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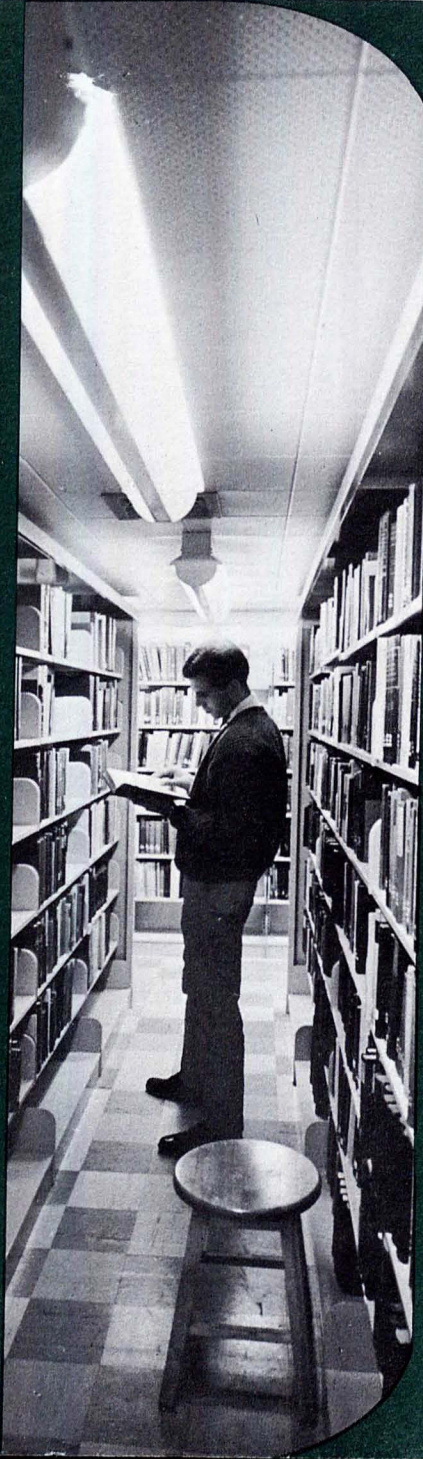
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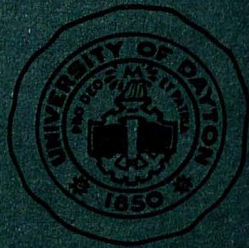
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UNIVERSITY OF DAYTON

University of Dayton Bulletin

GRADUATE CATALOG ISSUE 1967-1968





DAYTON, OHIO 45409

THE UNIVERSITY OF DAYTON BULLETIN

NUMBER 3

VOLUME LXXVIII

MARCH, 1967

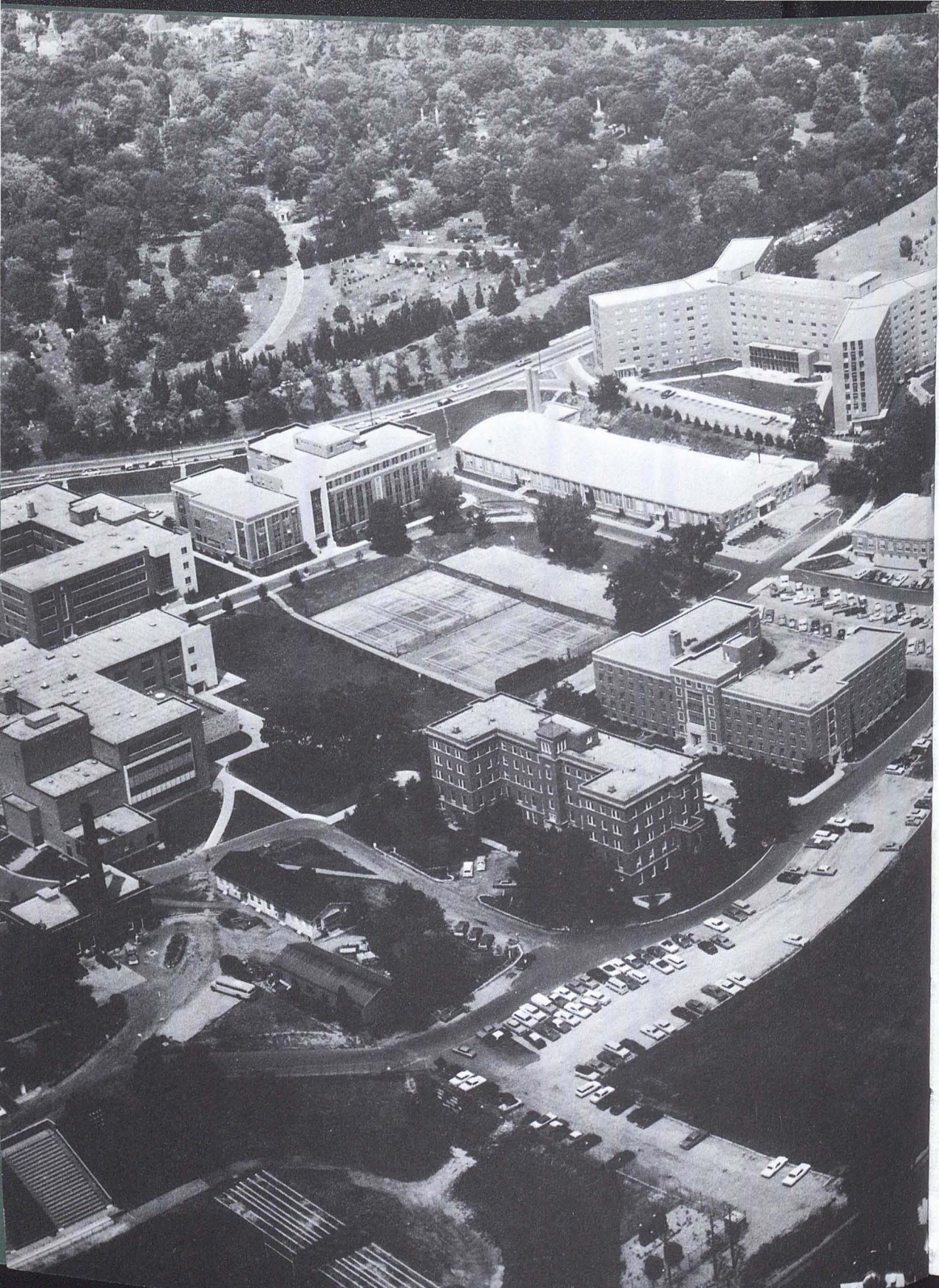
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The University of Dayton Bulletin includes the admissions catalog issue, the undergraduate catalog issue, the graduate catalog issue, the evening session announcements, and the summer session announcements.

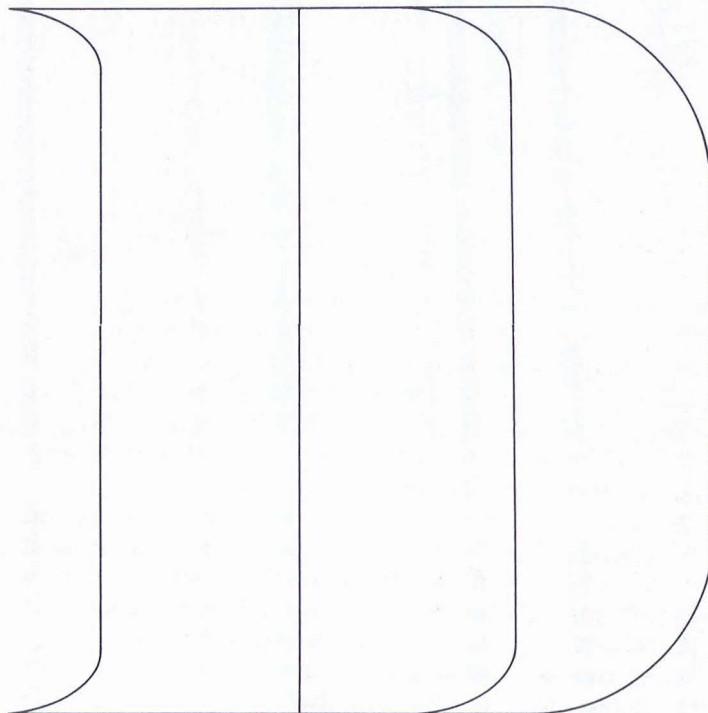
The provisions of the various issues of this Bulletin are to be considered directive in character and not as an irrevocable contract between the student and the University. The University reserves the right to make any changes that seem necessary or desirable.

The current number of any of these publications may be obtained by applying to the office of the Provost.

University of Dayton
Graduate Bulletin
1967-1968



University of Dayton Bulletin



The Graduate Catalog Issue 1967-68

College of Arts and Sciences
School of Business Administration
School of Education
School of Engineering

DAYTON, OHIO 45409

Academic Calendar

1967-1968

First Term

August	28	Monday	Registration: (6:30 p.m. to 8:30 p.m.)
August	29	Tuesday	Registration: (6:30 p.m. to 8:30 p.m.)
September	5	Tuesday	Classes begin.
September	12	Tuesday	Last day for change in schedules.
September	25	Monday	Last day to withdraw without record.
October	28	Saturday	Graduate Record Exam and Teacher Education Exam (file application 4 weeks in advance).
November	1	Wednesday	Feast of All Saints (no classes).
November	22	Wednesday	Thanksgiving recess begins after last evening class.
November	27	Monday	All classes resume.
December	8	Friday	Feast of the Immaculate Conception (no classes).
December	9	Saturday	Graduate Record Exam and Teacher Education Exam (file application 4 weeks in advance).
December	11	Monday	Registration: (6:30 p.m. to 8:30 p.m.)
December	12	Tuesday	Registration: (6:30 p.m. to 8:30 p.m.)
December	13	Wednesday	Registration: (6:30 p.m. to 8:30 p.m.)
December	17	Sunday	Diploma Exercises.
December	19	Tuesday	Term ends after last class.

Second Term

January	8	Monday	Classes begin.
January	15	Monday	Last day for change in schedules.
January	20	Saturday	Graduate Record Exam and Teacher Education Exam (file application 4 weeks in advance).
January	29	Monday	Last day to withdraw without record.
April	9	Tuesday	Easter recess begins after last evening class.
April	16	Tuesday	All classes resume. Registration: (6:30 p.m. to 8:30 p.m.)
April	17	Wednesday	Registration: (6:30 p.m. to 8:30 p.m.)
April	21	Sunday	Commencement Exercises.
April	23	Tuesday	Term ends after last class.
April	27	Saturday	Graduate Record Exam and Teacher Education Exam (file application 4 weeks in advance).



Third Term—First Session

May	2	Thursday	Classes begin.
May	9	Thursday	Last day for change in schedules.
May	10	Friday	Last day to withdraw without record.
May	11	Saturday	Teacher Education Exam <i>only</i> (file application 4 weeks in advance).
May	23	Thursday	Feast of the Ascension (no classes, except those meeting after 4 p.m.).
May	30	Thursday	Memorial Day (no classes, except those meeting after 4 p.m.).
June	14	Friday	Term ends after last class.

Third Term—Summer Session

June	19	Wednesday	Registration.
June	20	Thursday	Registration.
June	21	Friday	Classes begin.
June	26	Wednesday	Last day for change in schedules.
July	1	Monday	Last day to withdraw without record.
July	4	Thursday	Independence Day (no classes, except those meeting after 4 p.m.).
July	13	Saturday	Graduate Record Exam and Teacher Education Exam (file application 4 weeks in advance).
August	2	Friday	Term ends after last class.
August	3	Saturday	Diploma Exercises.

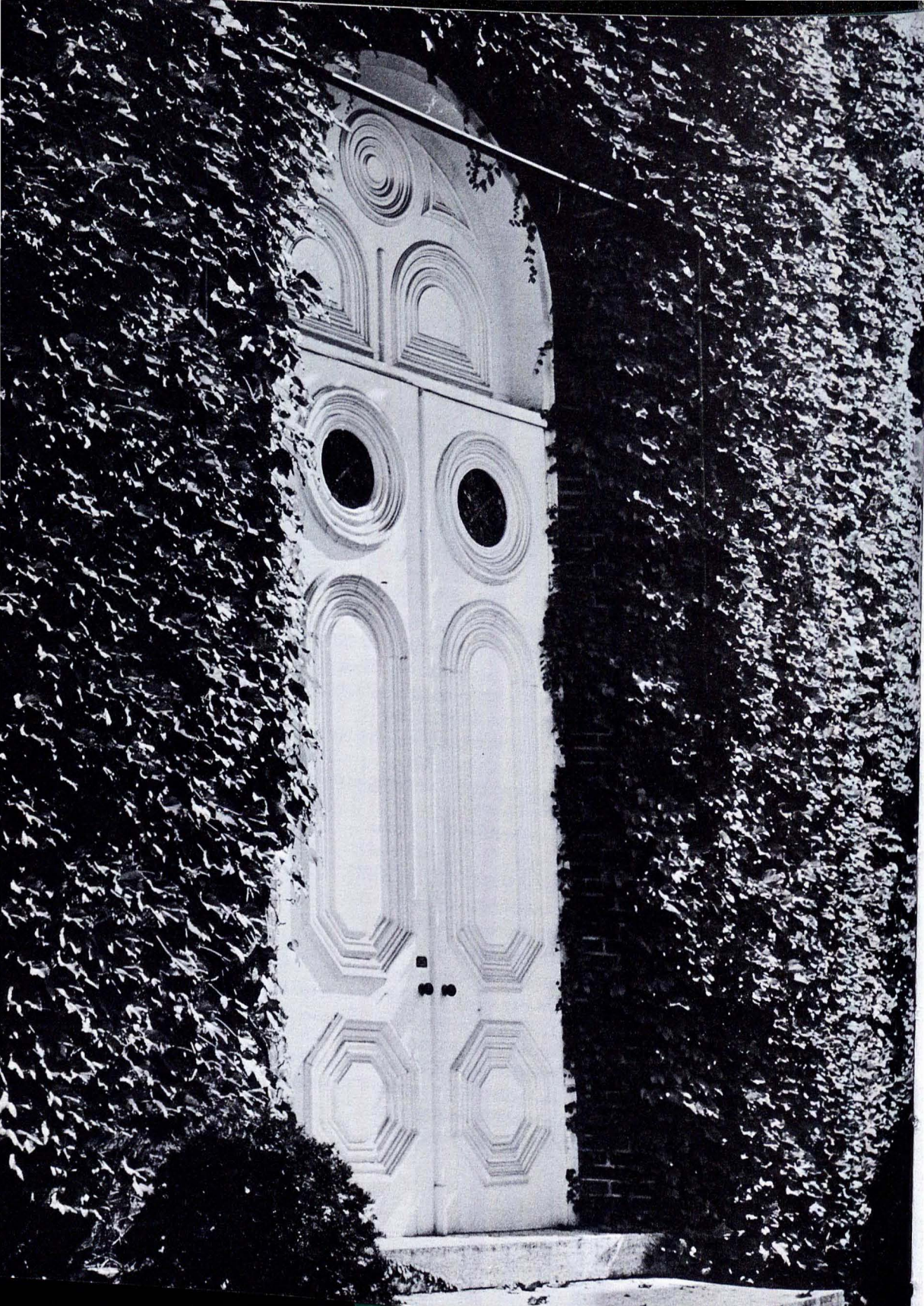


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I General Information

STATEMENT OF PURPOSE

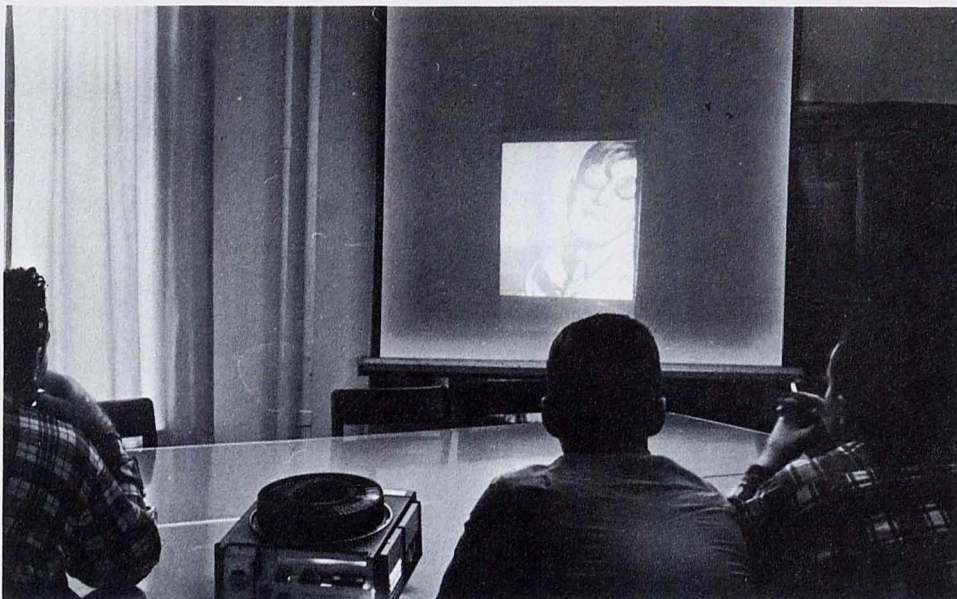
The ultimate purpose of graduate work at the University of Dayton is identical with the general purpose of the University itself, namely, "to provide an academic atmosphere in which Christian principles of thought and action are the essential integrating and dynamic forces impelling the students to pursue, to cherish, and to disseminate what is true, good and beautiful."

The immediate objectives of a graduate school distinguish it from every other type or level of educational institution. Through its faculty, it seeks to create and maintain an academic atmosphere that is essential to graduate work. Its influence, therefore, extends first to its own membership, by promoting all forms of scholarly activity.

It labors further to give its students a thorough grasp of a chosen field of knowledge, special skills in methods of research, and sharpened powers of independent thought. Under the guidance and inspiration of a scholarly staff, students are given the constant use of library, laboratories, and other educational facilities. Above all, a graduate student is expected to bring marked initiative to his work and to assume full responsibility for the progress of his studies. The courses of instruction can be no more than the point of departure and a basis for wide reading and personal investigation.

