Qtrs. Arr. Prereq: 201 or 202 or permission of instructor. Repeatable to maximum of 15 cr hrs including cr hrs earned in 694.

**Women in Antiquity**

See Classics 508.

**Women and Politics**

See Polit Sc 512.

**Women and the Law**

See Polit Sc 514.

**Women in the Western World: Ancient Civilization to the Industrial Revolution**

See History 523.

**Women in the Western World: the Industrial Revolution to the Present**

See History 524.

**Psychology of Women**

See Psych 543.

**Women in Literature**

See English 592.

**599 Senior Seminar U G 5**

Intensive study of the varieties of feminist theory through readings and research.

Sp Qtr. 2 2-hr cl. Prereq: Sr standing, 201 and one additional women's studies course or permission of instructor.

# Women's Studies

207 Dulles Hall, 230 West 17th Avenue, 292-1021

**201 Introduction to Women's Studies in the Humanities U 5**

Examination of the feminist viewpoint through interdisciplinary studies in the humanities; the relationship of feminist concepts, methods, and analyses to traditional academic disciplines in humanities.

Su, Au, Wi, Sp Qtrs. 5 or 2 2½-hr cl. H201 (honors) may be available to students enrolled in an honors program or by permission of dept. Not open to students with credit for 202. BER/LAC/LAR course.

**202 Introduction to Women's Studies in the Social and Behavioral Sciences U 5**

Examination of the feminist viewpoint through interdisciplinary studies in the social and behavioral sciences; the relationship of feminist concepts, methods, and analyses to traditional academic disciplines in the social and behavioral sciences.

Su, Au, Wi, Sp Qtrs. 2 2½-hr or 5 cl. Not open to students with credit for 201. BER/LAC/LAR course. SS Admis Cond course.

**215 Women Writers: Text and Context U 5**

An interdisciplinary inquiry into a specific formal or thematic aspect of the female literary tradition in relation to cultural ideologies and the status of women.

Su, Au, Wi, Sp Qtrs. (H215: Wi or Sp Qtrs.) 5 or 2 2½-hr cl. H215 (honors) may be available to students enrolled in an honors program or by permission of instructor. Prereq: English 110 or 111 or equiv. Not open to students with credit for Comp Std 215.01 or 215.02. BER/LAC/LAR course. Fulfills in part the ASC advanced English composition requirement.

**The Black Woman: Her Role in the Liberation Struggle**

See Black St 230.

**Language and the Sexes**

See Linguist 230.

**History of Women in the United States**

See History 237.

**Women in Ancient Hebrew Literature**

See Hebrew 274.



**Sociology of Sex Roles**

See Sociol 602.

**Special Topics in Cultural Anthropology:  
Anthropology of Women**

See Anthropology 620.02.

**Women in Social Movements in the U.S.**

See History 675.

**620 Topics in Feminist Studies U G 5**

Interdisciplinary in-depth analysis of selected topics in feminist research and interpretation; topic varies quarterly.

Su, Au, Wi, Sp Qtrs. 2 2½-hr cl or 5 cl. Prereq: 201 or 202, and at least 10 additional cr hrs in wom stds or written permission of instructor. Repeatable to a maximum of 15 cr hrs. Contact the Center for Women's Studies for information.

**693 Individual Studies U G 1-5**

Students may register for individual directed study in subjects not covered in regular course work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Jr standing or above; permission of instructor. Repeatable to a maximum of 15 cr hrs. No more than 5 cr hrs may be applied to women's studies major or minor. This course is graded S/U.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**Studies in Women's History**

See History 781.

**700 Studies in Feminist Theory U G 5**

An intensive reading course examining recent developments in feminist theory in all of the major disciplines that comprise the interdisciplinary field of women's studies.

Au, Wi Qtrs. 1 3-hr cl or 2 2-hr cl. Prereq: Grad standing or permission of instructor. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

A program of individual study for undergraduate honors students; may include individual conferences and reports; requires presentation and oral defense of an honors thesis.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 4th yr standing with a cumulative pt-hr ratio of at least 3.50 in women's studies courses; permission of thesis adviser and Arts and Sciences Honors Committee. At least 8 cr hrs and 2 qtrs of enrollment are required of candidates for the BA degree *with distinction* in women's studies. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**792 Interdepartmental Studies in the  
Humanities U G 3-5**

Two or more departments offer courses on subjects of mutual interest.

Repeatable to a maximum of 15 cr hrs.

**Black Role Models: Racism and Sexism**

See Black St 865.

**Seminar in Women's History**

See History 881.

**890 Interdepartmental Studies in Critical  
Theory G 5**

Interdisciplinary study of a movement (phenomenology, deconstruction, etc.) or problem (intentionality, evaluation, etc.) in literary theory.

Sp Qtr. 2 2-hr or 5 cl. Prereq: Background in critical theory recommended. Repeatable to a maximum of 10 cr hrs. Cross-listed in Comparative Studies in the Humanities, English, French, German, and Spanish.

# Yiddish

256 Cunz Hall, 1841 Millikin Road, 292-9255

**101 Elementary Yiddish I U 5**

Introduction to Yiddish; development of listening, reading, speaking and writing skills.

Au Qtr. 5 cl. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**102 Elementary Yiddish II U 5**

Continuation of 101; further development of listening, reading, speaking and writing skills.

Wi Qtr. 5 cl. Prereq: 101. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit. FL Admis Cond course.

**103 Intermediate Yiddish I U 5**

Continued study of Yiddish; development of listening, reading, speaking and writing skills; reading of simplified literary texts about Yiddish culture.

Sp Qtr. 5 cl. Prereq: 102. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**104 Intermediate Yiddish II U 5**

Readings of Yiddish short stories and poems with attention to literary and cultural appreciation; development of basic language skills.

Au Qtr. 5 cl. Prereq: 103. Not open to native speakers of this language through regular course enrollment or EM credit. This course is available for EM credit.

**293 Individual Studies U 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Special topics announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**341 Yiddish Culture U 5**

Introductory survey of political, social, ideological, and religious trends as reflected in Yiddish culture, especially folklore and literature.

Sp Qtr. 5 cl.

**371 Yiddish Literature in Translation U 5**

Reading, analysis, and discussion of representative works and of the development of major movements and genres in Yiddish literature.

Sp Qtr. 5 cl. Taught in English. BER/LAC course.

**401 Advanced Yiddish I U 5**

Reading in literary and journalistic prose, with practice in conversation and composition; intensive review of Yiddish grammar.

Wi Qtr. 5 cl. Prereq: 104 or equiv. Not open to students with credit for 294. Wi 83 or Wi 84.

**402 Advanced Yiddish II U 5**

Readings in texts from the nineteenth century to the present with emphasis on contemporary prose; practice in conversation and composition.

Sp Qtr. 5 cl. Prereq: 401 or equiv. Not open to students with credit for 294. Sp 84.

**611 History of the Yiddish Language U G 5**

Linguistic history of Yiddish; Yiddish dialect formation; analysis of Yiddish documents from the 13th century to the present; Yiddish in the context of Jewish interlinguistics.

5 cl. Prereq: 402 or equiv or permission of instructor.

**651 Modern Yiddish Prose U G 5**

Reading and analysis of short stories and novels representative of major developments and trends in Yiddish prose of the 19th and 20th centuries.

Au Qtr. 5 cl. Prereq: 402 or equiv.

**693 Individual Studies U G 1-5**

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of instructor. Maximum of 15 cr hrs. This course is graded S/U.

**694 Group Studies U G 1-5**

Special topics to be announced in the quarter previous to the one in which the course is offered.

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 15 cr hrs.

**697 Study at a Foreign Institution U G 1-15**

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

**721 Studies in Yiddish Literature U G 5**

Advanced study of specific literary periods, figures, and/or topics involving extensive reading and discussion of appropriate primary and secondary source materials.

Au, Wi, Sp Qtrs. 5 cl. Prereq: 5 cr hrs of Yiddish at the 600 level. Repeatable to a maximum of 15 cr hrs.

**H783 Honors Research U 3-5**

A program of research for each student which includes individual conferences and which culminates in an honors thesis or oral defense.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Approved candidacy for graduation with distinction, which includes faculty adviser and ASC Honors Committee approval of project, a minimum 3.50 pt-hr ratio in the field of distinction, sr standing, and cumulative pt-hr ratio in the commensurate with honors program membership. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

## Zoology

104 Botany and Zoology Building, 1735 Neil Avenue, 292-8088

**201 General Zoology U 5**

A study of the variety of animals, emphasizing organ systems and their functions, and how animals interact with one another and their environment. Mitchell, Stein, and Thompson.

Su, Au, Wi, Sp Qtrs. 3 cl, 2 2-hr labs. Prereq: Biology 113 or H115, or Botany 112. This course is available for EM credit. BER/LAC/LAR course. NS Admis Cond course.

**220 Introduction to Ornithology U 5**

The general biology of birds with emphasis on their natural histories and on the field identification of local species. Gaunt.

Sp Qtr. 3 cl, 2 2-hr labs. Prereq: 5 cr hrs in introductory biology. NS Admis Cond course.

**221 Field Identification of the Birds of Ohio U 2**

Field trips to various habitats in Ohio and introduction to the avifauna thereof. Visual and auditory techniques for identification. Gaunt.

Sp Qtr. 1 5-hr lab. Prereq or concur: 220. Not open to students with credit for 294 Sp Qtr. 84. One or more all-day trips possible.

**232 Introductory Physiology U 5**

A survey of human nerves and nervous systems, sense organs, muscle function, circulation, respiration, digestion, metabolism, kidney function, and reproduction. Greenwald and Lustick.

Wi, Sp Qtrs. 5 cl. Prereq: Biology 107 or 110 or 113 or H115. Credit does not count toward a major in zoology. BER/LAC/LAR course. NS Admis Cond course.

**235 Introductory Vertebrate Anatomy U 5**

An introduction to vertebrate anatomy with emphasis on mammalian anatomy. Gaunt and Hetherington.

Wi Qtr. 3 cl, 1 3-hr lab. Prereq: 5 cr hrs in general biology or Anthrop 200. Not open to premedical students. Not open to students with credit for 335. Credit does not count toward a major in zoology. Not intended for ASC BS students. BER/LAC/LAR course. NS Admis Cond course.

**293 Individual Studies U 1-5**

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: 201 and written permission of instructor. Only 5 hrs to count on zoology major. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

**294 Group Studies U 1-5**

Study of selected topics in zoology.

Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs with different topics.

**313 Introduction to Ecology U 5**

Distribution and abundance of species, population dynamics, the basic energetics of living systems, and evaluation of the ecosystem concept. Colinviaux.

Au, Wi Qtrs. 5 cl. Prereq: 10 cr hrs in biological sciences. Not open to students with credit for 313.01 or 313.02 or Botany 313.01 or 313.02 or 313. Cross-listed in Botany. BER/LAC/LAR course. NS Admis Cond course.

**320 Introduction to Biology of the Sea U 3**

Kinds, distribution, interactions, and physiological problems of marine organisms; the oceanic environment; pollution and productivity of the oceans. Hillis.

Wi Qtr. 3 cl. Prereq: 201 or equiv.

**335 Morphology of the Vertebrates U 5**

Basic structural characteristics of vertebrates in evolutionary, developmental, and functional contexts. Gaunt and Hetherington.

Au, Sp Qtrs. 4 cl, 1 3-hr lab. Prereq: 201 or 5 cr hrs in courses acceptable for majors in biological sciences. Not open to students with credit for 235. For premedical or science majors.

**340 Introductory Ethology U 5**

Observations of animal behaviors, and introductory analysis of their adaptive value, physiological mechanisms, development, and evolution; emphasis on movie presentations, reading, and small-group discussions. Grubb.

Sp Qtr. 4 cl, 1 2-hr field work per week. Prereq: 201. Not open to students with credit for 240. BER/LAC/LAR course.

**420 Evolution U 5**

The principles of organic evolution; demonstrations and discussion of the facts and theories underlying the evolution of man and other living things. Downhower and Mitchell.

Wi, Sp Qtrs. 5 cl. Prereq: 15 cr hrs in biological sciences or permission of instructor. Not open to students with credit for Biology 420.

**432 Principles of Physiology U 5**

A survey of the physical and chemical bases of physiological mechanisms in animals. Lustick and Pappas.

Su, Wi Qtrs. 3 cl, 1 lec/rec, 1 3-hr lab. Prereq: Chem 252, Physics 112, and 15 cr hrs of biological sciences course work; or equivalents.

**470 Biology of Vertebrates U 5**

Analysis of the anatomical, physiological, behavioral and ecological characteristics of the major vertebrate groups. Downhower.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 201.

**505 Oceanography and Marine Biology U G 3**

Modern concepts in oceanography, including chemical, physical and biological processes of the sea, environmental factors influencing marine life, and man's impact on ocean resources.

Au Qtr. 1 2½-hr cl. Prereq: 20 cr hrs in natural sciences, to include both biological and physical sciences.

**522 Systems Physiology U G 5**

An introduction to the major mammalian physiological systems, including nerves, muscles, respiration, circulation, digestion, kidney function, and reproduction; emphasis on control system functions.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 201 or Biology 114, Chem 123 or 205, and Physics 112; or grad standing. Not open to students with credit for 232.

**532 Introduction to Neuroscience U G 5**

An introduction to the nervous system, emphasizing its systems aspects; signal processing in invertebrates and vertebrates is examined in relation to structure and function.