The number of credit hours demanded for a graduate degree is merely the material requirement; the form and substance of graduate work are conceived as the mastery of a subject-matter with understanding of its relations to kindred branches of knowledge.

In short, graduate work, for the student at the University of Dayton, has for its purpose an integrated program of advanced study based on adequate undergraduate preparation in a specific field of study. It presupposes academic and personal maturity and makes more than average demand upon the initiative, the industry, and the scholarship of the candidates for an advanced degree.



ACCREDITATION

The University of Dayton is officially accredited by the following agencies:

The State of Ohio, Department of Education.

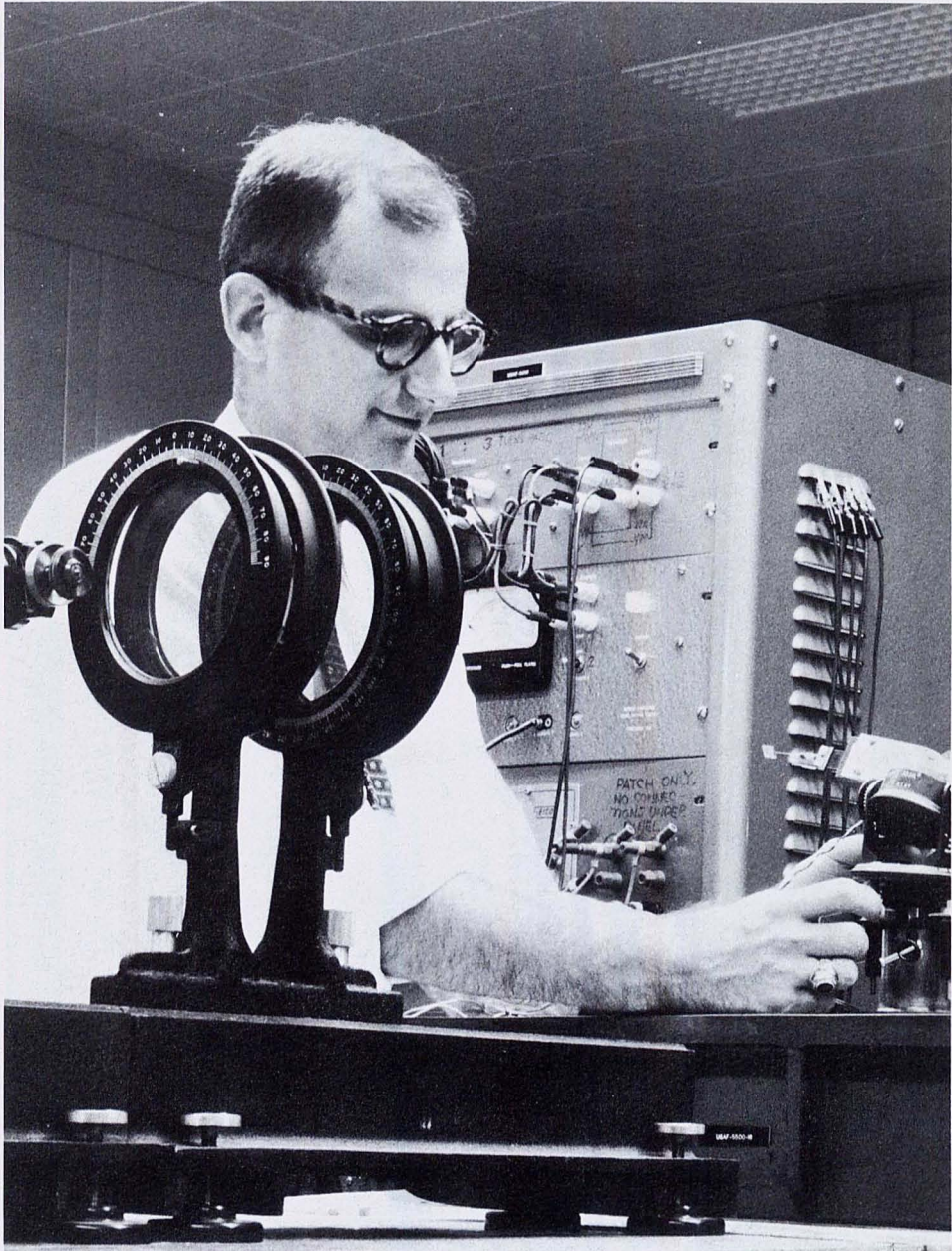
The North Central Association of Colleges and Secondary Schools.

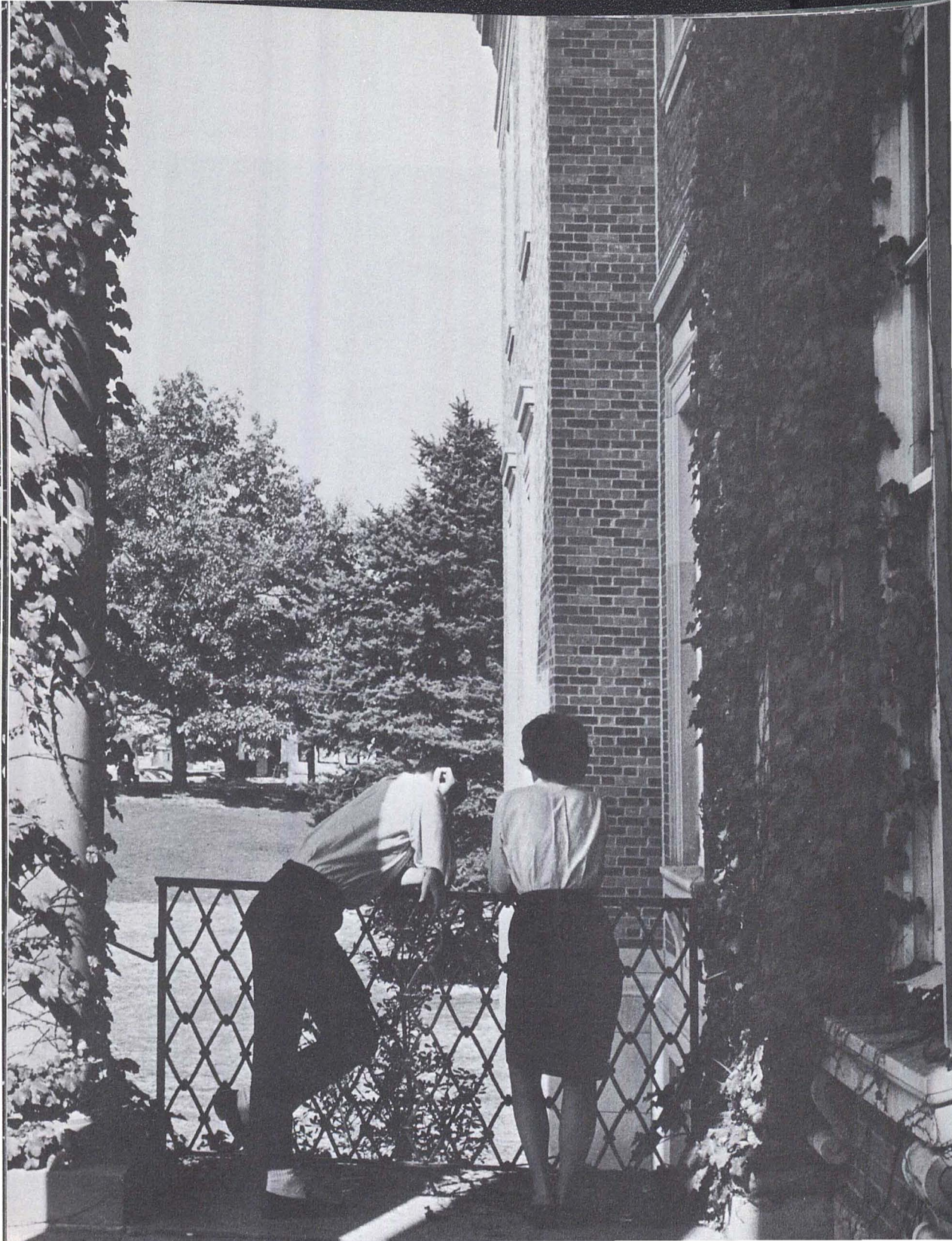
The National Council for Accreditation of Teacher Education (for preparation of elementary and secondary school teachers).

The Engineers' Council for Professional Development for Civil, Electrical, and Mechanical Engineering curricula; also for programs of Electrical, Industrial, and Mechanical Technology in the Technical Institute.

The University has the approval of the American Medical Association for its Pre-Medical program and of the American Chemical Society for its program in Chemistry.

The University holds institutional membership in the following associations: The Association of American Colleges; The American Association of Colleges for Teacher Education; The American Council on Education; The American Society for Engineering Education; The International Council on Education for Teaching; The National Catholic Educational Association; The Ohio Association of Counselor Educators; The Ohio College Association; The Council on Social Work Education; The Ohio Council for the Advancement of Educational Administration; Ohio Council on Advanced Placement.





II Academic Information

ADMISSION

Men and women graduates of approved colleges or universities with a Bachelor's degree are eligible for admission. Applicants must have had an adequate undergraduate preparation in their proposed field of study and must show promise for pursuing higher studies satisfactorily. Additional requirements of specific curricula are noted in their respective portions of this bulletin.

A student is expected to assume full responsibility for knowing the regulations and pertinent procedures of the Graduate School as set forth in this publication and for meeting the standards and requirements expressed by these regulations.

APPLICATION FOR ADMISSION

Inquiries concerning admission and requests for application forms should be addressed to the Office for Graduate Studies or to the office of the Dean of the College or School. The application for admission to graduate work should be submitted by August 1 for the first term, by December 1 for the second term, by April 1 for the third term, and by June 1 for the second half of the split third term. It is the responsibility of the student that his application, with all the necessary supporting documents, be complete and in order before registration if he is to be admitted as a graduate student.

Students from foreign countries may be admitted to graduate courses for which they are prepared and, if found capable, may pursue a program leading to a degree. In addition to the information required of all students, the foreign student must submit with his application for admission:

1. Test scores of the Graduate Record Examination (GRE) and the Test of English as a Foreign Language (TOEFL);
2. A statement by a responsible medical authority certifying that the student's physical, mental, and emotional balance is adequate for the work he intends to undertake.

If the student is accepted he must deposit the sum of \$2,000 with the Treasurer, University of Dayton. This amount is to pay tuition costs for the first year and the balance to help defray return transportation to the student's home. Moreover, the foreign student must carry health insurance and be prepared to pay the first annual premium (\$21.00) upon arrival at the University.

Foreign students should complete the application for admission to graduate work by July 1 for the first term, by November 1 for the second term, by March 1 for the third term. Original inquiries should be made at least six months before the term to which the student seeks admission.

CLASSIFICATION OF STUDENTS

Regular Status

On regular status are students who have met satisfactorily all the general requirements of the school and the specific requirements of the department in which they are working.

Conditional Status

On conditional status are applicants who must fulfill some prerequisite imposed by the school or department before their admission to regular status. Included likewise are students from foreign countries whose native language is not English and students whose preparation cannot be adequately determined.

Special Status

On special status are students who belong to any of the following categories:

1. Non-programmed students, that is, students who fulfill all the requirements and are taking courses for credit, but are not seeking a degree;
2. Auditors, that is, properly qualified students who wish to follow graduate courses without working for credit. Auditors may be admitted to graduate courses with the permission of, and under the conditions required by the Dean. Tuition for auditors is the same as for students on regular status;
3. Transient students, that is, properly qualified students working toward a degree in another institution who have written authorization from the Dean of that institution to take specific courses at the University of Dayton for transfer of credit. Such students must satisfy all registration requirements in the given course that are mandatory for students working toward a degree at the University of Dayton.

DEGREES

The University of Dayton offers advanced studies leading to a degree of Master of Arts, Master of Business Administration, Master of Public Administration,

Master of Science, Master of Science in Education, Master of Science in Engineering, and Master of Science in Electrical Engineering.

SPECIFIC REQUIREMENTS FOR ALL DEGREES

Course Requirements

The College of Arts and Sciences and the Schools of Business Administration, Education, and Engineering offer programs variously distributed in time, leading to the Master's degree. Specific requirements are listed in those sections of this Bulletin which describe these degrees. Each School also provides through a particular course-offering, a philosophical orientation to the over-all intent of the graduate programs in order to insure correlation with the general purposes of the University.

Residence Requirements

Residence requirements at the University of Dayton call for the equivalent of time normally demanded by the successful completion of twenty-four credit hours of graduate work. During the initial years of operation of any program, exceptions to this limitation may be made with the approval of the Dean concerned.

Minimum residence time requirement for students attending various combinations of terms is shown in the following table:

COMBINATION of TERMS	MINIMUM RESIDENCE
Students attending <i>ONLY</i> during regular academic year.	Two terms.
Students attending <i>BOTH</i> during regular academic year and third term.	Two terms or one term and two half terms.
Students attending <i>ONLY</i> summer sessions.	Four summer sessions, (i.e., four second-half of third term sessions).

The minimum residence time requirement will not in any case be reduced by the acceptance of transfer credit.

Time Limit

All requirements for a Master's degree must be satisfied within seven calendar years from the time of matriculation. (Period of service in the armed forces is not included.)

Graduate Work in Other Institutions

A maximum of two courses of graduate work may be allowed in transfer from other accredited institutions provided the work be of "B" grade quality or better.

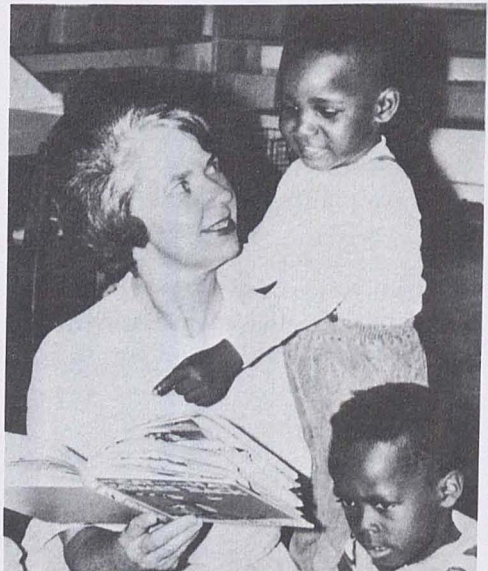
No transfer credit will be allowed for courses taken more than five years previous to matriculation in the graduate schools of the University of Dayton.

During the initial years of operation of any new program, exceptions to this limitation may be made with the approval of the Dean concerned.

Registration of Undergraduate Students for Graduate Courses

An undergraduate student may register for graduate courses only under the following conditions:

- a. Graduate courses to count toward the undergraduate degree.
 1. Approval must be obtained from the Graduate Committee of the particular Graduate School offering the course.
 2. The student's total load must not exceed seventeen (17) hours.
- b. Graduate Courses to count toward the graduate degree.
 1. Approval must be obtained from the Graduate Committee of the particular Graduate School offering the course.
 2. The student must be within fifteen (15) semester hours of completing the credit hour requirements for graduation in his undergraduate program.
 3. The student's total load must not exceed seventeen (17) hours.
 4. Credit obtained for the graduate courses may not be counted toward both the Bachelor's and the future Master's degrees.
 5. The graduate tuition rates must be paid when registering in graduate courses for graduate credit.



Language Requirement

A reading knowledge of a foreign language may be required for a Master's degree at the discretion of the Department. Language courses for the convenience of graduate students can be had by special arrangement on a class or tutorial basis, through the Chairman of the Language Department. No graduate credit is allowed for the fulfillment of these language requirements.

Grades and Examinations

Grades are expressed on the student's permanent record in the following manner:

A—Excellent	4 quality points
B—Good	3 quality points
C—Passing	2 quality points
F—Failing	0 quality points
I—Incomplete	0 quality points
P—Thesis in progress	0 quality points
W—Withdrawal	0 quality points

To be eligible for candidacy and for the comprehensive examinations as well as for graduation, graduate students must achieve a three-point cumulative average for all courses taken for graduate credit.

Admission to Candidacy

It is the student's responsibility to apply for admission to candidacy and to check with the Departmental Chairman as to when application should be made. The most important consideration in the admission of a student to candidacy is the qualitative standard of the student's record in his graduate work. Applicants who are deemed unqualified at this point will be advised to discontinue their program.

Comprehensive Examinations

A comprehensive examination is required by all Schools for the Master's degree. The examination may be oral or written, or both. Applications for all comprehensive examinations must be approved by the Chairman of the student's major department at least two weeks prior to the examination. Students who fail in a comprehensive examination may on the recommendation of the Chairman of the Department, be admitted to a second examination, but not sooner than the next term or summer session, and no later than one calendar year. If a second examination is unsatisfactory, no further trial may be granted.

Thesis

In those departments requiring a thesis or an equivalent project, the work may not be undertaken without the approval of the Departmental Chairman or of an

advisor delegated by the Dean; both the form and the content of the thesis must have the approval of three members of the Department, including the faculty advisor and the Chairman.

Three final copies of an approved thesis in correct form must be submitted by the student, at least two weeks before graduation.

Theses may not be published, in whole or in part, without the approval of the Administration of the University.

Withdrawals from Courses

Any withdrawal or change of course after the last date of registration is allowed only with written permission. Any change of course or withdrawal must be filed with each office that has a record of the student's admission form.

Use of Advanced Undergraduate Courses in the Graduate Program

1. Some but not all curricula permit the selection of designated upper-division (300-400) courses to be applied to the graduate program.
2. When upper-division courses are permitted for credit on the graduate level, in order to be accepted toward a degree, the work done shall be of "B" grade or better.
3. The graduate tuition rates must be paid when registering for graduate credit.

REGISTRATION

The responsibility for being properly registered rests with the student. Registration is required each term or session of all students who enter course work for credit; and of all students who wish to audit courses. The written approval of the proper dean or the designated advisor is required for admission to any course. Graduate Students are encouraged to register by mail at least ten days prior to the registration dates listed in the academic calendar. Any student who has interrupted the normal sequence of his graduate program is required to apply to the designated advisor or departmental chairman for permission to resume graduate study, at least two weeks prior to the date assigned for registration.