Sp Qtr. 5 cl, Prereq: 201, 432 is recommended; Chem, 123 and Physics 112.

**540 Sensory Bases of Behavior U G 5**

An exploration and analysis of animal sensory mechanisms—ways in which energies and information concerning environmental events are modified and converted into meaningful biological signals. Ingling.

Sp Qtr. 5 cl. Prereq: 432.

**610 Animal Parasitology U G 5**

The general principles of parasitology, emphasizing morphology, life histories, epidemiology, identification and host relationships of protozoan and metazoan parasites of zoological, medical and veterinary importance. Pappas.

Au Qtr. 4 cl, 1 3-hr lab. Prereq: 201 or equiv, jr standing or above.

**612 Invertebrate Zoology U G 5**

The collection and identification of invertebrate animals, development of methods of classification, and use of keys. Culver and Garton.

Su Qtr (2nd term), Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

**613 Biology of the Invertebrates U G 5**

Ecology, evolution, morphology, embryology, and physiology of major invertebrate groups exclusive of insects; labs will illustrate lecture concepts using living and preserved material. Culver and Garton.

Au Qtr. 3 cl, 2 2-hr labs, 1 required wkend field trip to Lake Erie. Prereq: 201 and 10 additional cr hrs in zoology above the 200 level or equiv, and English 110 or 111 or equiv. Fulfills in part the ASC advanced English composition requirement.

**617\* Theoretical Ecology I U G 5**

The models, assumptions, and conclusions of the mathematical theory of ecology including stability notions, deterministic and stochastic models, and models for patchy environments. Chesson.

Wi Qtr. 5 cl. Prereq: 313 or equiv; differential and integral calculus. Not open to students with credit for 713 or Botany 617. This course is graded S/U. Cross-listed in Botany.

**621 Ichthyology U G 5**

Study of the distribution and classification of fishes which includes methods of identification, collection, and preservation. Cavender.

Su Qtr (1st term), Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

**622\* Herpetology U G 5**

Local species of reptiles and amphibians, their habits, life histories, ecology, and classification.

Su Qtr (2nd term), Franz Theodore Stone Lab, 3 all-day cl per wk. Sp Qtr on Columbus campus, 4 cl, 1 2-hr lab. Prereq: 201 or equiv.

**624\* Advanced Ornithology U G 5**

Topics include instinctive behavior in the life of birds, the breeding cycle, social relations, territory, ecology, characteristics of population, and techniques in field study of birds.

Su Qtr (1st term), Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

**625 Mammalogy U G 5**

Mammals of the world, their natural history, distribution, taxonomy, and major anatomical and physiological adaptations; study of local species emphasized in lab. Harder.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 201 or equiv.

**626 Biology of Fishes U G 5**

The laboratory emphasizes ecological and systematic ichthyology; lectures emphasize the behavior, migration, distribution, and evolution of fishes. Cavender.

Sp Qtr. 3 cl, 1 3-hr lab. Prereq: 201, 15 cr hrs in biological sciences, and permission of instructor.

**630 Vertebrate Histology U G 5**

Examination and analysis of the functional morphology of cells and tissues of vertebrate animals, with emphasis on mammalian histology. Stetson.

Sp Qtr. 3 cl, 2 3-hr labs. Prereq: 335 or 432 or equiv. Not open to students with credit for 530.

**633 Vertebrate Physiology U G 5**

The physiology of vertebrates with emphasis on physiological adaptations to environmental problems. Lustick or Greenwald.

Sp Qtr. 3 cl, 6 lab hrs arr. Prereq: 432 or equiv, or grad standing.

**634\* Vertebrate Reproduction U G 5**

A study of the evolutionary, morphological, hormonal, and environmental aspects of reproduction in vertebrates with laboratory investigations of fish, birds, and mammals. Hurder.

Au Qtr. 3 cl, 2 2-hr labs. Prereq: 20 or hrs in life sciences, including 201 and 432 or 633 or Vet Phys 411 or equiv.

**637\* Aspects of Vertebrate Functional Anatomy U G 5**

Exploration of interactions of historical, mechanical, and functional factors that affect the structure of recent vertebrates.

Wi Qtr. 4 cl, 1 3-hr lab. Prereq: 335 or equiv or permission of instructor.

**640 Animal Behavior U G 5**

An experimental study of the biological basis of animal reactions. Masters.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 340 or permission of instructor.

**647\* Plankton U G 5**

Examination of phytoplankton and zooplankton communities, emphasizing population dynamics, seasonality, predation, and productivity; lab emphasis on identification and quantitative methods for collecting and enumerating plankton. Culver.

Au Qtr. 2 cl, 2 3-hr labs, 1 required wkend field trip to Lake Erie. Prereq: English 110 or 111 or equiv, and 20 cr hrs in biological sciences; Zoology 652 or 655 recommended. Cross-listed in Botany. Fulfills in part the ASC advanced English composition requirement. Occasionally offered Su Qtr at Franz Theodore Stone Lab.

**650 Principles of Animal Ecology U G 5**

Principles and methods of animal ecology and their application to other closely related biological sciences. Stansbery.

Sp Qtr. 3 cl, 2 2-hr labs, Sat field trips. Prereq: 313 or 313.01 and 313.02.

**651 Field Zoology U G 5**

Field and laboratory identification of aquatic and terrestrial vertebrates and invertebrates of the region, in relation to habitats occupied.

Su Qtr (1st term), Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv.

**652 Limnology U G 5**

Study of physical, geological, chemical and biological factors influencing freshwater life; field and laboratory techniques for determining lake morphometry, chemistry and biological productivity are emphasized.

Su Qtr (1st term), Franz Theodore Stone Lab, 3 all-day cl per wk. Prereq: 201 or equiv with written permission of instructor, 10 cr hrs in chem, 10 cr hrs in physics.

### 653 Fish Ecology U G 5

Field and laboratory studies of life histories and interspecific relationships of fishes and of the various factors influencing their abundance. Reutter.

Su Qtr (2nd term), Franz Theodore Stone Lab, 3 all-day cl per wk. Over night field trips. Prereq: 621 or equiv.

### 654\* Ecological Physiology of Aquatic Animals U G 5

Study of the aquatic habitat includes physical and chemical adjustment, tolerance, and acclimatization to environment of vertebrates and invertebrates.

Au Qtr. 3 cl, 2 3-hr labs. Prereq: 201 or equiv, and 10 cr hrs in chem, physics, or physiol. Occasionally offered at Franz Theodore Stone Lab, Su Qtr.

### 655 Limnology U G 5

A study of the physical, chemical, and biological factors influencing the biological productivity of inland waters and of techniques and equipment used in evaluating them. Culver.

Sp Qtr. 3 cl, 1 4-hr lab, several field trips (some Sat). Prereq: 10 cr hrs in chem and 20 cr hrs in biological sciences.

### 660\* Fisheries Biology U G 5

The productivity of fish populations and the ecological relationships between fishes and other aquatic organisms. R. Stein.

Wi Qtr. 3 cl, 2 2-hr labs. Prereq: 655 or equiv.

### 661\* Wildlife Biology U G 5

Study of the influence of ecological succession and human land use on wildlife habitat, and an exploration of wildlife population ecology. Harder.

Au Qtr. 3 cl, 2 2-hr labs, occasional field trips (some Sat). Prereq: 15 cr hrs in biological sciences above the 100-level, including 313 or equiv.

### 662 Wildlife Biology Techniques U G 5

Techniques employed in the field of wildlife biology, with emphases on game birds and mammals; designed for zoology majors specializing in wildlife biology.

Wi Qtr. 3 cl, 2 2-hr labs, Sat field trips. Prereq: 661 or equiv, Genetics 650 or equiv.

### 667 Principles of Radiobiology U G 5

A study of the concepts, principles, and uses of radiation and radioisotopes in biology, medicine, and industry. Carey.

Sp Qtr. 2 2-hr cl. Prereq: 15 cr hrs in biological sciences at the 200 level or above; Math 116 or equiv; and 1 yr each of chem and physics.

### 692 Workshop U G 1-6

Intensive study of topics in zoology; format will depend upon the topic and time.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Permission of workshop director. Repeatable to a maximum of 12 cr hrs.

### 693 Individual Studies U 2-5 G 2-10

Individual work in the field of the chosen problem.

Su, Au, Wi, Sp Qtrs. Prereq: Permission of instructor. No more than 5 cr hrs may be counted toward an undergrad zoology major. Repeatable to a maximum of 15 cr hrs for undergrads. This course is graded S/U.

A— Anatomy. Gaunt, Hetherington, and Stetson.

B— Animal Behavior. Grubb, Masters, R. Stein, and Thompson.

C— Animal Ecology. Bart, Berra, Chesson, Colinvaux, Culver, Downhower, Harder, Mitchell, Stansberry, and Vondracek.

D— Vertebrate Zoology. Downhower.

E— Invertebrate Zoology. Culver, Garton, and Mitchell.

F— Ornithology. Gaunt, Grubb, Lustick, and Thompson.

G— Parasitology. Mitchell and Pappas.

H— Wildlife Biology. Bart, Bookhout, and Harder.

I— General Limnology. Colinvaux, Culver, and Hillis.

J— Comparative Physiology. Garton, Greenwald, and Lustick.

K— Electron Microscopy. Stetson.

L— Population Ecology. Colinvaux, Downhower, Masters, Mitchell, and R. Stein.

M— Systematics. Berra, Cavender, Mitchell, and Stansberry.

N— Ichthyology. Berra, Cavender, R. Stein, and Vondracek.

O— Fisheries Biology. Berra, Cavender, R. Stein, and Vondracek.

### 694 Group Studies U G 2-5

Group work in the field of the chosen problem (see topics in 693).

Au, Wi, Sp Qtrs. Prereq: Permission of instructor. Repeatable to a maximum of 20 cr hrs for undergrads and to a maximum of 35 cr hrs for grads.

### 697 Study at a Foreign Institution U G 1-15

An opportunity for students to study at a foreign institution and receive Ohio State credit for that work.

Su, Au, Wi, Sp Qtrs. Arr. Prereq: Written permission of dept chairperson. Repeatable to a maximum of 45 cr hrs. Students will pay Ohio State fees and any fees in excess of Ohio State tuition, as well as all travel and subsistence costs.

### 698 Study Tour U G 1-15

Specific content, location, quarter(s) of offering, and prerequisites vary; contact department office for details.

Prereq: Permission of instructor. Repeatable for different titled study tours only.

#### 698.01 Domestic

#### 698.02 Foreign

### 714\* Theoretical Ecology II U G 5

Continuation of 617 with emphasis on populations in environments, stochastic models, and nonequilibrium theory.

Sp Qtr. 5 cl. Prereq: 617 or 713 or Botany 617 or permission of instructor. This course is graded S/U. Not open to students with credit for 713 or Botany 714. Cross-listed in Botany.

### 721 Marine Biology Seminar U G 3

Detailed study of various aspects of marine environment and marine life. Hillis.

Sp Qtr. 3 cl. Prereq: Sr or grad standing; 320 or equiv with permission of instructor. Repeatable to a maximum of 6 cr hrs.

### 740 Behavioral Ecology U G 5

Comparative study of mechanisms, ontogeny, function and evolution of behavior in its ecological and social contexts. Grubb.

Au Qtr. 3 1½-hr cl. Prereq: Sr standing; 640 or Psych 601 or equiv with written permission of instructor.

### 761 Wildlife Toxicology U G 5

A study of the release, transfer, and accumulation of toxic substances into the environment, and their toxic effects on wild animals.

Au Qtr. 3 1½-hr cl. Prereq: 313 or 313.01 or equiv and 20 cr hrs in biological sciences above the 200-level.

### H783 Honors Research U 3-5

A program of reading and research for each student with individual conferences, reports, and Honors thesis.

Su, Au, Wi, Sp Qtrs. Prereq: 4th yr standing with a grade of A in at least half of the courses in biological sciences and an average of B in the remainder; permission of instructor under whose supervision the work is to be completed and the Arts and Sciences Honors Committee. At least 2 qtrs are required of candidates for the degrees BS or BA *with distinction* in zoology. Failure to receive a mark of S in this course is a disqualification for special honors. Repeatable to a maximum of 15 cr hrs. This course is graded S/U.

### 800 Zoological Literature and Preparation of Manuscripts G 3

A study of library organization, bibliographies, and guides to zoological literature; the preparation of scientific papers for publication. Bookhout.

Wi Qtr. 2 cl, 1 2-hr lab. Prereq: 15 cr hrs in entomology or zoology at the 600-level or above.

**812\* Advanced Zoology  
of Invertebrates G 5**

A study of the morphology, physiology, life histories, and classification of the eucoelomate invertebrates exclusive of annelid worms.

Au Qtr. 3 cl, 2 2-hr labs. Field trips including 1 wk optional trip to a marine lab. Prereq: 613 or equiv and permission of instructor.

**851 Population Ecology G 5**

Interactions of animal populations considered from the environmental, physiological, and biometrical aspects. Peterle.

Wi Qtr. 5 cl. Prereq: 313 or equiv, and 650.

**880 Seminar G 1-2**

Required of all grad majors in zoology during the first Au Qtr of registration.

Au, Wi, Sp, Su Qtrs. 1 cl. This course is graded S/U.

**881 Seminars on Selected Topics G 2**

Selected topics to be announced.