LIBRARY RESOURCES

The Albert Emanuel Library houses all general holdings plus the concentration of titles in the field of Electrical Engineering.

Specialized libraries are also open to graduate students as follows:

1. Departmental Libraries

- a. Biology, Mathematics, Physics, Psychology . . . Sherman Hall Library, third floor.

- b. Chemistry, and Chemical, Mechanical, and Civil Engineering . . .
Wohlleben Hall Library, third floor.
 - c. Mariology . . . Marian Library, south wing of the Albert Emmanuel
Library.
 - d. Education . . . Curriculum Library on the first floor of Chaminade
Hall.
2. Other Libraries in the Area:

There are several other libraries in the area available to graduate students. These include the public libraries, the Engineers' Club, Miami Valley Hospital, certain local industries, certain areas at Wright-Patterson Air Force Base, and the libraries of the affiliated institutions.

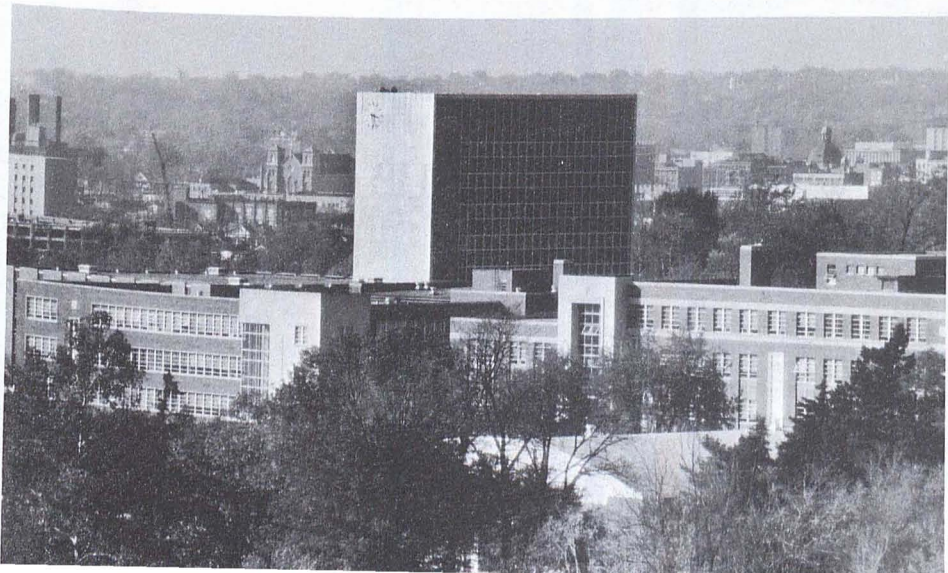
SEPARATION FROM THE UNIVERSITY

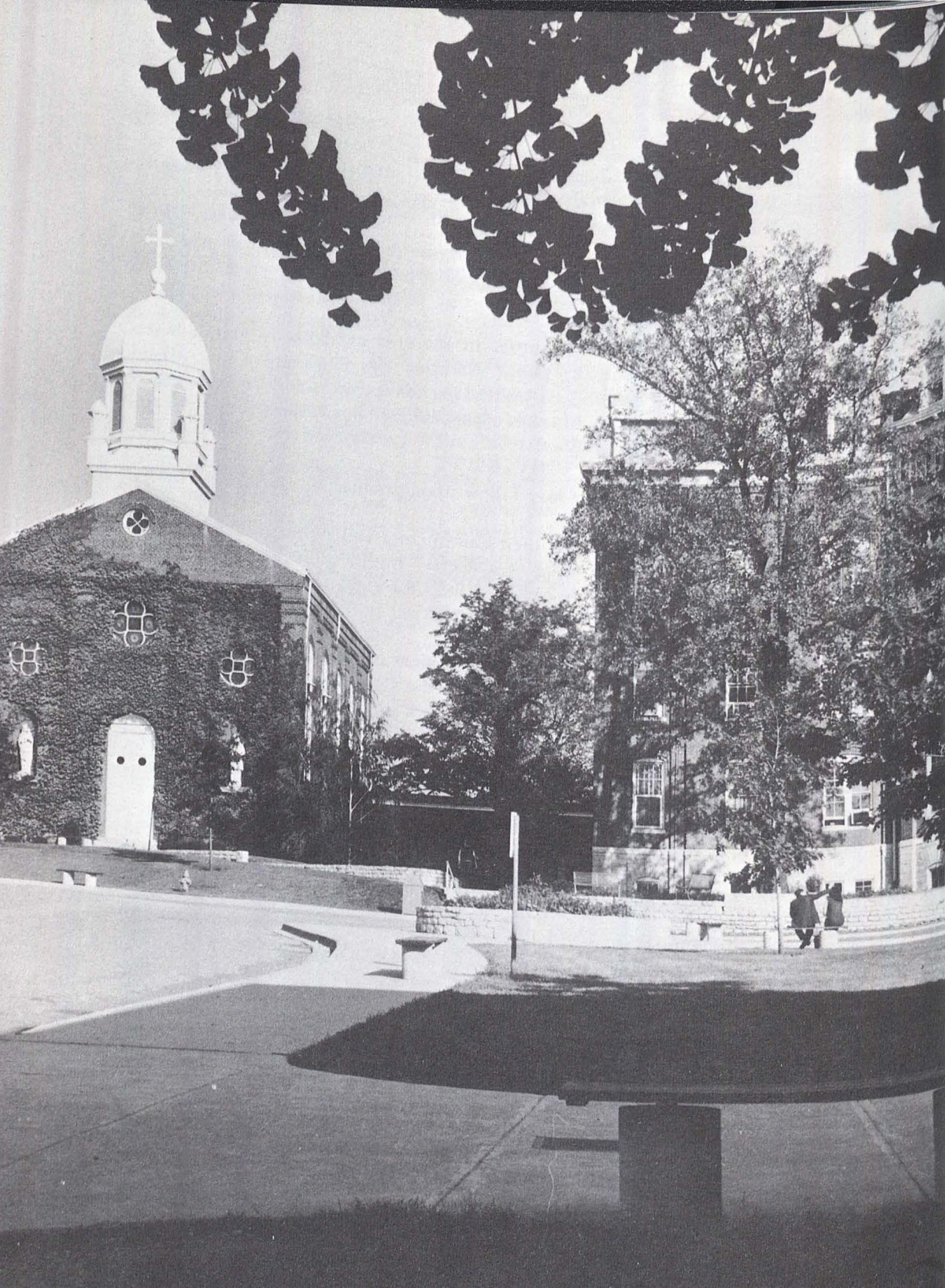
Separation from the University may follow upon graduation, withdrawal by the student, or dismissal.

The admission of candidates, their continuance and status, the awarding of academic credits, and the granting of a degree, are all subject to the ordinary regulatory powers of the University. It reserves the right to cancel, at its discretion, any of these privileges for reasons considered sufficient by its own governing body.

The various Deans reserve the right to review at intervals the work of their graduate students, and, in consultation with the Chairman of the Department, to recommend that those who are not doing work of a high caliber be advised to discontinue courses leading to a degree.

The disciplinary authority of the University is vested in the President by right, and in the Deans and other officers on whom jurisdiction may be conferred for specific cases and in restricted areas.





III Financial Information

GENERAL REGULATIONS

It is the rule of the University that tuition and fees are to be paid in full at the time of registration.

Where voluntary withdrawal, dismissal, illness, physical disability, or any extraordinary contingencies require a student to leave, he must notify the Dean of the School in which he is enrolled.

VETERANS

Veterans admitted to graduate courses must submit with their formal registration the Certificate of Eligibility for studies by the V.A. under Title 38, United States Code. Lacking the necessary document applicable to his case, the prospective student must register as a non-veteran and pay the required tuition and fees.

Application for benefits under Chapter 33, 34 or 35, Title 38, United States Code, is made at the Veterans Administration in Cleveland, Ohio. Advice and consultation for veterans may be had at the Veterans Service Office of the University of Dayton in St. Marys Hall, room 108.

TUITION AND FEES

Tuition for Courses Taken for Undergraduate Credit

Per registered credit hour for lecture course	\$25.00
Per clock hour for laboratory course	18.00

Tuition for Courses Taken for Graduate Credit

Per registered credit hour for lecture course	\$28.00-35.00
Per clock hour for laboratory course	20.00

Fees

Application Fee, payable once, upon application	10.00
Basic University Fee, each term* .. \$2.00 per credit hour—not to exceed	10.00
Registration Fee, each registration	2.00
Service Charge for Registration Exceptions	2.00
Late Registration Service Charge	5.00
Laboratory Materials and Equipment Fee (variable)	5.00-35.00
A second comprehensive examination	25.00
A second language examination	10.00
A deferred term final examination	5.00
Graduation	26.00

*The Basic University Fee is charged to cover library services, guidance and placement services, Kennedy Union services and publications of the University (except Yearbook).

If a student is registered in the Graduate School and the total number of hours carried is 12 or more per term, and half or more of the total credits are for undergraduate credit, then the student is to be charged the regular \$500 per term comprehensive tuition plus the full-time University fee of \$25. These charges will cover all graduate courses.

A transcript of credits may be requested from the Office of the Registrar. The official transcript may be sent to the institution or organization desiring it or to the student himself. There is a fee of fifty cents for a transcript with less than twelve credit hours. The fee is one dollar for a transcript with twelve or more credit hours. For transcripts ordered in lots of two or more, the fee is one dollar for the first copy and fifty cents for each additional copy. The first copy requested after graduation is a free copy.

CANCELLATION AND REFUNDS

Cancellations will be allowed only after the completion of the proper withdrawal forms. For refund purposes the effective date of cancellation is the date the student notifies the proper Dean's office not the last day the student attended class. This date will appear on the withdrawal forms forwarded to the Treasurer's Office and will determine the amount of refund due.

Students who discontinue class attendance without officially completing the withdrawal procedures during the cancellation period will be responsible for the full amount of the applicable tuition and fees. Those called to military service before the end of a given term should consult with the Treasurer of the University regarding the special regulations that apply in this case.

During the four-week cancellation period for the first and second terms, the tuition charges will be made according to the following schedule:

During the first week of classes	20%
During the second week of classes	40%
During the third week of classes	60%
During the fourth week of classes	80%
During and after the fifth week of classes	100%

During the five-day cancellation period for each session of the split term the tuition charges will be made according to the following schedule:

First day of classes	20%
Second day of classes	40%
Third day of classes	60%
Fourth day of classes	80%
After fourth day of classes	100%

Fees of any sort are not refundable. Deposits for breakage are refundable in whole or in part.

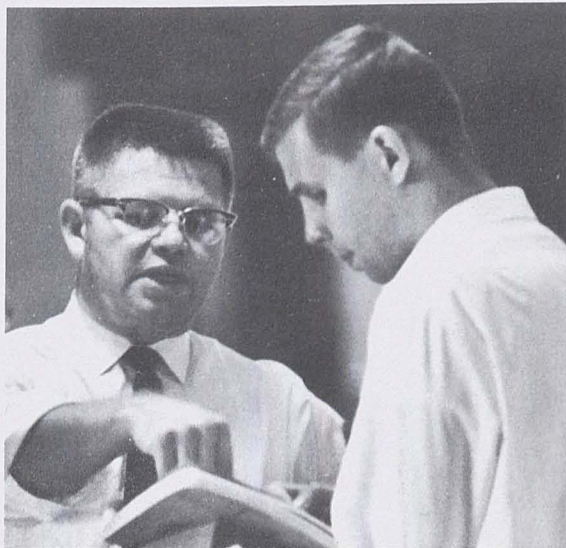
HOUSING

Those interested in obtaining accommodations in University-owned housing are asked to write or phone the Housing Office for rates and information.

FELLOWSHIPS, SCHOLARSHIPS, ASSISTANTSHIPS

A limited number of Research Fellowships and Graduate Assistantships are available to students who are qualified. These carry a stipend and tuition refund provision which enables the recipients to complete the requirements for the degree in a two-year period.

Detailed information and forms for making application may be secured from the Dean of the School in which study is to be done.





IV College of Arts and Sciences

The objectives of graduate work in the Arts and Sciences coincide with the general aims and philosophy of education that characterize the University of Dayton. Specific objectives and requirements of the several departments are presented in the following programs:

THE MASTER'S PROGRAM IN BIOLOGY

Statement of Purpose:

The general objective of graduate work in the Department of Biology is to give the student a basis for a thorough understanding and appreciation of his chosen discipline. Specifically, the graduate program is intended:

- a. To prepare professional biologists.
- b. To qualify the student for academic, industrial and governmental careers in biology.
- c. To equip teachers for scholarly competence in biology.
- d. To prepare the student for further graduate training.

Specific Requirements of the Department:

a. Admission: An applicant is admitted if the Admissions Committee of the Department is satisfied that the applicant is fully qualified to undertake the degree program.

The following undergraduate prerequisites are recommended:

1. A total of twenty-four to thirty credit hours in the field of Biology, of which eighteen to twenty-four credit hours must correspond to the Department's 300-400 course designation.
2. Two semesters each of General Chemistry and Organic Chemistry.
3. Two semesters of Physics.
4. Two semesters of Mathematics.

The graduate student may be required to fulfill undergraduate prerequisites before being admitted to graduate courses for which, in the judgment of the Departmental Committee, he is not qualified.

b. Requirements for the Master's Degree in Biology:

1. Residence. Graduate studies require much more than merely completing more credit hours of course work. While it is possible to fulfill the requirements for the M.S. in Biology as a part-time student, our experience has shown that this is quite difficult. Therefore, we recommend that students in biology attend at least two terms as full-time students. This will enable them to benefit by discussion with the faculty, informal seminars, working with fellow students and participating in the general camaraderie of graduate scholarship and research.
2. A minimum of thirty credit hours of acceptable course work and research. At the discretion of the Chairman, this may include graduate and/or undergraduate courses in both biology and related areas. The graduate student is permitted three to six credit hours for thesis research.
3. While the degree is in biology rather than in a specific field, some amount of specialization is expected. This is determined by the particular interests of the student and accomplished by the selection of courses and the thesis topic.
4. Although the exact courses to be taken will be determined after conferring with the advisor, choice may be in any of the following areas of specialization.

Microbiology

Bacteriology	Pathogenic Bacteriology
Biochemistry	Parasitology
Bacterial Physiology	Bioinstrumentation
Immunology and Serology	Cytology
Virology	Non-vascular Plants

Biofunction

Bioinstrumentation	Genetics
Radiation Biology	Biochemical Genetics
Plant Physiology	Biochemistry
Endocrinology	Physiology
Immunology	Comparative Animal Physiology

Bioecology

Ecology	Invertebrate Zoology
Population Ecology	Biometrics
Vertebrate Morphology	Vertebrate Paleontology
Lower Plants	Evolutionary Biology
Higher Plants	

5. Since advanced undergraduate courses may be taken for graduate credit with the permission of the Chairman, the student is advised to consult the list of courses in the Undergraduate Catalog. Normally, only two advanced undergraduate courses may be counted toward the graduate requirements.

6. A number of credits are common to all programs. These required areas are:

Bio 501	Seminar	2 credit hours
Bio 590	Philosophy of Biological Science	3 credit hours
Bio 599	Thesis	3-6 credit hours

Although only two credits are required in Bio 501, Seminar, students are expected to attend and participate in this course each term they are enrolled.

The six credits in Bio 599, Thesis, are taken in two groups of three credits each. The first three credits are earned during the initial stages of literature work, experimental design and establishment of control methods. The actual research and presentation of an acceptable thesis will occupy the final three credits. All thesis work must be under the immediate direction of a member of the graduate faculty.

7. Following the completion of a major portion of the course requirements, the student will take a written and/or oral examination covering general areas of biology and the specific special area in which he has concentrated. If this is satisfactory, the final oral examination will consist primarily of a thesis defense.



THE MASTER'S PROGRAM IN CHEMISTRY

Statement of Purpose:

The purpose of the Master's program in Chemistry is to present to the student a rigorous approach to modern theories in Chemistry, and to increase his desire and potential toward fundamental research through a program of literature search and laboratory experimentation.

Specific Requirements of the Department:

a. Undergraduate prerequisites: The undergraduate prerequisites shall be the minimum requirements specified by the American Chemical Society. Those students who have graduated from A.C.S. approved schools will have fulfilled these requirements. Others may have to take certain courses concurrently from the undergraduate program to meet A.C.S. requirements.

b. Undergraduate courses open to graduate students: Credit for certain undergraduate non-Chemistry electives may be allowed at the discretion of the Chairman of the Department.

c. Requirements in terms of credit hours for the Master's degree in Chemistry: Twenty-four credit hours of course work and six hours of research are normally required. A thesis which may be an exhaustive literature search is expected. With the approval of the Chairman, equivalent course work may be substituted for the thesis. Every thesis must be approved by a Thesis Committee, appointed by the Chairman of the Department.

The following courses are required:

Chm 503-4	Advanced Inorganic Chemistry
Chm 505-6	Advanced Organic Chemistry
Chm 507-8	Advanced Physical Chemistry
Chm 510	Pro-Seminar or Phl 510 Philosophy of Science
Chm 520-521	Research

Electives:

Three hours of electives which may be taken from the following listing. Other electives may be chosen with the approval of the Chairman of the Chemistry Department.

Chm 511	Biochemistry
Chm 514	Advanced Analytical Chemistry
Chm 515	The Physical Chemistry of High Polymers
Chm 516	Thermo-Kinetics
Mth 421	Advanced Calculus I
Phy 420	Introduction to the Solid State
Phy 440	X-Rays

THE MASTER'S PROGRAM IN ENGLISH

Statement of Purpose:

The Master's program in English is designed to offer the opportunity for an intensified study of English and American literature, and to develop in the student a competence in independent research and in the exercise of sound literary judgment.

Specific Requirements of the Department:

a. Undergraduate prerequisites: The student seeking admission must have completed studies in English and American literature which will enable him to pursue his graduate studies with distinction. He will ordinarily have completed, with a grade point average of at least 3.00, twenty-four semester credit hours in literature, of which at least eighteen hours were in upper-division courses. Graduate Record Examination scores may be required as part of the applicant's materials.

b. Specific degree requirements: Two options are possible:

Option A: Twenty-four credit hours of course work, a thesis for which six hours are granted, a language examination, and a special examination in the area of the thesis.

Option B: Thirty credit hours of course work which culminates in a written comprehensive examination.

Neither option is regarded as a terminal master's. The selection would depend upon the student's preparation, interest and vocational objective.

c. Obligatory core courses: Eng 595, Research and Bibliography, to be taken in the first term in which it is offered, and Eng 592, Philosophical and Critical Foundations of Literature, are required of all applicants for the degree.

d. Occasionally and only by permission of the Chairman, certain of the 400-level course offerings in English, up to six hours maximum, can be included in the master's program if taken by a student enrolled in the graduate program. These are the 400-level courses listed in the University catalog.

e. Credit hours in an allied field: Six semester credit hours may be taken in an allied field upon approval of the Chairman of the Department.

f. Thesis: A thesis upon a topic approved by the Graduate Committee of the Department is required of all students who elect Option A.

g. Language requirements: Students electing Option A must demonstrate a reading knowledge of one foreign language. French or German is preferred.

h. Comprehensive examination: All students electing Option B must pass a written comprehensive examination upon six of seven periods of English and American literature. Detailed instructions concerning this examination may be obtained from the Chairman.

Course Offerings:

Courses will be offered during the late afternoons or evenings and on Saturday mornings during the First, Second, and first half of the Third Term and during the evening and in the day in the second half (the summer session) of the Third Term.

THE MASTER'S PROGRAM IN HISTORY

Statement of Purpose:

The Department of History through its graduate program seeks to develop in the student that combination of mature judgment and scholarly competence associated with the ability to make, compare, test, and evaluate historical conclusions and interpretations.

As a secondary purpose, the program is designed to prepare the student for a successful career in teaching, government services, or specific fields of private endeavor.

Specific Requirements of the Department:

a. Undergraduate prerequisites: Applicants for the graduate program in History must have completed a total of twenty-four semester credit hours of History, and must have achieved a grade point average of at least 3.00 in all History courses.

b. Undergraduate History courses on the 300 and 400 level may be taken for graduate credit to a maximum of six credit hours. Courses for which undergraduate credit has been received may not be repeated for graduate credit.

c. Courses required of all students in the Master's Program in History:

Hst 500 Historiography

Hst 550 The Philosophy of History

Hst 545 Seminar in Non-American History

or

Hst 595 Seminar in American History

d. Requirements for the Master's degree in History:

OPTION A:

1. Thirty credit hours of acceptable course work including nine credits of required courses (See c above) and six credit hours for thesis (Hst 599).

2. A reading knowledge of one foreign language (usually French, German, or Spanish).
3. An oral comprehensive examination which must be passed at least three weeks prior to the date of graduation.

OPTION B:

1. Thirty-three credit hours of acceptable course work including nine credits of required courses (See c above).
2. A written comprehensive examination which must be passed at least three weeks prior to the date of graduation.
3. This program is recommended only for students for whom the Master's degree is to be considered a terminal degree.

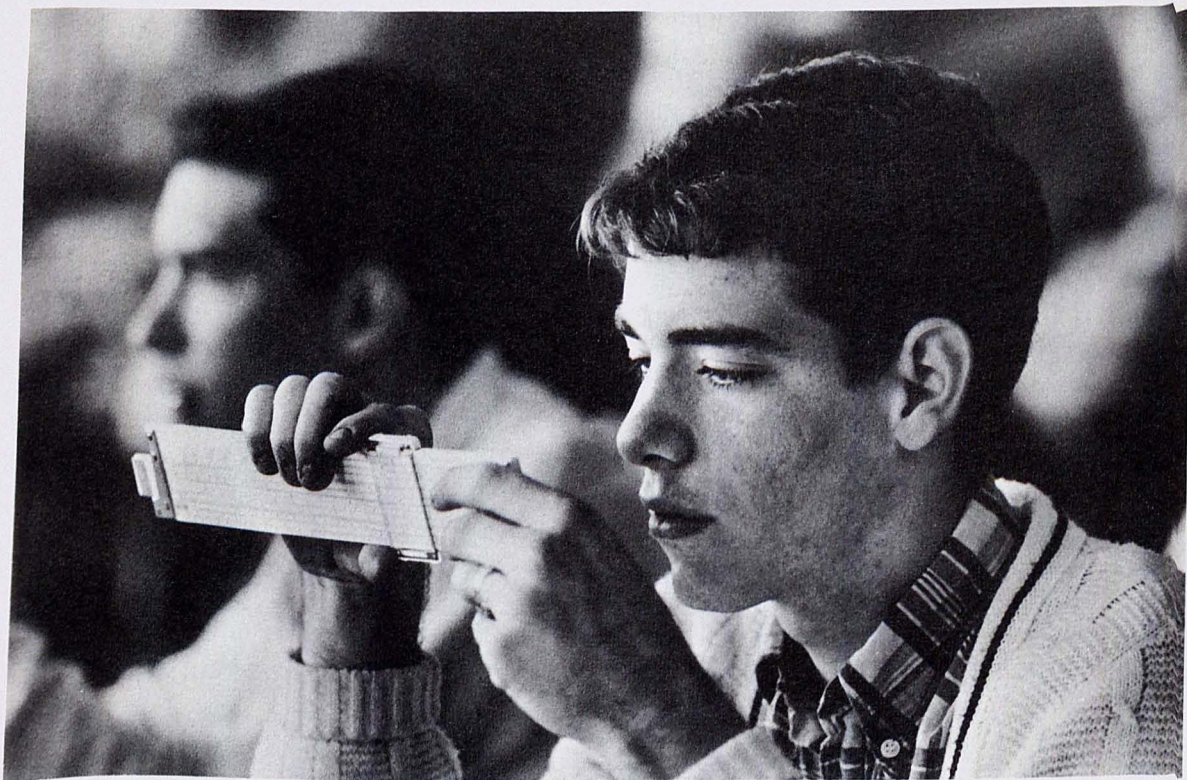
e. Six credit hours may be taken in an allied field, such as Education, English, Philosophy, Theology, etc., upon approval by the chairmen of both departments.

Course Offerings:

Courses will be offered in the late afternoon and evening hours for the convenience of teachers and other employed persons except during the Third Term, Second Session, when courses will be offered in the morning hours only.

Students who wish to do so may register for the 300- and 400-level courses in the full time undergraduate program. No more than six credits of such courses may be taken for graduate credit.





THE MASTER'S PROGRAM IN MATHEMATICS

Statement of Purpose:

The Department proposes to offer graduate studies in Mathematics in order to give an opportunity for properly prepared persons to acquire skills in those branches of Mathematics normally studied after the Baccalaureate degree. The curriculum is intended to serve as a firm basis for doctoral studies and research.

Specific Requirements of the Department:

a. Undergraduate prerequisites:

Mth 301 Differential Equations (or equivalent)

Mth 361 Introduction to Abstract Algebra

or

Mth 362 Introduction to Linear Algebra and
Matrices (or equivalents)

Mth 421-422 Advanced Calculus (or equivalents)

b. Graduate requirements:

The candidate selects his courses under the guidance of the Chairman. He should have a proficiency in the following areas: Real Variables, Complex Variables, Abstract or Linear Algebra and Topology.

c. Requirements for the Degree:

1. Thirty course hours: These may include 6 hours of undergraduate courses chosen from Mth 411, 412, 413, Probability and Statistics, I, II and III; a maximum of 6 hours of approved courses outside the department; a maximum of 6 hours for a thesis in special cases.
2. An oral examination. This must be passed successfully after the completion of all courses. The material covered in the examination is listed in b. For further information see page 15 of this catalog.
3. A reading knowledge of German or French. Although no foreign language is required, a student may be expected to be assigned readings in French or German.

THE MASTER'S PROGRAM IN PHILOSOPHY

Statement of Purpose:

The purpose of the graduate program in Philosophy is to provide an atmosphere for independent study and research, in which the student can gain a more comprehensive knowledge and deepen his understanding of Thomistic philosophy and of other major philosophical positions, develop his powers of critical analysis and his ability to apply philosophical principles to the solution of present-day problems.

Students working toward the Master of Arts degree in Philosophy will be subject to the general requirements of the College of Arts and Sciences program and to the specific requirements given below.

Specific Requirements of the Department:

a. Undergraduate Prerequisites: For a Master's degree in Philosophy, the student must have had the following undergraduate courses: Logic, Cosmology, Philosophical Psychology, Epistemology, General Metaphysics, Natural Theology, Ethics, History of Greek and Medieval Philosophy.

b. Advanced Undergraduate Courses Open to Graduate Students: Only two courses are permitted. Offerings will be restricted to a choice from the following:

- Phl 406 History of Greek Philosophy
- Phl 407 History of Medieval Philosophy
- Phl 408 History of Modern Philosophy

- Phl 410 History of Political Philosophy
- Phl 414 Philosophy of Law
- Phl 430 Philosophy of Plato
- Phl 432 Philosophy of Aristotle
- Phl 434 St. Thomas Aquinas
- Phl 455 Philosophy of Art

c. **Obligatory Core Courses:** Six credit hours of core courses will be required of all regular students for the M.A. in Philosophy. The courses which constitute the core are listed under "Courses of Instruction" as Phl 525 and Phl 540.

d. **Requirements in Terms of Credit Hours for an M.A. in Philosophy:** The student must take a minimum of thirty hours in graduate work, six of which are given for a thesis. At the discretion of the Chairman, six of these hours may be taken from the Special Problems courses.

e. **Thesis Requirement:** A thesis will be required of all students in this program. An outline of his thesis should be submitted by the student to the Chairman three months prior to the expected graduation. The completed thesis must be submitted at least four weeks prior to the date of graduation. The student must be prepared to make an oral defense of his thesis no later than two weeks prior to graduation.

f. **Language Requirement:** All students will be required to pass an examination on their reading knowledge of a foreign language. A reading knowledge of philosophical Latin, of French or of German will satisfy this requirement. The language examination will be held twice a year, one month after the beginning of the First and Second Term.

g. **Comprehensive Examination:** Each student must take a written comprehensive examination in partial fulfillment of the requirement for the degree. The examinations will be administered on the last Monday of November, March and June. The student taking the comprehensive examination must have completed at least 18 hours of class work.

Courses of Instruction:

A distinctive feature of the graduate program in Philosophy is the special emphasis on Modern Philosophy.

a. **Core Courses:**

- Phl 525 Thomistic Texts and Commentaries
- Phl 540 Aristotle's *De Anima* and St. Thomas' Commentary

b. **Elective Courses:**

- Phl 541 Texts of Plato
- Phl 542 Texts of Aristotle

- Phl 545 Modern French Philosophy
- Phl 555 Modern German Philosophy
- Phl 560 Modern British Philosophy
- Phl 570 Existentialist Philosophy
- Phl 575 Contemporary Philosophies of Evolution
- Phl 580 Contemporary Naturalism and Realism
- Phl 585 Phenomenology

c. Special Problems Courses:

- Thl 500 Philosophy of Religion
- EdF 502 Comparative Philosophies of Education
- Phl 503 Philosophy of Man
- Phl 510 Philosophy of Science
- Hst 550 Philosophy of History

THE MASTER'S PROGRAM IN PHYSICS

Statement of Purpose:

Basically the Master's program in the Department of Physics serves the stated purpose of the University by giving the student a thorough understanding and appreciation of his chosen discipline. Advanced study in physics may be used in several immediate ways:

- a. To prepare for an advanced degree (Ph.D.) program;
- b. To qualify the student for research and development careers in industry and government;
- c. To enrich the backgrounds of teachers of physics on the secondary school level.

Specific Requirements of the Department:

a. Undergraduate requirements: An applicant will be admitted to advanced study in physics if the graduate admission committee of the Department determines he is qualified to take the degree program. In general, a properly prepared student should have the following background:

1. Physics courses which are approximately the equivalent of University of Dayton courses.
 - Phy 303-4 Intermediate Mechanics
 - Phy 408-9 Advanced Electricity & Magnetism
 - Phy 301 Thermodynamics
 - Phy 390 Introduction to Quantum Mechanics
 - Phy 421 Nuclear Physics

2. Mathematics through Differential Equations and preferably Advanced Calculus.

The applicant will be required to make up any deficiencies which the Department deems necessary to bring him to the level of the graduate course.

b. Specific requirements for the degree: The formal requirements for the degree are thirty credit hours of course work properly distributed plus examinations and possibly a thesis as indicated in the following:

1. The "core sequence" normally required of all degree students.¹

Phy 511	Classical Mechanics	three credit hours
Phy 515	Statistical Mechanics	three credit hours
Phy 516	Philosophical Basis of Modern Physics	three credit hours
Phy 523	Electromagnetic Theory I	three credit hours
Phy 524	Electromagnetic Theory II	three credit hours
Phy 525	Quantum Mechanics I	three credit hours
Phy 526	Quantum Mechanics II	three credit hours

2. Other recommended Graduate courses in physics.

Phy 512	Classical Theory of Fields	three credit hours
Phy 520	Advanced Solid State Physics	three credit hours
Phy 521	Advanced Nuclear Physics	three credit hours
Phy 531	Advanced Graduate Laboratory	three credit hours

3. Courses in related disciplines.

These may be chosen in related fields, mathematics, chemistry, etc. up to a maximum of six credit hours with the approval of the Chairman of the Department.

4. Advanced undergraduate courses.

A maximum of six credit hours of graduate credit may be granted for advanced undergraduate courses which are approved by the graduate student's Faculty Advisor.

NOTE: Courses for which undergraduate credit has been allowed may not be repeated for graduate credit.

5. Thesis credit.

A Master's degree thesis is recommended for those students who have no comparable experience. An oral examination before a committee designated by the Chairman of the Department must be passed before credit can be given. A maximum of six credit hours can be given for thesis work.

¹Substitutions may be made with the approval of the Chairman of the Department.

6. Comprehensive examinations.

A three-hour written and one-hour oral examination in the general field of physics is given under the direction of the student's Faculty Advisor. This examination must be passed satisfactorily by the candidate for a Master's degree.

7. Language requirement.

No specific language requirement is necessary for the degree of Master of Science in Physics.

THE MASTER'S PROGRAM IN POLITICAL SCIENCE

Statement of Purpose:

The Department of Political Science offers graduate students the opportunity for advanced study of governmental structures, processes, and theory within an integrated disciplinary context. The programs propose to develop professional competence and the research skills necessary to productive participation in the discipline.

Specific Requirements of the Department:

a. Undergraduate prerequisites: An applicant is admitted to graduate study if the admitting committee of the Department is satisfied that the applicant is fully qualified to undertake graduate study. Applicants may submit credentials in any substantive field.

b. Required core courses: Pol 513, Political Philosophy, and a seminar in the area of specialization are required for all master's degrees.

c. Specific requirements for the Master of Arts: Thirty hours of graduate credit, which may include six to nine hours in courses taken in an allied field. A written comprehensive examination is required. A thesis, evaluated at six semester hours, may be written under the direction of a member of the faculty. If a thesis topic requires command of a foreign language, computer technology, or another tool of research, the candidate will be required to demonstrate competence in its use.

d. Specific requirements for the Master of Public Administration: Thirty hours of graduate credit, including the required core courses. A candidate who has not had government experience at an administrative level must complete Pol 595-596, Government Internship. An applicant who wishes a research-oriented program in public administration should take the M.A. program with thesis.

A candidate may take up to six or nine hours in a cognate field related to his administrative or professional interests. A written comprehensive examination is required at the completion of the course work.

e. Under the general University regulations regarding transfer credit, an applicant may transfer six semester hours of graduate studies from another university under certain conditions. Courses taken in an accredited law school may be transferred under the same conditions.

THE MASTER'S PROGRAM IN PSYCHOLOGY

Statement of Purpose:

The Department of Psychology offers three graduate programs.

The Master of Arts program in Psychology is designed to prepare the student for sub-doctoral activities in such fields as clinical and counseling psychology, and as a teacher of psychology. Course work can also be designed as preparatory to advanced work leading to the Ph.D. in these and other areas.

The Master of Science program in Experimental Psychology prepares the student for duties as research psychologist in government, industry and the University. The objective of the program is to develop a capability to plan, conduct and report on experimental methodology and theory applied to human behavior, motor and cognitive functions. The laboratory and course work is preparatory to advanced degrees.

The Master of Science program in Information Science is distinctive. It represents an interdisciplinary approach to the problems men face in organizing and controlling mass amounts of data generated and needed by individuals and institutions. Its distinctiveness lies in the integrated applications of computer science, mathematics and psychological principles to the receipt, classification, cataloging, storing and retrieval of information and data regardless of its subject matter. The program also trains its students to investigate and apply computer techniques and systems to social sciences research. Consequently, the program attempts to develop individuals who have a fundamental knowledge about the major principles of psychology with those engineering concepts that govern the development of Information Systems established for management decisions and research programs in government, academic and industrial institutions, processing of documentation in libraries, diagnostic techniques in hospitals, etc. Individuals completing the program are expected to be sufficiently trained to cope with problems emerging in the development and implementation of computer based Information Systems.

Student Guidance

The student enrolled in the graduate program of the department is provided with the *Student's Guide to Graduate Study in the Department of Psychology*. The Guide provides specific elaboration of the procedures to be followed by the student in completing his graduate studies.

Student Status

Each student *admitted* to the Graduate Program is placed in either of the following categories as defined.

a. *Regular Standing*

Student meeting all the entrance requirements of the department.

b. *Conditional standing*

1. Students in this status are required to complete admission requirements as to preliminary examinations (GRE), letters of recommendation, or specific courses as determined by the Department.
2. Students are considered as *probationary* pending the results of nine to fifteen hours of graduate work.

c. *Special Standing*

Students enrolled in graduate courses of the department who may not be necessarily working for a degree.

Candidacy

A graduate student becomes eligible for candidacy when in the judgment of his advisor he has adequately demonstrated ability to satisfy the requirements stipulated in the program for which he was accepted. On the student's part, application for candidacy signifies the intention to complete the degree requirements at the University of Dayton.

Time Limit

The program must be completed within seven years after matriculation. (Period of service in the Armed Forces not included.)