Au, Wi, Sp Qtrs. Each alphabetical subdivision repeatable to a maximum of 12 cr hrs. This course is graded S/U.

A— Anatomy and Physiology

B— Behavior

C— Cell Biology

D— Ecology

E— Evolution

F— Marine Biology

G— Wildlife Biology

H— Fisheries Biology

**890 Interdepartmental Seminar  
in Developmental Biology G 2**

Students will present oral reports and lead discussion on research progress in specific areas of developmental biology.

Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor.

Repeatable to a maximum of 12 cr hrs. Given cooperatively by Botany, Genetics, Microbiology, and Zoology. This course is graded S/U.

**891 Interdepartmental Seminar  
in Environmental Biology G 2**

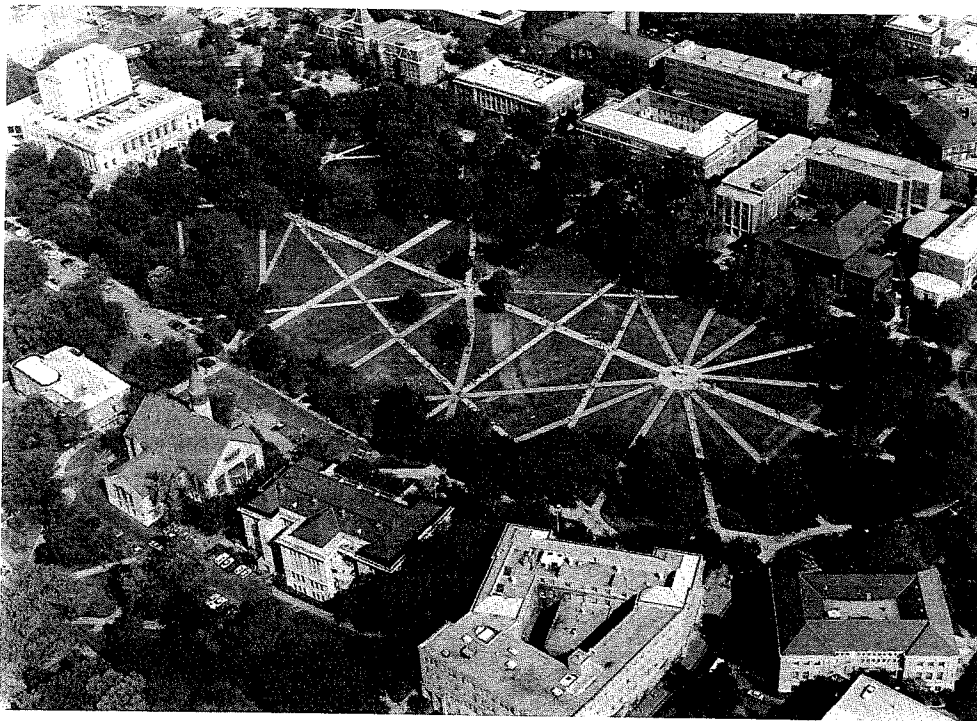
Selected topics treating the environmental aspects of organisms, populations, and ecosystems as they may relate to time, space, and human activities.

Su, Au, Wi, Sp Qtrs. 1 2-hr cl. Prereq: Permission of instructor. Repeatable to a maximum of 24 cr hrs. Given cooperatively by Botany, Entomology, Microbiology, and Zoology. This course is graded S/U.

**999 Research in Zoology G Arr**

Research for thesis and dissertation purposes only.

Su, Au, Wi, Sp Qtrs. This course is graded S/U.



## Organization of Instructional Units

Ohio State's instructional units—colleges, schools, departments, academic faculties, divisions, and centers—are grouped as in the following section.

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### Office of Academic Affairs

Department of Air Force Aerospace Studies  
 Department of Military Science  
 Department of Naval Science  
 Mershon Center  
 Office of Continuing Education  
 Regional Campuses

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### College of Agriculture

Department of Agricultural Economics and Rural Sociology  
 Department of Agricultural Education  
 Department of Agricultural Engineering  
 Department of Agronomy  
 Department of Animal Science  
 Department of Dairy Science  
 Department of Food Science and Technology  
 Department of Horticulture  
 Department of Plant Pathology  
 Department of Poultry Science

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### School of Natural Resources

Environmental Education Division  
 Fisheries and Wildlife Management Division  
 Forestry Division  
 Parks and Recreation Administration Division

### Agricultural Technical Institute

Division of Agricultural Business Technologies  
 Division of Agricultural Mechanics Technologies  
 Division of Animal Industries Technologies  
 Division of General Studies  
 Division of Horticulture Industries Technologies

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### Colleges of the Arts and Sciences

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#### College of the Arts

Department of Art  
 Department of Art Education  
 Department of Dance  
 Department of History of Art  
 Department of Industrial Design  
 Department of Photography and Cinema  
 Department of Theatre

#### School of Music

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## College of Biological Sciences

Department of Biochemistry  
 Department of Botany  
 Department of Entomology  
 Department of Microbiology  
 Department of Molecular Genetics  
 Department of Zoology  
 Division of Sensory Biophysics

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## College of Humanities

Department of Black Studies  
 Department of Classics  
 Department of East Asian Languages and Literatures  
 Department of English  
 Department of French and Italian  
 Department of German  
 Department of History  
 Department of Judaic and Near Eastern Languages and Literatures  
 Department of Linguistics  
 Department of Philosophy  
 Department of Slavic and East European Languages and Literatures  
 Department of Spanish and Portuguese  
 Center for Comparative Studies in the Humanities  
 Melton Center for Jewish Studies  
 Center for Medieval and Renaissance Studies  
 Center for Women's Studies

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## College of Mathematical and Physical Sciences

Department of Astronomy  
 Department of Chemistry  
 Department of Geodetic Science and Surveying  
 Department of Geology and Mineralogy  
 Department of Mathematics  
 Department of Physics  
 Department of Statistics

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## College of Social and Behavioral Sciences

Department of Anthropology  
 Department of Communication  
 Department of Economics  
 Department of Geography  
 Department of Political Science  
 Department of Psychology  
 Department of Sociology

Division of Speech and Hearing Science

School of Journalism

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## College of Business

Academic Faculty of Accounting and Management Information Systems  
 Academic Faculty of Finance  
 Academic Faculty of Management and Human Resources  
 Academic Faculty of Management Sciences  
 Academic Faculty of Marketing

School of Public Policy and Management

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## College of Dentistry

Division of Dental Hygiene

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## College of Education

Department of Educational Policy and Leadership  
 Department of Educational Services and Research  
 Department of Educational Studies: Humanities, Science, Technological, and Vocational  
 Department of Educational Theory and Practice