Specific Entrance Requirements for the Respective Programs

a. Master of Arts in Psychology (Clinical-Counseling)

Undergraduate prerequisites for admission as a regular student:

1. Three credit hours of College Algebra
2. 3.0 point average in Psychology
3. As a minimum, 3 credit hours in Experimental Psychology

b. Master of Science in Psychology (Experimental)

Undergraduate prerequisites for admission as a regular student:

1. Three credit hours of College Algebra
2. 3.0 average in Psychology
3. As a minimum, 3 credit hours in Experimental Psychology and 3 hours in Statistics, plus 6 hours in upper level Psychology

c. Master of Science in Information Science

Undergraduate prerequisites for admission as a regular student:

1. Completion of differential Integral Calculus.
2. 3.0 point average in major (behavioral, physical science or engineering).
3. At least 6 hours in Psychology (includes Experimental Psy 308, 308L).
In the event these course requirements are not met, student may be accepted on condition pending satisfactory completion of these courses.

Course Requirements for Degree in Respective Programs

a. Master of Arts in Psychology (Clinical-Counseling)

1. Formal Requirements

- a. 33 credit hours of course work including thesis.
- b. The completion of one semester of 12 graduate credit hours.
- c. Minimum B average in course work.
- d. Passing of a comprehensive examination.
Details on the examination are included in the *Student's Guide to Graduate Study*.
- e. Thesis and oral examination of Thesis.

2. Core Course Requirements

- Psy 501 Advanced Statistics
- Psy 504 Computer and Research Design I
- Psy 505 Computer and Research Design II
- Phl 510 Philosophy of Science

b. Master of Science in Psychology (Experimental)

1. Formal Requirements

- a. 33 credit hours of course work including thesis.
- b. The completion of one semester of 12 graduate credit hours.
- c. Minimum B average in course work.
- d. Passing of a comprehensive examination.
- e. Thesis and oral examination of Thesis.

2. Core Course Requirements

- Psy 501 Advanced Statistics
- Psy 504 Computer and Research Design I
- Psy 508 Advanced Experimental Psychology
- Psy 530 Learning
- Phl 510 Philosophy of Science

c. Master of Science in Information Science

1. Formal Requirements

- a. 39 credit hours of course work (includes 3 credits for thesis).

- b. The completion of one semester of 12 graduate credit hours.
 - c. Minimum B average in course work.
 - d. Passing of a comprehensive examination.
 - e. Thesis and oral examination of Thesis.
2. Core Course Requirements
- Psy 504 Computer & Research Design I
 - Psy 505 Computer & Research Design II
 - Psy 590 Introduction to Math Psychology I
 - Psy 591 Introduction to Math Psychology II
 - Psy 508 Advanced Experimental Psychology
 - Psy 540 Introduction to Information Systems
 - Phl 510 Philosophy of Science

Courses of Instruction:

- a. Master of Arts in Psychology (Clinical-Counseling)
 - Psy 402 Survey of Tests and Measurements (3)
 - Psy 412 Interviewing and Counseling (3)
 - Psy 505 Computer and Research Design II (3)
 - Psy 511 Individual Testing (Binet) (3)
 - Psy 512 Individual Testing (Wechsler) (3)
 - Psy 513 Projective Test I (2)
 - Psy 514 Projective Test II (2)
 - Psy 519 Practicum in Projective Techniques (2)
 - Psy 521 Developmental Psychology (3)
 - Psy 532 Theories of Perception (3)
 - Psy 535 History and Systems of Psychology (3)
 - Psy 560 Theories of Personality (3)
 - Psy 561 Clinical Psychology (3)
 - Psy 562 Clinical Diagnosis (3)
 - Psy 563 Theories of Therapeutic Counseling (3)
 - Psy 579 Practicum in Interviewing and Counseling (2)
 - Psy 597 Readings (1-3)
 - Psy 598 Selected Problems (1-6)
 - Psy 599 Thesis (3)
- b. Master of Science in Psychology (Experimental)
 - Psy 454 Physiological Psychology (3)
 - Psy 455 Comparative Psychology (2)
 - Psy 505 Computer and Research Design II (3)
 - Psy 530 Learning (3)
 - Psy 531 Learning Theory (3)

- Psy 532 Theories of Perception (3)
- Psy 565 Psychophysiology (3)
- Psy 580 Development of Man-Machine Systems (3)
- Psy 581 Control Display Systems (3)
- Psy 585 Experimental Social Psychology (3)
- Psy 592 Seminar in Statistics (may be repeated) (3)
- Psy 597 Readings (1-3)
- c. Master of Science in Information Science
 - Psy 505 Computer and Research Design II (3)
 - Psy 530 Learning (3)
 - Psy 531 Learning Theory (3)
 - Psy 532 Theories of Perception (3)
 - Psy 533 Decision Processes (3)
 - Psy 540 Introduction to Information Systems (3)
 - Psy 541 Computer Applications to Behavioral Science (3)
 - Psy 542 Communication Theory I (3)
 - Psy 543 Communication Theory II (Psycholinguistics) (3)
 - Psy 580 Development of Man-Machine Systems (3)
 - Psy 583 Simulation Theory and Practice (3)
 - Psy 585 Experimental Social Psychology (3)
 - Psy 592 Seminar in Statistics (may be repeated) (3)
 - Psy 597 Readings (1-3)
 - Cps 314 Electronics for Scientists (3)
 - Cps 399 Special Problems (in Computer Science) (1-3)
 - Cps 481 Mathematical Logic (3)
 - Cps 499 Special Topics (3)
 - Egr 513 Systems Analysis, Design and Evaluation (3)
 - Ine 421-2 Reliability (3)

THE MASTER'S PROGRAM IN THEOLOGICAL STUDIES

Statement of Purpose:

The graduate program in Theological Studies is conceived as a broad comprehensive approach to the study of Religion and Theology. Its major concern is to develop in the degree candidate a methodology whereby he may approach the field with five major concerns: a solid grasp of Sacred Scripture, the historical development of western theological thought, the comparative study of world religious phenomena, an ecumenical awareness, the establishment of an interdisciplinary mentality. The program is conceived both as a preparation for

specialization on the doctoral level and as a terminal program for those with other interests and needs.

The unique facilities afforded by the Marian Library allow the offering of special electives in Mariology.

Specific Requirements of the Department:

a. Undergraduate prerequisites: An applicant is admitted to graduate study if the admitting committee of the Department is satisfied that the applicant is fully qualified to undertake graduate study.

b. Specific course requirements for the degree: The candidate must take a minimum of thirty-two hours of course work distributed as follows:

1. Obligatory core courses: 20 credit hours
2. Electives in Theological Studies: 6 credit hours
3. Electives in another graduate discipline: 6 credit hours.

c. With permission undergraduate courses on the 300 and 400 level in Theological Studies and in Judaics may be taken for graduate credit to a maximum of six credit hours. Courses for which undergraduate credit has been received may not be repeated for graduate credit.

d. Language requirement: At the completion of 12 credit hours the candidate will be required to demonstrate a reading knowledge of another language.

e. Comprehensive examination: At the completion of the program of studies an oral and written comprehensive examination must be taken on the core courses, the electives in Theological Studies and the electives in the other disciplines.

f. Thesis requirement: In view of the papers and monographs required for the core courses, no thesis is required for the degree. However, when warranted, permission may be given to replace up to six hours of content courses with a thesis.

Program for the M.A. in Theological Studies:

The program leading to a Master's degree in Theological Studies may be pursued in Summer Sessions or full-time, throughout the year. It must be completed within seven calendar years. Another program in Theological Studies is offered conjointly by the University of Dayton and St. Charles Seminary. Details of this program, along with the descriptions of the courses offered at St. Charles, can be found in the Catalog of St. Charles Seminary, Carthage, Ohio.

Courses of Instruction:

a. Core courses:

- Thl 502 The Comparative Study of Religion
- Thl 510 The Patristic Period
- Thl 511 The Medieval Period
- Thl 512 Reformation Theology I: Catholic
- Thl 513 Reformation Theology II: Protestant
- Thl 514 History of Jewish Thought
- Thl 515 Contemporary Protestant and Catholic Thought
- Thl 531 Biblical Studies I: Old Testament
- Thl 532 Biblical Studies II: New Testament

b. Elective courses:

- Thl 503 World Religions
- Thl 504 Introduction to Theology
- Thl 506 Systematic Theology
- Thl 507 Phenomenology of Religion
- Thl 508 Non-religious Interpretations of Reality in 20th Century
- Thl 509 Theology and Philosophy
- Thl 516 Readings in Contemporary European Theology
- Thl 517 Frontiers in Catholic and Protestant Theology
- Thl 518 American Theological Thought
- Thl 524 Role of Mother of God in the Incarnation
- Thl 525 Privileges of Blessed Virgin
- Thl 526 History of Mariology
- Thl 527 The Marian Question in an Ecumenical Age
- Thl 528 Selected Questions in Mariology
- Thl 533 Biblical Theology
- Thl 534 Messianic Message of Old Testament
- Thl 538 Special Problems in Biblical Theology
- Thl 540 Theology of Incarnation
- Thl 545 The Christian Approach to Morality
- Thl 546 Theology of Sexuality
- Thl 548 Contemporary Themes in Theology
- Thl 591 Selected Problems in Religion: Workshop
- Thl 599 Thesis

c. Courses offered at Carthage:

Areas of concentration are: God, One and Three—God the Creator; God—Man and Redeemer; Christ in the Sacramental and Eschatological Church. Course descriptions can be found in the St. Charles Catalog.

1. Systematic Theology:

- Thl 502C God Is
- Thl 503C God Saves
- Thl 504C God is Three
- Thl 505C God Sanctifies
- Thl 506C God Creates
- Thl 570C Christ and Sacramental Eschatological Church I
- Thl 571C Christ and Sacramental Eschatological Church II

2. Biblical Theology:

- Thl 560C God One and Three
- Thl 561C God the Creator
- Thl 562C God, Man and Redeemer I
- Thl 563C God, Man and Redeemer II
- Thl 564C Christ and Sacramental Eschatological Church I
- Thl 565C Christ and Sacramental Eschatological Church II

3. Moral Theology:

- Thl 510C The Man of Prudence; Principles of Justice
- Thl 511C The Practice of Individual and Social Justice
- Thl 512C The Life of Faith, Hope, and Charity
- Thl 513C The Christian Man of Temperance and Fortitude
- Thl 590C Monograph Seminar
- Thl 592C Seminar*

(*May be repeated for each area)

4. Electives:

- Thl 514C Church Law on Clerics and Religious
- Thl 515C Church Law on the Laity; Law of Worship
- Thl 516C Law of Church Property
- Thl 517C Penal Law of the Church
- Thl 556-557C History of the Old Testament (or)
- Hst 556-557C History of the Ancient Near East
- Thl 558-559C History of the New Testament (or)
- Hst 558-559C History of First Christian Beginnings



V

School of Business Administration

AIMS AND OBJECTIVES

Graduate Work in Business at the University of Dayton

In the fall term of 1963, the Master of Business Administration program at the University of Dayton was launched. The decision to embark upon graduate education in business resulted from several years of careful study and planning. It was determined that such an undertaking afforded the University an opportunity to meet a growing need in an area in which it was in a position to offer a program consistent with the University's objectives of purpose and quality.

Philosophy of the Master of Business Administration Program

The M.B.A. program is designed to provide advanced work on a professional level for those whose occupational and personal objectives can be thus served. The University recognizes that a society characterized by heavy industrialization and organized activity requires an increasing input of skilled managers and administrators. It also recognizes that the increased complexities of enterprise and organization places demands upon managers and administrators that require more exacting mastery of the business disciplines.

The manager today must view his function as a professional activity. One aspect of professional competence is the mastery of a body of knowledge. Another is the development of proficiency in applying such knowledge in the decision-making situation. The manager's knowledge must encompass certain basic categories: The social, economic and political environment of business enterprise; the basic business functions such as marketing, finance, operations, and accounting; the management process; and the methodologies for research and problem-solving.

The emphasis of the M.B.A. program is on management practice and decision-making. Although some degree of specialization is afforded, most of the student's work is in courses designed to provide a solid grounding in all the basic business functions, the management process, and the economic and social

environment. In the final analysis, most truly managerial decisions require this broad-based educational background.

In summary, then, the objective of the program is to enable the student to achieve the following:

1. An understanding of the factors and forces in the social, economic and political environment that bear directly and indirectly on managerial decision-making.
2. A knowledge of the principles, methods, and applications of the basic business functions of marketing, finance, accounting and operations.
3. An understanding of managerial processes, administrative practices and organizational relationships.
4. Methodologies for problem analysis and decision-making.

ADMISSION

The program is designed for holders of a bachelor's degree from an accredited college in: (1) business administration or (2) a field other than business administration.

Those in the first group usually can meet the requirements for the M.B.A. degree by completing thirty credits of graduate work.

Those in the second group may find it necessary to remove certain undergraduate deficiencies by taking basic courses in accounting, economics, management, statistics, and marketing before starting the program.

Applicants for admission to the M.B.A. program should demonstrate a readiness for graduate study, personal integrity, and aptitude for successful business performance. The admissions committee carefully evaluates the following:

1. Undergraduate and other collegiate record as indicated by official transcripts of all universities and colleges previously attended by the applicants.
2. Results on the Graduate Record Examination or the Admission Test for Graduate Study in Business.
3. Personal interview.

The admissions committee is not only interested in the overall undergraduate grade average but the trend of these grades.

All applicants are required to take either the Graduate Record Examination or the Admission Test for Graduate Study in Business. This should be done prior to the beginning of course work in the program. Under certain circumstances, when all other admission requirements have been met, the student will be permitted to take the examination during the first term of course work. To register for the examination, request an application form from the School of Business Administration and forward the completed form to the Educational

Testing Service, Princeton, New Jersey, thirty days before the examination is to be held.

Two copies of the application for admission to the M.B.A. program are required.

A personal interview is desirable and may be arranged by contacting the Director of the program.

Applicants who are not graduates of the University of Dayton must submit official transcripts of all previous college studies. These transcripts should be sent directly by the degree granting institution at least twenty days before the opening of the session in which the student expects to enroll. All applications and transcripts should be sent to the Dean, School of Business Administration, University of Dayton, Dayton 9, Ohio.

Admission with Advanced Standing

A maximum of six hours of appropriate graduate courses earned at another approved graduate school of business may be applied toward the M.B.A. degree at the University of Dayton. No graduate credit earned at either the University of Dayton or another school may be applied to the M.B.A. degree if such course work was completed more than five years prior to the date of graduation.





Prerequisite courses

Certain undergraduate courses in business and economics are required before a student is permitted to begin courses at the graduate level. These are in the areas of Economics, Accounting, Principles of Marketing, Principles of Management, and Statistics. If a student is deficient in one or more of these courses, he may remove such deficiency by successful completion of the appropriate course or courses as follows:

- Eco 202 Principles of Economics (MBA section)
- Acc 203 Survey of Accounting (MBA section)
- Mkt 305 Principles of Marketing (MBA section)
- Bus 315 Principles of Management (MBA section)
- Bus 313 Statistics (MBA section)

Each of the above courses is especially designed for students in the M.B.A. program who lack such courses in their undergraduate work. If the student or a prospective student contemplates taking prerequisites at a school other than the University of Dayton, he should consult with the Director in advance to assure that such courses are acceptable as prerequisites.

REQUIREMENTS

Thirty hours of graduate level course work are required for the M.B.A. degree.

Twenty-four of the thirty hours are prescribed as follows:

MBA 570 (Business and Society) and MBA 599 (Business Policies and Administrative Management) *ARE REQUIRED*. MBA 570 may be taken at any time, provided no prerequisites remain to be taken. MBA 599 may be taken *only* after twenty-one hours of graduate courses have been completed.

Six of seven courses designated CORE COURSES must be taken.

The seven core courses are:

- MBA 501 Managerial Accounting
- MBA 510 Business Investigation and Analysis
- MBA 520 Financial Policies of Enterprise
- MBA 530 Marketing Management
- MBA 540 Managerial Economics
- MBA 550 Government and Business
- MBA 560 Operations Management

The six remaining hours may be elected from among the remaining M.B.A. courses listed in the catalogue. With the approval of the Director, certain designated advanced undergraduate courses offered by the School of Business Administration may also be taken as electives. Likewise with the approval of the Director, graduate level courses offered by other schools and departments of the University may be taken as electives. It is emphasized that prior approval of the Director is required before the student may enroll in the latter two categories of courses for graduate credit.

All course work must be completed within five calendar years.

Comprehensive Examination

Successful completion of a comprehensive examination is required for graduation. The examination is given once during each of the three regular terms and may be taken in the student's last term of course work, or after he has completed his course work. The student must receive a passing grade in all of the areas covered by the examination, which are Economics, Accounting, Finance, Marketing, Management, and Business and Society. In each area, the scope of the examination generally corresponds with the content of the required and core courses.

To be eligible to take the Comprehensive Examination, the student must have at least a 3.00 grade average for all graduate courses completed up to the term in which the examination is given. Unless special permission has been granted, the student must have completed twenty-seven (27) graduate hours of

work by the end of the term preceding the term in which he is taking the examination.

Academic Standards

Academic standing is determined on a point system in which corresponding letter and quality points are as follows:

A	4.00
B	3.00
C	2.00
F	0.00

A 3.00 or B average is required for graduation. As indicated earlier, a 3.00 average for course work completed is required for eligibility to take the comprehensive examination. To maintain good academic standing, the student must not have received more than six hours of C. He must achieve a 3.00 cumulative average for the first 15 credit hours in order to be permitted to continue in the program. A student whose average is not above 3.00 after nine hours of graduate credit is strongly urged *and may be required* to limit his load to below the maximum permitted according to his work status as indicated below.

Course Load

Graduate work may be pursued on a part-time basis. If the student is employed in a full-time position, he is permitted to carry a maximum of six hours. If the student is employed in a part-time position, he may carry a maximum load of nine hours.

Schedule of Courses

Most courses are scheduled for evening and Saturday morning class periods. The courses are scheduled in such a manner as to permit a student to complete his entire program by attending week night classes exclusively or Saturday morning classes exclusively. Courses are scheduled for all three terms. With the exception of the split Third Term, all required and core courses are normally offered each term. While certain required and core courses may not be offered in the Third Term, most of them are and a maximum load for either part-time or full-time students is available for either or both of the two half-term periods.