School of Health, Physical Education, and Recreation

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## College of Engineering

Department of Aeronautical and Astronautical Engineering  
 Department of Aviation  
 Department of Chemical Engineering  
 Department of Civil Engineering  
 Department of Computer and Information Science  
 Department of Electrical Engineering  
 Department of Engineering Graphics  
 Department of Engineering Mechanics  
 Department of Industrial and Systems Engineering  
 Department of Materials Science and Engineering  
 Department of Mechanical Engineering  
 Department of Welding Engineering  
 Division of Mining Engineering

School of Architecture

Department of Architecture  
 Department of City and Regional Planning  
 Department of Landscape Architecture

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## Graduate School

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## College of Human Ecology

Department of Family Relations and Human Development  
 Department of Family Resource Management  
 Department of Home Economics Education  
 Department of Human Nutrition and Food Management  
 Department of Textiles and Clothing

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## Office of International Affairs

University Center for International Studies

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## College of Law

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## College of Medicine

Department of Anatomy  
 Department of Anesthesiology  
 Department of Family Medicine  
 Department of Internal Medicine  
 Department of Medical Microbiology and Immunology  
 Department of Neurology  
 Department of Obstetrics and Gynecology  
 Department of Ophthalmology  
 Department of Otolaryngology  
 Department of Pathology  
 Department of Pediatrics  
 Department of Pharmacology  
 Department of Physical Medicine  
 Department of Physiological Chemistry  
 Department of Physiology  
 Department of Preventive Medicine  
 Department of Psychiatry  
 Department of Radiology  
 Department of Surgery  
 Division of Hospital and Health Services Administration

## School of Allied Medical Professions

Biomedical Communications Division  
 Circulation Technology Division  
 Medical Dietetics Division  
 Medical Record Administration Division  
 Medical Technology Division  
 Nurse Anesthesia Division  
 Occupational Therapy Division  
 Physical Therapy Division  
 Radiologic Technology Division  
 Respiratory Therapy Division

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## College of Nursing

Department of Family and Community  
 Department of Life Span Process

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## College of Optometry

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## College of Pharmacy

Division of Medicinal Chemistry and Pharmacognosy  
 Division of Pharmaceutical Administration  
 Division of Pharmaceutics and Pharmaceutical Chemistry  
 Division of Pharmacology  
 Division of Pharmacy Practice

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## College of Social Work

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## University College

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## College of Veterinary Medicine

Department of Veterinary Anatomy and Cellular Biology  
 Department of Veterinary Clinical Sciences  
 Department of Veterinary Pathobiology  
 Department of Veterinary Physiology and Pharmacology  
 Department of Veterinary Preventive Medicine

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# University Calendar\*

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## Autumn Quarter 1989

September 20	Classes begin, 8:00 a.m. (Wed.)
November 10	Veterans' Day observed—no classes, offices closed (Fri.)
November 23	Thanksgiving Day—no classes, offices closed (Thurs.)
November 24	Columbus Day observed—no classes, offices closed (Fri.)
December 1	Last day of regularly scheduled classes (Fri.)
December 4-7	Final examinations (Mon.-Thurs.)
December 8	Autumn commencement, 9:30 a.m., St. John Arena (Fri.)
December 25	Christmas Day—offices closed (Mon.)
December 26	Presidents' Day observed—offices closed (Tues.)

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## Winter Quarter 1990

January 1	New Year's Day—offices closed (Mon.)
January 3	Classes begin, 8:00 a.m. (Wed.)
January 15	Martin Luther King Day—no classes, offices closed (Mon.)
March 9	Last day of regularly scheduled classes (Fri.)
March 12-15	Final examinations (Mon.-Thurs.)
March 16	Winter commencement, 9:30 a.m., St. John Arena (Fri.)

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## Spring Quarter 1990

March 26	Classes begin, 8:00 a.m. (Mon.)
May 28	Memorial Day observed—no classes, offices closed (Mon.)
June 1	Last day of regularly scheduled classes (Fri.)
June 4-7	Final examinations (Mon.-Thurs.)
June 8	Spring commencement, 9:30 a.m., Ohio Stadium (Fri.)

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## Summer Quarter 1990

June 18	Quarter and first term classes begin, 8:00 a.m. (Mon.)
July 4	Independence Day—no classes, offices closed (Wed.)
July 20	Last day of regularly scheduled classes for first term courses (Fri.)
July 23-24	Final examinations for first term courses only—at regular class hours (Mon. and Tues.)
July 25	Second term classes begin, 8:00 a.m. (Wed.)
August 24	Last day of regularly scheduled classes for quarter and second term courses (Fri.)
August 27-29	Final examinations for quarter and second term courses (Mon.-Wed.)
August 30	Summer commencement, 9:30 a.m., St. John Arena (Thurs.)
September 3	Labor Day—offices closed (Mon.)

\* All dates are subject to change.

## Call or write

For more information about admissions, financial aid, or the educational programs of The Ohio State University, call the numbers listed here. Administrative offices are open Monday through Friday 8 a.m. - 5 p.m. (7:30 a.m. - 4:30 p.m. during the summer). The Department of Credit Programs office is open also Monday through Thursday until 7:30 p.m. and Saturday mornings.

Prospective students and their parents regularly are invited to Career Information Days on the Columbus campus. If you would like to tour the Columbus campus or talk with students or instructors, please contact the Admissions Office. If you would like to visit a regional campus, please contact the individual campus.

**Admissions Office/Third Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1200; 614-292-3980.**

**Agricultural Technical Institute/Wooster, Ohio 44691-4099; 216-264-3911**

**Continuing Education, Office of, Department of Credit Programs/210 Sullivant Hall, 1813 North High Street, Columbus, Ohio 43210-1307; 614-292-8860**