VI School of Education

AIMS AND OBJECTIVES

The general objective of the School of Education coincides with the purpose of the University of Dayton: "To provide an academic atmosphere in which Christian principles of thought and action are the essential integrating and dynamic forces impelling the student to pursue, to cherish, and to disseminate what is true, good, and beautiful."

The particular objective of the School of Education is to develop those special capacities of the student which enable him to become an effective practitioner in the field of professional education.

The programs leading to the Master of Science in Education degree are designed primarily to meet the following three purposes:

1. Develop Master Teachers on the elementary and secondary school levels.
2. Enable certified teachers to work toward certification as school counselors, school psychologists, or educational research specialists.
3. Enable teachers with at least three years' successful teaching experience to qualify for certification as principal, or as supervisor, or as executive head.

Development of Master Teachers

In undertaking the task of developing master teachers, the School endeavors to provide a continuation on the graduate level of a recognized baccalaureate teacher education program. It addresses itself to the needs of graduates who carry initial certification as teachers. Hence, the program represents an additional year beyond the professional baccalaureate degree involving work at a more advanced level than that which characterizes undergraduate study.

a. Master High School Teachers: To develop master teachers on the secondary school level, a program is provided to enable the teacher to advance himself primarily in the SUBJECT-MATTER of his teaching field.

b. Master Elementary School Teachers: To develop master teachers on the elementary school level, a program is planned to fit the special needs of each teacher, involving provision on the graduate level for greater depth in general education, or greater mastery of an academic subject field, or greater proficiency in professional practice, or a combination of two or all three of the above. Considerable attention is directed to those objectives which are established through a clear conception of what the competencies and qualities of a skilled teacher should be.

Preparation of School Counselors:

This program is designed to prepare school personnel for specialized services in the area of school guidance and counseling. This preparation calls for the development of competencies that enable the counselor to perform such duties as:

a. Counseling pupils on their curricular programs, extra-curricular activities, in their personal-social adjustment, in occupational adjustment, in placement problems, and in other related matters.

b. Working with teachers in studying, diagnosing, and understanding students; planning and conducting group guidance activities; utilizing community resources; and participating in in-service teacher-education activities.

c. Working with the administrative staff and other school personnel in planning, developing, and conducting the total guidance program, curriculum, study, and research.

d. Working with lay groups, parents, and individuals in coordinating school and community resources and activities which contribute to improve pupil personnel services.

Preparation of School Psychologists:

This program requires an intensive psychological study of children and adolescents designed to prepare specialists who can serve both the school and the community:

a. As experts in educational and personality diagnosis and remediation.

b. As consultants in problems relating to curriculum and instruction, group testing, counseling and guidance, pupil personnel policies, special education—particularly as these problems affect the adjustment of children and adolescents to school situations.

c. As resource persons in such areas as child development, mental health, and psychological therapy.

Preparation of School Administrators:

This program endeavors to develop in the candidate such attributes as the following:

- a. Knowledge of the purposes of the work to be administered and a sincere loyalty to those purposes.
- b. Appreciation and use of the strategic institutional structure to carry out the purposes.
- c. Knowledge of the large principles of administration (the science of administration) to apply them particularly in elementary and secondary school administration.
- d. Knowledge and practice of the principles of effective supervision.
- e. Understanding of the processes of evaluation of the whole school program in the light of the school's philosophy and objectives, plus the ability to apply these processes to curriculum improvement.
- f. Ability in social and professional leadership in both school and community which will cause the candidate to be recognized as an organizer and leader.
- g. Ability to locate and solve problems within a school or school system on the basis of sound research, understandings, and practices.
- h. Functional knowledge of the ethics of the teaching profession.
- i. Functional knowledge of the principles and procedures of guidance.

Preparation of Educational Research Specialists:

This program is designed to prepare individuals to perform the varied research and evaluative functions which are becoming increasingly vital for school systems. This preparation stresses the development of the following competencies:

- a. Developing and testing creative hypotheses congruent with the functioning of a particular school or school system.
- b. Working with administrators, teachers, and those in pupil personnel toward the end of researching the effectiveness of regular practices as well as innovative programs.
- c. Assisting administrators in the task of efficient data collection and scheduling, utilizing the latest scientific instruments.
- d. Becoming able to assume the unique dual role of administrator and researcher by earning the administrative specialist in research certificate.
- e. Perceiving clearly, actively, and practically the relationships between research and the following: curriculum development, teaching and learning strategies, guidance services, and effective administrative and institutional structures.

Preparation of Certified High School Teachers

This program is restricted to students who (1) hold a non-professional bachelor's degree; (2) have earned the degree within a period of ten years prior to application to the program; (3) have an undergraduate cumulative point average of 3.0 or higher (on a 4.0 scale); (4) desire certification to teach in secondary school; (5) have a major teaching field which can be serviced by graduate courses offered at the University of Dayton. (Students who desire high school certification but cannot meet these requirements may take Program E-9 on the undergraduate level. Cf. Undergraduate Catalog.)

The program described here, leading to the Master's degree, involves professional education courses on the graduate level, graduate courses in the student's major (principal teaching field), and a teaching internship.

THE MASTER'S PROGRAM IN EDUCATION

Title and Meaning of the Degree:

The title of the Master's degree to which all the indicated programs lead is the Master of Science in Education.

The awarding of this degree means that the candidate has completed a program of graduate work designed to give him the following characteristics:

- a. Broader knowledge of an advanced nature of the tested psychological and philosophical theories of education.
- b. Essential understandings and skills necessary for intelligent consumption of educational research.
- c. More extensive knowledge and skill involved in teaching, or in school counseling, or in school administration.
- d. Ability to contribute toward the improvement of school conditions and/or professional practice through consumer research.

Authorization:

The University of Dayton's offerings in graduate work leading to the Master of Science in Education degree have the official approval of the State of Ohio, Department of Education, of the North Central Association of Colleges and Secondary Schools, and of the National Council for the Accreditation of Teacher Education.

The programs in School Counseling, in School Psychology, and in School Administration lead to Provisional Certification by the State of Ohio.

The Master Teacher program may lead to Eight Year Professional or to Permanent Certification depending on the years of successful teaching performed under the previous provisional certificate held.

Admission Requirements:

The School of Education accepts those students into its graduate program who can present undergraduate records which show them capable of meeting the standards of graduate work and of becoming leaders in their respective fields of professional education.

In order to qualify for registration in any graduate course, both special students and regular students must hold a teacher's certificate on a bachelor's degree from an accredited institution (at least State Accreditation) and must have attained an undergraduate quality-point average of at least 2.50 out of a possible 4.00. An exception to the latter requirement may be made if the applicant has a cumulative point average of 3.0 or higher for his junior and senior years.

An applicant who is not a graduate of the University of Dayton must submit complete official transcripts of all of his previous college studies. These transcripts should be sent directly to the Office for Graduate Studies from the degree-granting institution at least twenty days before the opening of the term or summer session in which the student expects to enroll.

Admission to graduate study as a special student or as a regular student does not imply admission to candidacy for a degree.

Besides meeting the above requirements, an applicant for the School Psychologist Program must receive a favorable recommendation from the School Counseling staff. In deciding whether or not to make such a recommendation to the Admissions Committee, the staff will take into account the applicant's physical and mental health, his personality adjustment as determined by appropriate tests, and his general character as determined by reference appraisals solicited from former professors and employers.

Entrance Examination:

Either the Graduate Record Examination or the Teacher Education Examination Program is required of all graduate students, and the results must be on file with the Graduate Committee, School of Education, prior to application for degree candidacy.

The Graduate Record Examination is given four times annually at a number of universities including the University of Dayton. Arrangements should be made through the U.D. Guidance Center. Both the Aptitude Test and one Advanced Test should be taken.

The Teacher Education Examination Program is administered directly by the School of Education four times a year. The dates when the TEEP Examinations are scheduled to be given are announced in the calendar of this Bulletin. The fee for the examinations is \$8.00 per person. (This same TEEP is being used

as the comprehensive examinations for under-graduate Seniors in partial fulfillment of the requirements for the Bachelor of Science in Education degree.)

The Teacher Education Examination Program consists of the General Professional Examinations and a series of Teaching Field Tests.

The General Professional Examinations have seven discrete tests which are designed to measure the student's knowledge and understanding of the basic principles in professional education, English usage, and general culture. Other significant factors which contribute to teacher-effectiveness, such as personality and interest in children, are not measured by the examinations. The student takes this group of tests in one session of 185 minutes.

The Teaching Field Tests provide the student with an opportunity to demonstrate certain competencies essential for teaching in a specific field. The time limit for each test is 80 minutes, and the student should take one (preferably in his principal teaching field). The tests are:

- Early Childhood Education
- Elementary School Education
- English Language and Literature
- Social Studies (History-Government included)
- Biological Science
- Physical Science
- Mathematics
- French
- Spanish
- Physical Education
- Business Education
- Music Education

Early Childhood Education is designed primarily for students preparing to teach kindergarten through third grade. Elementary School Education covers the broad range of elementary education from grade one through eight. The remaining Teaching Field Tests are appropriate for students preparing to teach at the secondary-school level.

It is recommended that students take the General Professional Examinations and at least one Teaching Field Test. This recommendation is based on the belief that all pre-service or in-service teachers should be able to demonstrate reasonable competence with respect to professional knowledge, English usage, and general culture as well as specific competencies in a teaching field.

All of the questions are of the objective multiple-choice type. Examinees mark their answers on a separate answer sheet, using a special electrographic pencil provided by ETS.

Scores on all of the tests will be reported as scaled scores established so as to have a mean of 20 and a standard deviation of 5 for a sample of seniors preparing to teach. Scores will range from approximately 5 to 35.

Admission to Candidacy for Degree:

A student becomes a candidate for the Master of Science in Education degree if his graduate work to date, the reference appraisals, and the GRE or TEEP results are judged to be acceptable by the Graduate Committee. At this time the candidate's Preliminary Plan for his Research Project is approved, and he is assigned an official advisor to direct the Project.

The most important consideration in the admission of a student to candidacy is the qualitative aspect of his graduate work to date. He must give evidence of being able to meet all the graduation requirements. Applicants who are deemed unqualified at this point will be advised to discontinue their program.

Students may apply for admission to candidacy after the completion of twelve semester credit hours of graduate work (including EdF 503 Research Methodology and Statistics) by filing with the Graduate Committee the official application form. They should be sure that all the required credentials are in order and that their Preliminary Plan for the Research Project is ready for evaluation.

Applicants with a concentration in Administration must present evidence of at least three years of successful teaching and a letter of recommendation to the program from an administrator in position to judge their potential for educational leadership.

Students following the School Psychologist Program are admitted to candidacy at the time they are approved for internship. Since no Research Project is included in this program, completion of EdF 503 and submission of the Preliminary Plan are not requirements for candidacy.

Requirements for the Degree:

a. Research Project: At least ten days before graduation the student must submit three acceptable copies of his Research Project Report and three copies of an abstract of the Report.

b. Required Average: Students must achieve an average of at least 3.00 ("B" average) in all work undertaken in order to qualify for graduation.

c. Comprehensive Examination: The student must pass a final comprehensive examination conducted by his examining board. This examination covers the whole field of the student's graduate studies.

A student who fails his comprehensive examination may be given permission to take a second examination at the discretion of the examining board at least one semester or summer term (but no later than one academic year) after the first examination. No third examination is given.

Advisement:

The Dean of the School of Education acts as general advisor to all graduate students regardless of the program they are following. In this capacity, he will counsel students with a view toward orienting them in the purposes and requirements of graduate work and will assist them in planning their programs and schedules.

PROGRAMS OF STUDY

PROGRAM I: MASTER HIGH SCHOOL TEACHER

<i>Core Courses</i>	<i>Nine credit hours</i>
EdF 501 Advanced Psychology of Learning	three credit hours
EdF 502 Comparative Philosophies of Education	three credit hours
EdF 503 Research Methodology and Statistics	three credit hours
<i>Area of Concentration</i>	<i>Twelve credit hours</i>
Content courses in a selected teaching field	
<i>Electives</i>	<i>Six credit hours</i>
Further courses in the selected teaching field or in allied field; or (with the approval of the advisor) courses in general or professional education.	
<i>Graduate Seminar (EdF 592)</i>	<i>Three credit hours</i>

PROGRAM II: MASTER ELEMENTARY SCHOOL TEACHER

<i>Core Courses</i>	<i>Nine credit hours</i>
EdF 501 Advanced Psychology of Learning	three credit hours
EdF 502 Comparative Philosophies of Education	three credit hours
EdF 503 Research Methodology and Statistics	three credit hours
<i>Area of Concentration</i>	<i>Seven credit hours</i>
EdA 511 Elementary School Curriculum	two credit hours
EdC 522 Principles and Techniques of Guidance	three credit hours
EdC 520 Psychology of Individual Differences	two credit hours
<i>Electives</i>	<i>Eleven credit hours</i>
The student is directed into a selection of courses that would best serve to complete his pre-service curriculum and to give him the professional skills needed. Concentrations are available in Reading, in Elementary School Subjects	

(e.g., Reading, Mathematics, Science, and Social Studies), in Special Education, and in Child Study. Concentrations are also possible in academic subject-matter.

Graduate Seminar (EdF 592)

Three credit hours

PROGRAM III: SCHOOL COUNSELOR

Core Courses

EdF 502	Comparative Philosophies of Education	<i>Nine credit hours</i> three credit hours
EdF 503	Research Methodology and Statistics	three credit hours
EdF 504	Advanced Child and Adolescent Psychology	three credit hours

Concentration

EdC 531	Dynamics of Personality	<i>Nineteen credit hours</i> three credit hours
EdC 522	Principles and Techniques of Guidance	three credit hours
EdC 523	Occupational Information & Community Resources	two credit hours
EdC 533	Psychometrics	three credit hours
EdC 535	Practicum I: Test Interpretations and Case Studies	two credit hours
EdC 543	Principles and Techniques of Counseling	three credit hours
EdC 545	Practicum II: Counseling Techniques	three credit hours

Graduate Seminar (EdF 592)

Three credit hours

Students who desire to qualify for a SUPERVISOR'S CERTIFICATE IN SCHOOL COUNSELING should add to the above program the following courses:

EdA 509	School Supervision	three credit hours
EdA 511	Elementary School Curriculum	two credit hours
EdA 512	Secondary School Curriculum	two credit hours
EdA 515	School Law, <i>or</i>	two credit hours
EdA 521	School Public Relations	two credit hours
EdF 518	School and the Social Order	three credit hours
EdC 530	Psychology of Individual Differences, <i>or</i>	two credit hours
EdE 547	Psychology of Exceptional Children	two credit hours
EdF 593	Interpretation of Statistics	two credit hours

PROGRAM IV: SCHOOL PSYCHOLOGIST

Core Courses

EdF 501	Advanced Psychology of Learning	<i>Nine credit hours</i> three credit hours
EdF 502	Comparative Philosophies of Education	three credit hours
EdF 504	Advanced Child and Adolescent Psychology	three credit hours

<i>Concentration</i>	<i>Thirty-one credit hours</i>
EdC 531 Dynamics of Personality	three credit hours
EdE 547 Psychology of Exceptional Children	two credit hours
EdC 533 Psychometrics	three credit hours
EdC 543 Principles and Techniques of Counseling	three credit hours
EdC 545 Practicum II: Counseling Techniques	three credit hours
EdE 568 Diagnosis and Correction of Reading Difficulties	three credit hours
EdC 572 The School Psychologist: Role and Function	two credit hours
EdF 593 Interpretation of Statistics, <i>or</i>	two credit hours
Psy 501 Advanced Statistics	three credit hours
Psy 511 Psychological Testing—Binet	three credit hours
Psy 512 Psychological Testing—Wechsler	three credit hours
Psy 513 Projective Test I	two credit hours
Psy 514 Projective Test II	two credit hours
<i>Internship (EdC 594-595)</i>	<i>Twelve credit hours</i>

PROGRAM V: SCHOOL ADMINISTRATOR

<i>Core Courses</i>	<i>Nine credit hours</i>
EdF 502 Comparative Philosophies of Education	three credit hours
EdF 503 Research Methodology and Statistics	three credit hours
EdF 504 Advanced Child and Adolescent Psychology, <i>or</i>	three credit hours
EdF 501 Advanced Psychology of Learning	three credit hours

<i>Concentration</i>	<i>Thirteen credit hours</i>
Students interested in <i>Elementary School Administration</i> should take the following courses:	
EdA 506 School Administration	three credit hours
EdA 509 School Supervision	three credit hours
EdA 511 Elementary School Curriculum	two credit hours
EdA 513 Elementary School Evaluation	two credit hours
EdC 522 Principles and Techniques of Guidance	three credit hours

Students interested in <i>Secondary School Administration</i> should take the following courses:	
EdA 506 School Administration	three credit hours
EdA 509 School Supervision	three credit hours
EdA 512 Secondary School Curriculum	two credit hours
EdA 514 Secondary School Evaluation	two credit hours
EdC 522 Principles and Techniques of Guidance	three credit hours

<i>Electives</i>	<i>Five credit hours</i>
EdA 515 School Law	two credit hours
EdA 517 School Finance	two credit hours
EdF 518 School and the Social Order	three credit hours
EdA 521 School Public Relations	two credit hours
EdC 522 Principles and Techniques of Guidance	three credit hours
EdC 530 Psychology of Individual Differences	two credit hours
EdC 533 Psychometrics	three credit hours
EdC 539 Administration of a School Guidance Program	two credit hours
EdC 543 Principles and Techniques of Counseling	three credit hours
EdE 547 Psychology of Exceptional Children	two credit hours
<i>Graduate Seminar (EdF 592)</i>	<i>Three credit hours</i>

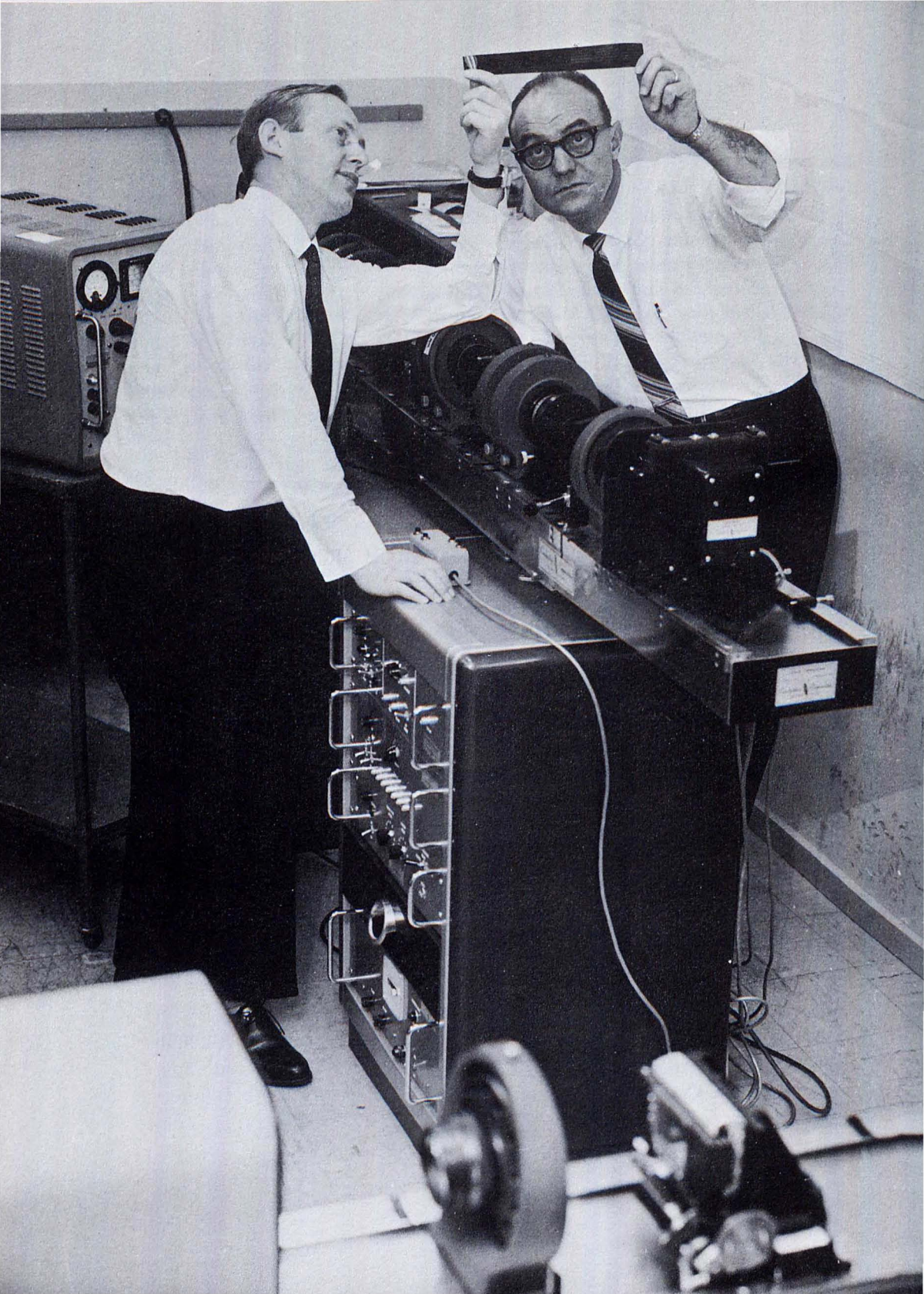
(Note: Programs can be arranged for students who desire to work for higher administrative and supervisory certificates.)

PROGRAM VI: EDUCATIONAL RESEARCH SPECIALIST

<i>Core Courses</i>	<i>Six credit hours</i>
EdF 501 Advanced Psychology of Learning	three credit hours
EdF 502 Comparative Philosophies of Education	three credit hours
<i>Concentration</i>	<i>Fourteen credit hours</i>
EdA 514 School Evaluation	two credit hours
EdC 533 Psychometrics	three credit hours
EdF 593 Interpretation of Statistics	three credit hours
— — Data Processing and Computer Techniques	three credit hours
EdF 590 Educational Research Design	three credit hours
<i>Internship in Educational Research (EdF 596-597)</i>	<i>Twelve credit hours</i>

PROGRAM VII: TEACHER CERTIFICATION

<i>Core Courses</i>	<i>Nine credit hours</i>
EdF 501 Advanced Psychology of Learning	three credit hours
EdF 502 Comparative Philosophies of Education	three credit hours
EdF 518 School and the Social Order	three credit hours
<i>Concentration</i>	<i>Nineteen credit hours</i>
EdS 351 The Secondary School: Purposes and Practices	two credit hours
EdS — Special Methods in Principal Teaching Field	two credit hours
— — Content Courses in Principal Teaching Field	fifteen credit hours
<i>Internship in Teaching (EdS 598)</i>	<i>Eight credit hours</i>



VII School of Engineering

FOREWORD

The general objective of the School of Engineering is identical with the purpose of the University of Dayton in meeting its objective of serving the community and fulfilling its motto, *Pro Deo et Patria*. The specific purpose of the graduate program in engineering is to provide the best possible education for men and women at the graduate level for enriched careers in engineering. This purpose is achieved by developing those special capacities and capabilities of the student which enable him to become a thoroughly competent professional in his chosen field.

The programs leading to the Master of Science in Engineering and the Master of Science in Electrical Engineering degrees are designed primarily to meet the basic needs of the engineer in a changing world.

ADMISSION CLASSIFICATION

Applicants admitted to the Graduate Program of the School of Engineering will fall into the following classifications:

Regular Status—This classification will be given to applicants, who are holders of a Bachelor's degree in engineering from an institution having curricula accredited by the Engineers' Council for Professional Development and who have maintained a cumulative grade point average of 3.00 for the last two years of their undergraduate programs. This is based upon a grading system in which A equals 4.00.

Conditional Status—This classification will cover all other applicants in the following categories:

1. Holders of a Bachelor's degree in engineering from an institution having curricula accredited by the Engineers' Council for Professional Development, who have failed to maintain the required cumulative average of

- 3.00, but whose post-academic activities indicate promise of being able to do satisfactory graduate work.
2. Holders of a Bachelor's degree in engineering from an institution unaccredited by ECPD, whose academic performances indicate an ability to do satisfactory graduate work.
 3. Holders of a Bachelor's degree in engineering from foreign universities, excluding those whose native language is English.
 4. Applicants whose preparation cannot be adequately determined and applicants for whom any part of their qualifying education was obtained more than seven years before the date of the proposed initiation of studies in the graduate program.

All students having conditional status may be required to complete additional qualifying work beyond the normal degree requirements. They will be permitted to complete 12 hours of graduate study, at the end of which they must have achieved a cumulative average of 3.00. At that point reclassification will be made, either into regular status or automatic dismissal.

Special Status—See General Academic Information regarding Special Status.

THE MASTER'S PROGRAMS

The Director of Engineering Graduate Studies will assign each student admitted to graduate study to the Chairman of the Department of the student's major interest. After consultation with the student, the Chairman will arrange for a member of the Department to be the student's permanent advisor. The advisor will guide the student in the development of a Program of Studies deemed best for his particular interests and objectives. The Program of Studies approved by the advisor and the Chairman of the Department will be filed with and approved by the Director of Engineering Graduate Studies. A graduate student may not change from one advisor to another without written permission from the Director.

It is the student's responsibility to meet with the Chairman of the Department and the advisor as soon as possible after being formally accepted by the Office for Graduate Studies. Conditional attendance for one term is permitted until the Program of Studies has been filed. Amendment to the original program is permitted with the approval of the advisor and the Department Chairman and must be filed with the Director of Engineering Graduate Studies.

All programs and amendments must be prepared in quadruplicate. One copy will be retained by the student, department chairman, Director's office, and the Office for Graduate Studies.

THE MASTER OF SCIENCE IN ENGINEERING PROGRAM

The Program of Study must include a minimum of 33 credit hours consisting of the following:

1. 6-9 credit hours in Basic Sciences;
2. 12 credit hours in Engineering Sciences;
3. 3 credit hours in Philosophy;
4. 3-6 credit hours in Thesis Supporting Courses approved by the student's advisor;
5. 6 credit hours on an approved thesis project.*

*Students registering for thesis must maintain continuous registration in successive terms until the thesis has been satisfactorily completed. If the enrollment for thesis completion extends beyond six credit hours, registration in the succeeding terms will be designated at zero credit hours until completion. A regular grade will be assigned upon satisfactory completion and will be included in the final cumulative average. Prior to completion, cumulative averages will be calculated only on the basis of course performance.

Courses:

1. Basic Sciences

6-9 credit hours are to be selected from the general basic science group taught by the Mathematics and Science Departments.

2. Engineering Sciences

12 credit hours selected from the following courses:

Egr 501	Applied Elasticity	three credit hours
Egr 502	Mechanics of Fluids	three credit hours
Egr 503	Thermodynamics	three credit hours
Egr 504	Mass and Energy Transport	three credit hours
Egr 505	Properties of Materials	three credit hours
Egr 506	Solid State Devices	three credit hours

3. Philosophy

Egr 522 Philosophical Foundations of Engineering three credit hours

4. Thesis Supporting courses

3-6 credit hours in courses approved by the student's advisory committee.

5. Thesis

Egr 599 6 credit hours on an approved research project.

THE MASTER OF SCIENCE IN ELECTRICAL ENGINEERING PROGRAM

The Program of Study must include a minimum of 30 credit hours consisting of the following:

- 1. 6 credit hours in Basic and Engineering Sciences;
- 2. 12 credit hours in Electrical Engineering;
- 3. 6 credit hours in Thesis Supporting Courses approved by the student's advisor;
- 4. 6 credit hours on an approved thesis project.*

*See footnote on page 67, under Master of Science in Engineering Program.

Courses:

1. Basic and Engineering Sciences

6 credit hours are to be selected from either the general basic science group taught by the Mathematics and Science Departments, or from the Engineering Sciences group listed in the Master of Science in Engineering Program. It is permissible to combine three credit hours from each program.

2. Electrical Engineering

12 credit hours to be selected from the following courses:

Ele 501	Analog and Digital Computers	three credit hours
Ele 502	Advanced Circuit Analysis	three credit hours
Ele 505	Quantum Electronics, Principles	three credit hours
Ele 507	Electromagnetic Fields I	three credit hours
Ele 508	Electromagnetic Fields II	three credit hours
Ele 509	Analysis of Linear Systems	three credit hours
Ele 511	Advanced Theory & Design of Rotating Machinery I	three credit hours
Ele 512	Advanced Theory & Design of Rotating Machinery II	three credit hours
Ele 513	Communication Theory	three credit hours
Ele 514	Analysis of Non-Linear Systems	three credit hours
Ele 515	Automatic Control Theory	three credit hours
Ele 516	Gaseous Electronics and Plasmas	three credit hours

3. Thesis Supporting Courses

3 credit hours in Thesis Supporting Courses approved by the student's advisor.

4. Thesis

Egr 599 6 credit hours on an approved thesis project.

Comprehensive Examination and Admission to Candidacy:

The student must satisfactorily pass a comprehensive examination before he is granted admission to candidacy for the degree. The examination may be written, oral or both. This examination may be taken after the student has completed 18 or more credit hours of graduate class work with a cumulative grade point average of 3.00 or better. The student's advisory committee administers the examination.

Application for Admission to Candidacy:

An application for comprehensive examination and admission to candidacy may be obtained from the Office of the Director of Engineering Graduate Studies. This form must be filled out and filed in that office at least four weeks prior to the date requested for the examination.

Thesis:

Presentation of a thesis is required of all candidates. Joint authorship is not permitted. Copies of the completed thesis must be in the hands of the student's advisory committee and the librarian for approval two weeks prior to the date fixed for the final oral thesis examination. After the final oral examination, two complete and approved typewritten copies of the thesis shall be deposited with the librarian. These copies of the thesis must be deposited not less than two weeks prior to commencement.

The student should consult the University of Dayton Thesis Manual, prepared for use of students in the Engineering Graduate School, before arranging for the typing of his thesis.

When students do their thesis research at their place of employment, emphasis will be placed on the observance of confidential aspects of research projects. When requested, arrangements will be made to delay public disclosure of theses, or their subject matter, for any reasonable time to permit filing of patents or taking any other measures to protect the rights of the employer to the findings in the project.

Final Oral Thesis Examination:

An application for final oral thesis examination may be obtained from the Office of the Director of Engineering Graduate Studies. This form should be filled out and signed by the Chairman of the student's advisory committee and filed in the Office of the Director at least two weeks prior to the date requested for the oral examination.

SUMMARY

The School of Engineering at the present time offers two graduate programs of study leading to the degrees of Master of Science in Engineering and Master of Science in Electrical Engineering. The requirements for these degrees are outlined as follows:

1. Obtain admission to candidacy.
2. Earn a cumulative grade point average of 3.00 or better for an approved Program of Study.
3. Submit an acceptable thesis.
4. Satisfactorily pass an oral thesis examination.

In fulfilling the requirements for the degrees, certain specific conditions prevail and should be noted carefully by the student. These are itemized as follows:

1. Credits in Transfer

Transfer credit is determined on an individual basis by the committee charged with this responsibility. Refer to page 14 for further details.

2. Course Load

Any person who is not a full-time student may register for more than six credit hours per term only with permission of the Director of Engineering Graduate Studies.

3. Use of Advanced Undergraduate Courses

Certain undergraduate level courses may be used if approved by the student's advisor.

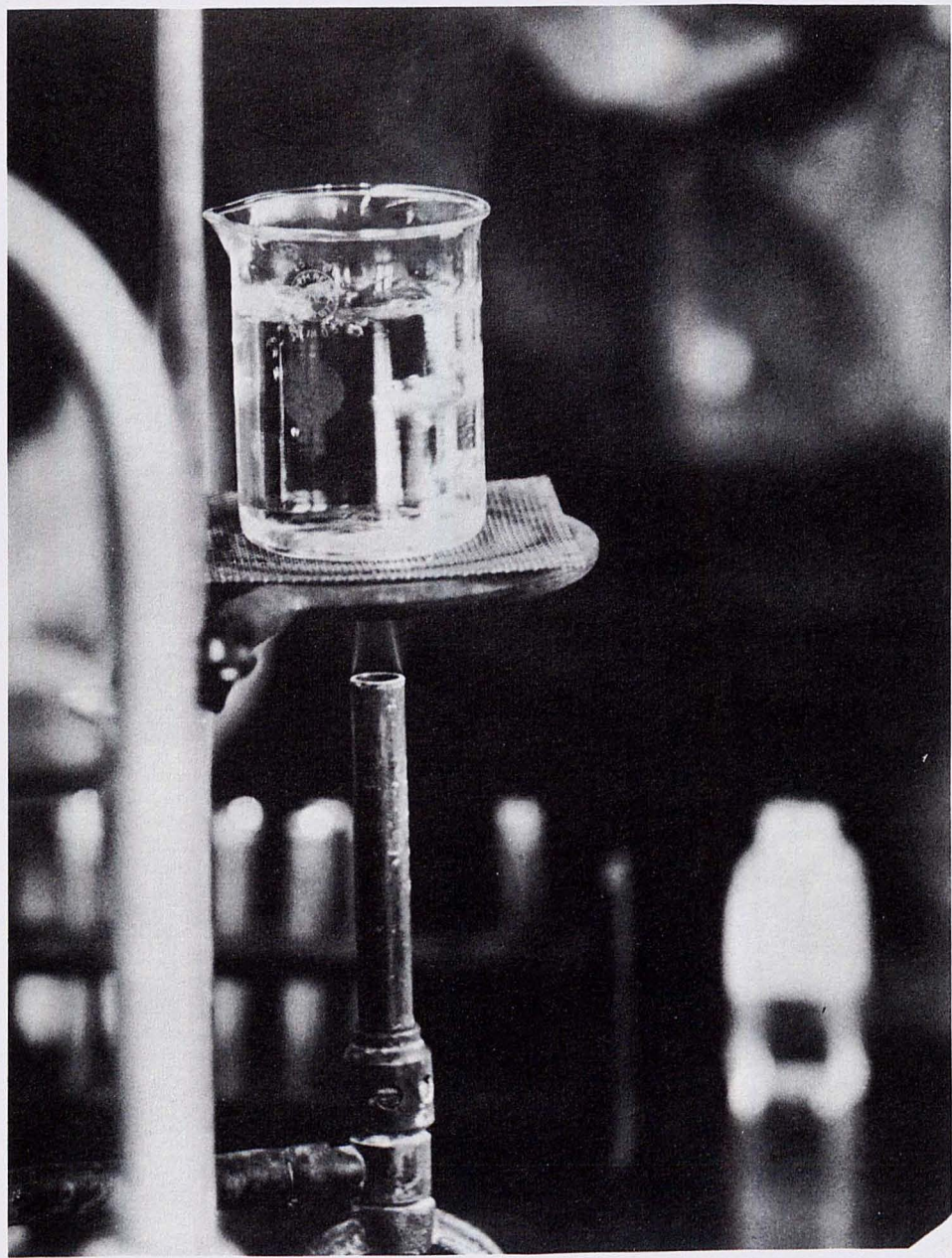
RESEARCH FACILITIES

The facilities for research at the University of Dayton are administered by the academic departments and the University of Dayton Research Institute.

INDUSTRIAL FELLOWSHIPS

Industrial Fellowships and certain special research grants are available at the University of Dayton for the encouragement of graduate work and the promotion of research.

Detailed information and forms for making application may be secured from the Director of Engineering Graduate Studies.





VIII Departments of Instruction

Biology (Bio)

Dr. George B. Noland, *Chairman*

Any 300-400 upper level undergraduate course in biology may be taken for graduate credit under the usual conditions.

BIO 501. SEMINAR

ZERO-ONE CREDIT HOUR

The development, presentation, and discussion of papers dealing with Biological problems. Open only to advanced undergraduate and graduate Biology Majors.