**Disability Services, Office for/150 Pomerene Hall, 1760 Neil Avenue, Columbus, Ohio 43210-1297; 614-292-3307**

**Fees and Deposits, Office of/Second Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-2812**

**Graduate School/247 University Hall, 230 North Oval Mall, Columbus, Ohio 43210-1366; 614-292-6031**

**Honors Center, University/Kuhn Honors Hall, 220 West 12th Avenue, Columbus, Ohio 43210-1329; 614-292-3135**

**Minority Affairs, Office of/1000 Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-0964**

**Ohio State Lima/4240 Campus Drive, Lima, Ohio 45804-3596; 1-419-221-1641**

**Ohio State Mansfield/1680 University Drive, Mansfield, Ohio 44906-1599; 419-755-4011**

**Ohio State Marion/1465 Mt. Vernon Avenue, Marion, Ohio 43302-5695; 614-389-2361**

**Ohio State Newark/University Drive, Newark, Ohio 43055-1797; 614-366-3321**

**Registrar, Office of the University/Third Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-8500**

**Residence and Dining Halls, Office of/Sixth Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-8266**

**Student Affairs/201 Ohio Union, 1739 North High Street, Columbus, Ohio 43210-1392; 614-292-9334**

**Student Financial Aid, Office of/Fifth Floor Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-6621**

**University College/110 Enarson Hall, 154 West 12th Avenue, Columbus, Ohio 43210-1390; 614-292-6344**

**Visitor Information Center/Mershon Auditorium, 30 West 15th Avenue, Columbus, Ohio 43210-1393; 614-292-0428**

# Index

- Absences, 11
- Academic:
  - Dismissal, 12
  - Organization, 441-443
  - Probation, 12
  - Warning, 12
- Academic Affairs, Office of, 441
- Admission, 11
- Agricultural Technical Institute, 441
- Agriculture, College of, 441
- Allied Medical Professions, School of, 443
- Architecture, School of, 442
- Arts and Sciences, Colleges of the, 441
- Arts, College of the, 441
- Associate of Arts Degree, 15-16
- Audit, 5, 9
- Baccalaureate Degree, Requirements for, 16
- Basic Education Requirements, 14, 19
- Biological Sciences, College of, 442
- Business, College of, 442
- Call or write, 445
- Certificate of Study, Requirements for, 16-17
- Class Ranking System, 14
- Classification of Students, 11
- Classroom and Laboratory Hours, 19
- College Requirements, 14
- Conditional/Unconditional Admission, 13-14
- Course:
  - Conditions for Disenrollment, 10
  - Credit, 7
  - Examinations, 3
  - Failure in Required, 8
  - Numbering System, 20
  - Offerings, 18-440
  - Repetition of, 8-9
  - Rescheduled, 9
  - Withdrawal from, 9-10
- Credit:
  - Hours, 7
  - Points and Point-Hour Ratio, 7-8
- Cum Laude, 17
- Curricular Information, 14-17
- Curricular Requirements, 14
- Decimal Subdivisions, 19
- Degrees and Certificates, 15
- Dentistry, College of, 442
- Disenrollment from Courses, 10
- Dismissal:
  - Notice of, 12
  - Reinstatement after, 12
- EM, 4
- Education, College of, 442
- Engineering, College of, 442
- Examinations and Marks, 3-6
- Failure in a Required Course, 8
- Final Examinations, Schedules for, 3
- Foreign Language Admission Condition
  - Courses, 13
- Free Electives, 14
- Fresh Start Rule, 8
- Freshman Forgiveness Rule, 8
- General Information Clause, 19
- Grade Grievances, 5, 6
- Grades, 3-5
- Graduate Credit:
  - Retroactive, 15
  - for Undergraduates, 15
- Graduate Degree, Requirements for, 16
- Graduate School, 442
- Graduate Students, Classification of, 11
- Health, Physical Education, and Recreation, School of, 442
- High School Curriculum, Suggested, 13-14
- Honors Statement, 19
- Honors at Graduation, Standards for, 17
- Human Ecology, College of, 443
- Humanities in the BER, 14
- Humanities, College of, 442
- Improper Admission or Registration, 11
- Improper Registration, 11
- Incomplete, 4
- Instructional Units, Organization of, 441-443
- International Affairs, Office of, 443
- Journalism, School of, 442
- K Credit, 4
- Law, College of, 443
- Marks, 3-6:
  - Alteration of, 5-6
  - Report of, 5
- Mathematical and Physical Sciences, College of, 442
- Medicine, College of, 443
- Music, School of, 441
- Natural Resources, School of, 441
- Natural Sciences Admission Condition
  - Courses, 13
- Natural Sciences in the BER, 14
- Nursing, College of, 443
- Optometry, College of, 443
- Organization of University, Academic, 441-443
- Pass/Non-Pass, 4-5
- Pharmacy, College of, 443
- Point-Hour Ratio, 7
- Point-Hour Ratio, Recalculation of, 8
- Prerequisites, 19
- Probation, 12
- Professional Degree, Requirements for, 16
- Professional Students, Classification of, 11
- Progress, 4
- Public Policy and Management, School of, 442
- Quarters of Offering, 19
- Reinstatement After Academic Dismissal, 12
- Repeatability Clause, 19
- Satisfactory/Unsatisfactory, 5
- Scholastic Requirements, Minimum, 11
- School Requirements, 14
- Social Sciences Admission Condition
  - Courses, 13-14
- Social Sciences in the BER, 14
- Social and Behavioral Sciences, College of, 442
- Social Work, College of, 443
- Student Responsibility, 3
- Summa Cum Laude, 17
- Transient Students, Classification of, 11
- Undergraduate Students, Classification of, 11
- University Calendar, 444
- University College, 443
- Veterinary Medicine, College of, 443
- Visual and Performing Arts Admission Condition
  - Courses, 14
- Warning and Dismissal, 11-12
- With Distinction, 17
- Withdraw, 5, 9-10
- Withdrawal from Courses or from the University, 9-10

## Courses, 21-440

- Accounting and Management Information Systems, 21-22
- Aeronautical and Astronautical Engineering, 22-24
- Agricultural Communications, 24-25
- Agricultural Economics, 25-27
- Agricultural Education, 27-29
- Agricultural Engineering, 30-31
- Agricultural Mechanization and Systems, 31-32
- Agriculture: Interdisciplinary, 33
- Agronomy, 32-35
- Air Force Aerospace Studies, 35-36
- Allied Medicine, 36-38
- Anatomy, 38-39
- Anesthesiology, 39
- Animal Science, 39-42
- Anthropology, 42-45
- Arabic, 45-47
- Architecture, 47-50
- Art, 50-54
- Art Education, 54-57
- Arts and Sciences, 57
- Arts, College of the, 57
- Astronomy, 57-59
- Atmospheric Sciences, 59-60
- Aviation, 60-62
- Biochemistry, 62-63
- Biology, 63-64
- Biomedical Engineering, 64-65
- Biophysics, 65
- Biostatistics, 65-66
- Black Studies, 66-69
- Botany, 69-72
- Bulgarian, 72
- Business Administration, 72-73
- Business Administration: Finance, 73-75
- Business Administration: Management and Human Resources, 76-78
- Business Administration: Management Sciences, 78-80
- Business Administration: Marketing, 80-81
- Chemical Engineering, 81-84
- Chemical Physics, 84
- Chemistry, 84-87
- Chinese, 88-91
- Circulation Technology, 91
- City and Regional Planning, 92-95
- Civil Engineering, 95-101
- Classics, 101-102
- Communication, 102-106
- Comparative Studies in the Humanities, 106-108
- Computer and Information Science, 108-112
- Criminology and Criminal Justice, 112
- Czech, 112-113
- Dairy Science, 113-115
- Dance, 115-119
- Dental Hygiene, 119-121
- Dentistry, 121-128
- Dutch, 128
- East Asian Languages and Literatures, 128
- East European Languages and Literatures, 128-129
- Economics, 129-133
- Education, 133
- Educational Policy and Leadership, 133-141
  - Curriculum, Instruction, and Professional Development
  - Educational Administration
  - Higher Education, Adult Education, and Student Affairs
  - Humanistic Foundations
  - Instructional Design and Technology
  - Educational Services & Research, 142-152
  - Educational Studies: Humanities, Science, Technological, and Vocational, 152-165
  - Adult Education
  - English Education
  - Foreign Language Education
  - Industrial Technology Education
  - Science Education
  - Social Studies Education
  - Speech/Theatre Education
  - Vocational-Technical Education
  - Educational Theory and Practice, 165-172
  - Early and Middle Childhood Education
  - Mathematics Education
  - Language Arts, Literature, and Reading Education
  - Teacher Education
  - Electrical Engineering, 172-178
  - Engineering, 178
  - Engineering Graphics, 178-179
  - Engineering Mechanics, 179-181
  - English, 181-187
  - Entomology, 187-189
  - Environmental Biology, 190
  - Family Medicine, 190
  - Family Relations and Human Development, 190-193
  - Family Resource Management, 193-195
  - Food Science and Nutrition, 195-197
  - Food Technology, 197
  - Forestry, 197
  - French, 198-201
  - Geodetic Science, 201-203
  - Geography, 203-206
  - Geology and Mineralogy, 206-211
  - German, 211-215
  - Graduate School, 216
  - Greek, 216-217
  - Health Education, 217-219
  - Hebrew, 219-221
  - History, 221-229
  - History of Art, 229-233
  - Home Economics Education, 233-235
  - Honors, University, 235
  - Horticulture, 236-239
  - Hospital and Health Services Administration, 239-240
  - Human Ecology, 240
  - Human Nutrition and Food Management, 240-242
  - Humanities, College of, 242
  - Hungarian, 242-243
  - Industrial and Systems Engineering, 243-247
  - Industrial Design, 247-250
  - Internal Medicine, 250
  - International Studies, 250-251
  - Italian, 251-253
  - Japanese, 253-255
  - Jewish Studies, 255
  - Journalism, 255-258
  - Judaic and Near Eastern Languages and Literatures, 258-259
  - Korean, 259
  - Landscape Architecture, 259-261
  - Latin, 261-262
  - Law, 263-267
  - Linguistics, 267-269
  - Master of Business Administration, 269-270
  - Materials Science and Engineering, 270-274
  - Mathematics, 274-282
  - Mechanical Engineering, 283-287
  - Medical Communications, 287-288

- Medical Dietetics, 288-289
- Medical Illustration, 289
- Medical Microbiology and Immunology, 290
- Medical Record Administration, 291
- Medical Technology, 291-293
- Medicine, College of, 293
- Medieval and Renaissance Studies, 293-294
- Microbiology, 294-296
- Military Science, 296-297
- Mining Engineering, 297-298
- Modern Greek, 299
- Molecular, Cellular, and Developmental Biology, 299
- Molecular Genetics, 300-301
- Music, 301-314
- National Security Policy Studies, 314
- Natural Resources, 315-318
- Naval Science, 318-319
- Nuclear Engineering, 319-320
- Nurse Anesthesia, 320-321
- Nursing, 321-325
- Obstetrics and Gynecology, 325
- Occupational Therapy, 325-326
- Ophthalmology, 326
- Optometry, 326-328
- Otolaryngology, 328
- Pathology, 328-329
- Pediatrics, 329
- Persian, 329-330
- Pharmacology, 330
- Pharmacy, 330-335
- Philosophy, 335-338
- Photography and Cinema, 338-341
- Physical Education, 341-352
- Physical Medicine, 352-353
- Physical Sciences, College of Mathematical and, 353
- Physical Therapy, 353-354
- Physics, 354-357
- Physiological Chemistry, 357-358
- Physiological Optics, 358-359
- Physiology, 360-361
- Plant Pathology, 361-362
- Polish, 362-363
- Political Science, 363-368
- Portuguese, 369
- Poultry Science, 369-371
- Preventive Medicine, 371-372
- Psychiatry, 373
- Psychology, 373-380
- Public Policy and Management, 380-382
- Radiologic Technology, 382-383
- Radiology, 383-384
- Recreation Education, 384-385
- Religious Studies, 385-386
- Respiratory Therapy, 386-387
- Romance Linguistics, 387
- Romanian, 387-388
- Rural Sociology, 388
- Russian, 389-392
- Sanskrit, 393
- Scandinavian, 393
- Sensory Biophysics, 393
- Serbo-Croatian, 393-394
- Slavic and East European Studies, 394
- Slavic Languages and Literatures, 394-395
- Social and Behavioral Sciences, College of, 395
- Social Work, 395-400
- Sociology, 400-405
- Spanish, 405-409
- Speech and Hearing Science, 409-412
- Statistics, 412-415
- Surgery, 415
- Surveying, 415-416
- Swahili, 416
- Swedish, 416
- Textiles and Clothing, 417-418
- Theatre, 418-423
- Turkish, 423-424
- Ukrainian, 424-425
- University College, 425
- Veterinary Anatomy and Cellular Biology, 425
- Veterinary Clinical Sciences, 426-427
- Veterinary Medicine, College of, 427-429
- Veterinary Pathobiology, 429-430
- Veterinary Physiology and Pharmacology, 430-431
- Veterinary Preventive Medicine, 431-432
- Vocational Education, Comprehensive, 432
- Welding Engineering, 432-435
- Women's Studies, 435-436
- Yiddish, 436-437
- Zoology, 437-440

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## Nondiscrimination Policy

The policy of The Ohio State University, both traditionally and currently, is that discrimination against any individual for reasons of race, color, creed, religion, sex, sexual harassment, sexual orientation, national origin, age, handicap, or Vietnam-era veteran status is specifically prohibited. Title IX of the Education Amendments of 1972 prohibits sex discrimination and Section 504 of the Rehabilitation Act of 1973 prohibits discrimination on the basis of handicap in education programs and activities. Accordingly, equal access to employment opportunities, admissions, educational programs, and all other University activities is extended to all persons, and the University promotes equal opportunity through a positive and continuing affirmative action program.

The University's Office of Affirmative Action, 1100 Lincoln Tower, 1800 Cannon Drive, Columbus, Ohio 43210-1230; 614-292-4207, is responsible for the coordination of matters relating to equal opportunity and this nondiscrimination policy. Information concerning violations of the policy and inquiries regarding University compliance with equal opportunity mandates, affirmative action, the requirements of Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and other applicable statutes and regulations pertaining to equality of opportunity may be addressed to the associate executive officer for affirmative action at the address and telephone number indicated.

Further policy guidelines pertaining to affirmative action at The Ohio State University are detailed in the University *Operating Manual*, Section 1.0 and 1.15. Copies of the *Operating Manual* are available for reference in college and department offices throughout the campus.