BIO 502. VERTEBRATE ZOOLOGY

FOUR CREDIT HOURS

An advanced course dealing with the morphology, physiology, ecology and distribution of representative vertebrate groups. Three hours lecture and one three-hour lab per week.

BIO 509. ECOLOGY

FOUR CREDIT HOURS

The course deals with the mutual relations between organisms and their environment. Some aspects of biological productivity of lakes will be included. Three hours lecture and one three-hour lab per week.

BIO 512. RADIATION BIOLOGY

FOUR CREDIT HOURS

A course in the theory and principles of ionizing radiation. Application of radioactive tracers to biological problems will be considered. Two hours lecture and two two-hour labs per week.

BIO 514. BIOCHEMISTRY

FOUR CREDIT HOURS

Lectures, selected readings and laboratory assignments dealing with carbohydrates, lipids, amino acids, proteins, enzymes, nucleic acids and the metabolism of those compounds. Three hours lecture and one three-hour lab per week.

BIO 515. BACTERIAL PHYSIOLOGY

FOUR CREDIT HOURS

A study of the metabolic and biosynthetic activities of bacteria, accompanied by a laboratory period designed to familiarize the student with some of the basic biochemical techniques used in the study of bacterial physiology. Three hours lecture and one three-hour lab per week.

BIO 516. IMMUNOLOGY AND SEROLOGY

FOUR CREDIT HOURS

The nature of antigens, the antibody response, and antigen-antibody reactions; site and mechanisms of antibody formation; hypersensitivity, immunologic tolerance, and the immune diseases will be considered. Two hours lecture and two three-hour labs per week.

- BIO 517. ENDOCRINOLOGY** FOUR CREDIT HOURS
 A functional analysis of the mechanisms and activity of the endocrine system. Emphasis will be placed on hormonal regulation of metabolism and growth. Three hours lecture and one three-hour lab per week.
- BIO 518. CYTOLOGY** FOUR CREDIT HOURS
 A study of cell structure at the organelle and the molecular levels. Where possible, fine structure will be related to cell function. Two hours lecture and two three-hour labs per week.
- BIO 519. VIROLOGY** THREE CREDIT HOURS
 Lectures, selected readings and laboratory assignments dealing with the biology of plant, animal and microbial viruses. Tissue culture techniques will be considered. Two hours lecture and one three-hour lab per week.
- BIO 521. BIOCHEMICAL GENETICS** THREE CREDIT HOURS
 An analysis of the nature of the gene and gene action. Particular attention will be given to genetic control of protein synthesis and to recent advances in biochemical and physiological genetics. Two hours lecture and one three-hour lab per week.
- BIO 530. COMPARATIVE ANIMAL PHYSIOLOGY** FOUR CREDIT HOURS
 Organized on a function-system basis, the course deals with environment-organism interaction and with integrative systems of the principal phyla of animals. Three hours lecture and one three-hour lab per week.
- BIO 532. VERTEBRATE MORPHOLOGY** FOUR CREDIT HOURS
 The general biology of vertebrates with emphasis on their structural, functional and behavioral adaptations, comparative anatomy and evolutionary history. Three hours lecture and one three-hour lab per week.
- BIO 534. VERTEBRATE PALEONTOLOGY** FOUR CREDIT HOURS
 The origin, evolution, dispersal and geologic history of the major groups of the Chordates with emphasis on the morphology and paleoecology of the higher classes. Three hours lecture and one three-hour lab per week, plus one field trip. Laboratory sessions to take place at the Dayton Museum of Natural History.
- BIO 536. EVOLUTIONARY BIOLOGY** THREE CREDIT HOURS
 A study of the proofs, processes and products of evolution.
- BIO 538. ECOLOGY II** FOUR CREDIT HOURS
 A study of the coactions of animals and plants within their environment. Particular emphasis will be given to trophic structure and bioenergetics. Three hours lecture and one three-hour lab per week.
- BIO 540. PHYSIOLOGY OF HIGHER PLANTS** FOUR CREDIT HOURS
 Principles covering photosynthesis, respiration, mineral nutrition, solute transport and growth in higher plants. Three hours lecture and one three-hour lab per week.
- BIO 542. PLANT TAXONOMY** FOUR CREDIT HOURS
 A consideration of the principles, procedures and literature of the classification of tracheophyte plants. Three hours lecture and one three-hour lab per week.

- BIO 544. VASCULAR PLANTS FOUR CREDIT HOURS
A study of the anatomy, morphology and phylogeny of those plants possessing vascular systems. Three hours lecture and one three-hour lab per week.
- BIO 546. NON-VASCULAR PLANTS FOUR CREDIT HOURS
A survey of the algae, fungi, and bryophytes emphasizing their morphology, phylogeny and ecology. Three hours lecture and one three-hour lab per week.
- BIO 550. BIOMETRICS THREE CREDIT HOURS
The design and analysis of experiments in quantitative biology. Rectilinear and curvilinear regression, correlation, and the distribution functions of various statistics will be considered.
- BIO 551. BIOINSTRUMENTATION THREE CREDIT HOURS
Survey of microscopic, chromatographic, polarographic, manometric, spectro-photometric and other techniques employed in biological studies. Two hours lecture and one three-hour lab per week.
- BIO 590. PHILOSOPHY OF BIOLOGICAL SCIENCE THREE CREDIT HOURS
The relevance of science to all other knowledge; problems dealing with the interrelations of science, philosophy, education and government. Required course. May be replaced by PHL 505, INTER-DISCIPLINARY SEMINAR.
- BIO 591. TEACHING OF COLLEGE BIOLOGY ONE CREDIT HOUR
Lectures, discussions, and practice in teaching of college biology. Required of and open only to Graduate Teaching Assistants. May be repeated each semester. May not be used to satisfy degree requirements.
- BIO 596. CURRENT BIOLOGICAL PROBLEMS THREE CREDIT HOURS
The consideration of recent developments in biological thought and procedure. By permission of Chairman only.
- BIO 599. THESIS THREE-SIX CREDIT HOURS

Business Administration (MBA)

William J. Hoben, *Dean*

- MBA 501. MANAGERIAL ACCOUNTING THREE CREDIT HOURS
Practical emphasis on the accountant's role in business measurement techniques, communication, prediction, and decision-making based upon the use of relevant accounting information.
- MBA 502. CONTROLLERSHIP THREE CREDIT HOURS
Analysis of the functions of controllership; emphasis upon the integration of the related areas of accounting, organization, finance, and business decision-making; the role of the chief accounting executive in planning, recording, coordinating, and controlling the financial aspects of the enterprise.
- MBA 503. ACCOUNTING SYSTEMS THREE CREDIT HOURS
Latest concepts, methods, and advanced developments in accounting systems emphasizing the implementation of office automation; the business survey, selection of methods, designing the system, and preparing the report; the problems of communication with technical staff specialists.

- MBA 510. BUSINESS INVESTIGATION AND ANALYSIS** THREE CREDIT HOURS
 Meaning of research and types of business research problems; sources of information, interpretation and application of research to special projects; use of modern machine methods in research procedure.
- MBA 512. QUANTITATIVE METHODS FOR BUSINESS DECISIONS** THREE CREDIT HOURS
 Application of mathematical and statistical methods to business decision-making in the fields of marketing, production, finance and related areas; basic nature and method of operations research; the use of such techniques as linear programming, queuing problems, Monte Carlo method and Bayesian statistics.
- MBA 520. FINANCIAL POLICIES OF ENTERPRISES** THREE CREDIT HOURS
 A study of finance with emphasis upon the financial policies and problems of business, especially within the corporation. Consideration is given to institutions and other investors in supplying funds for enterprise.
- MBA 521. PROBLEMS OF FINANCE** THREE CREDIT HOURS
 The application of principles of finance to the financial management of corporate enterprise with special attention to the financing of expansion. Reading assignments, cases, individual reports and discussion of current financial problems.
- MBA 530. MARKETING MANAGEMENT** THREE CREDIT HOURS
 Major areas of marketing are examined from the viewpoint of the marketing executive. Presents and develops concepts for analytical purposes, but is primarily oriented to decision-making.
- MBA 531. SEMINAR IN CONSUMER BEHAVIOR** THREE CREDIT HOURS
 Identification and analysis of the consumer market through use of concepts from the behavioral sciences emphasizing the family life cycle, social class and family life styles.
- MBA 532. PHYSICAL DISTRIBUTION MANAGEMENT** THREE CREDIT HOURS
 The logistics of business as a basis for marketing action. Integrates plant location, warehousing and transportation into modern marketing strategy.
- MBA 540. MANAGERIAL ECONOMICS** THREE CREDIT HOURS
 Examination of the scope and method of managerial methods; introductory cases in managerial economics; demand analysis, forecasting demand, cases in demand; short-run cost analysis; long-run costs and production functions, cases in cost analysis; pricing, selected topics in pricing, cases in pricing decisions; capital budgeting, risk and uncertainty, cases in capital budgeting and uncertainty.
- MBA 541. LABOR RELATIONS AND LABOR ECONOMICS** THREE CREDIT HOURS
 A study of labor relations and labor economics; collective bargaining, wage determination, structure and operation of labor markets, direction of the labor movement, theories of industrial peace and conflict; current problems and trends in labor relations.
- MBA 542. MULTI-NATIONAL BUSINESS POLICY** THREE CREDIT HOURS
 Examines changes in the structure, organization, and policies of Multi-National business firms and international trade in general. Analyzes their implications relative to the composition of exports, international marketing processes, terms of trade, and determinants of payments and exchange-rate movements.

- MBA 550. GOVERNMENT AND BUSINESS THREE CREDIT HOURS
 Analysis of the economic aspects and consequences of government regulations over social and business activities; a study of government and business relations.
- MBA 560. OPERATIONS MANAGEMENT THREE CREDIT HOURS
 An analysis of the principles of organization and management; the theory of organization and the principles of planning, directing and controlling product development, plant layout and location, equipment, inventory and production standards.
- MBA 561. ADVANCED MANAGEMENT SEMINAR THREE CREDIT HOURS
 An analysis in depth of several strategically important areas of management in which theory, research, and practice have progressed significantly in recent years; the applicability, potential and actual, of the newer concepts. Areas considered are: long range planning, management organization development, systems management, executive decision-making, organizational behavior, control techniques, and other selected topics.
- *MBA 570. BUSINESS AND SOCIETY THREE CREDIT HOURS
 The purpose of this course is to study the development of a personal philosophy and a philosophy of business.
 *Required of all students.
- MBA 580. HUMAN RELATIONS IN INDUSTRY THREE CREDIT HOURS
 The application of psychology to the problems of human behavior and human relations; the problems of motivation, morale, conflict, discipline, leadership, emotions and decision-making are considered and analyzed in lectures, cases and discussions.
- *MBA 599. BUSINESS POLICIES AND ADMINISTRATIVE MANAGEMENT THREE CREDIT HOURS
 The correlation of theory and practice in the development of business policies. Emphasis will be on the problems of executive management, decision-making and administrative action.
 *Required of all students.

Chemistry (CHM)

Dr. John J. Lucier, S.M., *Chairman*

The courses marked with an asterisk are intended primarily for graduate students in Education. Prerequisite for enrolling in any of these courses for credit toward the M.S. in Education degree is standard teacher certification in the field of Physical Science or in Chemistry.

- *CHM 412. INTERMEDIATE ORGANIC CHEMISTRY THREE CREDIT HOURS
 Prerequisite: One year of Basic Organic Chemistry.
- *CHM 417. INORGANIC CHEMISTRY THREE CREDIT HOURS
 Prerequisite: Chm 215 Quantitative Analysis, or the equivalent.
- *CHM 501. PRINCIPLES OF CHEMISTRY I THREE CREDIT HOURS
 The subjects treated in this course are: atomic structure, chemical bonding, chemical equilibrium, inorganic nomenclature, theory of solutions, acid-base concepts, periodic properties of the elements, radiochemistry and nuclear reactions. Prerequisite: One year of College Chemistry.
- *CHM 502. PRINCIPLES OF CHEMISTRY II THREE CREDIT HOURS
 The subjects treated in this course are: thermodynamics, chemical kinetics, redox reac-

tions, organic chemistry (nomenclature, functional groups, preparation and properties of organic compounds). Prerequisite: Chm 501.

CHM 503-504. ADVANCED INORGANIC CHEMISTRY THREE CREDIT HOURS EACH TERM
Current views on atomic theory and atomic structure, chemical bonding, periodic properties of the elements, inorganic nomenclature, coordination compounds, acid-base systems, nuclear chemistry, properties and compounds of families of elements.

CHM 505-506. ADVANCED ORGANIC CHEMISTRY THREE CREDIT HOURS EACH TERM
Molecular orbital and resonance theories; conformational analysis; stereo-chemistry; correlation of molecular structure with physical and chemical properties; reaction mechanisms; heterocyclic chemistry.

CHM 507-508. ADVANCED PHYSICAL CHEMISTRY THREE CREDIT HOURS EACH TERM
Classical thermodynamics with emphasis on non-ideal systems and chemical reactions; introductory quantum theory, chemical bonding and the structure of molecules; chemical kinetics, empirical kinetics and reaction mechanism; absolute reaction rate theory.

CHM 510. PRO-SEMINAR THREE CREDIT HOURS
The impact of Chemistry on present-day society; sociological, economical, and ethical factors. Phl 505 may be substituted for Chm 510.

CHM 511. BIOCHEMISTRY THREE CREDIT HOURS
Review of structure of carbohydrates, lipids and proteins, followed by the metabolic path of each group; energy metabolism, inorganic metabolism and enzyme systems will also be treated.

CHM 512. SPECIAL TECHNIQUES IN BIOCHEMISTRY THREE CREDIT HOURS
This course comprises the study of cellular respiration, enzyme kinetics, chemical and physical methods of biochemical analysis, and the use of radioisotopes in metabolism by means of special equipment such as the Warburg microrespirometer, recording spectrophotometer, recording oxygen cathode, fluorometer, high speed centrifuge, paper electrophoresis, and radioisotope scintillation tube with attached scaler.

CHM 514. ADVANCED ANALYTICAL CHEMISTRY THREE CREDIT HOURS
Theoretical topics of analytical Chemistry, particularly as applied to electrical and optical methods of instrumental analysis.

CHM 515. THE PHYSICAL CHEMISTRY OF HIGH POLYMERS THREE CREDIT HOURS
Condensation and free radical polymerization, crystalline and configurational properties, molecular weight determinations and distributions, gelatin and rubber elasticity, linear viscoelasticity, phase equilibria and solution properties.

CHM 516. THERMO-KINETICS THREE CREDIT HOURS
A treatment of equilibrium and non-equilibrium thermodynamics and kinetics.

CHM 520-521. RESEARCH THREE CREDIT HOURS EACH TERM

CHM 525-526. PRINCIPLES OF ORGANIC CHEMISTRY THREE CREDIT HOURS EACH TERM
An introduction to the fundamentals of Organic Chemistry. Prerequisite: Chm 124.

CHM 525L-526L. PRINCIPLES OF ORGANIC CHEMISTRY ONE CREDIT HOUR
Laboratory course to accompany Chm 525-526. One three-hour lab per week.

CHM 527-528. THEORETICAL PRINCIPLES OF CHEMISTRY THREE CREDIT HOURS EACH TERM
Prerequisite: Chm 215 or equivalent. Corequisite: Mth 218.

CHM 527L-528L. THEORETICAL PRINCIPLES OF CHEMISTRY ONE CREDIT HOUR
Laboratory course to accompany Chm 527-528. One three-hour lab per week.

CHM 529. INORGANIC CHEMISTRY THREE CREDIT HOURS
The nature of the chemical bond, periodicity, electron distribution in atoms, coordination compounds, the nucleus and its reactions. Prerequisite: Chm 303-304.

CHM 530. PHYSICAL CHEMISTRY THREE CREDIT HOURS
A concise treatment of Theoretical Chemistry. Prerequisite: Chm 124.

CHM 531. IDENTIFICATION OF ORGANIC COMPOUNDS ONE CREDIT HOUR
An analytical course, applying functional groups, physical properties and instrumental methods to the identification of organic compounds. Prerequisite: Chm 315-316.

CHM 531L. IDENTIFICATION OF ORGANIC COMPOUNDS TWO CREDIT HOURS
Laboratory course to accompany Chm 531. Two three-hour labs per week.

CHM 532. SPECIAL TOPICS IN THEORETICAL CHEMISTRY THREE CREDIT HOURS
A treatment of special topics surveyed in Chm 527-528. Prerequisite: Chm 304.

Economics (Eco)

Msgr. Paul Louis Panickavede, *Acting Chairman*

Prerequisite for enrolling in any of the following courses for credits toward the M.S. in Education degree is Eco 201-202 Principles of Economics or the equivalent.

Eco 501. ADVANCED PRINCIPLES OF ECONOMICS THREE CREDIT HOURS
A review and analysis of the fundamental principles underlying the economic system.

Eco 503. HISTORY OF ECONOMIC DOCTRINE THREE CREDIT HOURS
Development of economic concepts and theories from the Mercantilists to the present period.

Eco 505. CONSUMER ECONOMICS THREE CREDIT HOURS
A study of the economic forces which influence the consumer in his choice and use of goods and services; and of the public and private agencies which afford protection, information, and assistance to the consumer.

Eco 507. CURRENT ECONOMIC PROBLEMS THREE CREDIT HOURS
An analysis and discussion at an advanced level of current economic issues and problems.

Eco 520. ECONOMICS OF GOVERNMENT THREE CREDIT HOURS
A survey of government and business relationships in the American economy and the impact of government on private enterprise.

Eco 525. GRADUATE SEMINAR IN ECONOMICS THREE CREDIT HOURS
Special studies and discussions of economic problems and trends.

Education

Dr. Joseph J. Panzer, S.M., *Dean*

- EdE 325. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
- EdE 431. VISUAL AND OTHER SENSORY AIDS IN EDUCATION TWO CREDIT HOURS
- EdE 451. ADVANCED KINDERGARTEN-PRIMARY INSTRUCTION THREE CREDIT HOURS
Prerequisite: EdE 219 Kindergarten Instruction or equivalent.
- EdE 480. THE PSYCHOLOGY OF SLOW LEARNING CHILDREN TWO CREDIT HOURS
Enrollment limited to teachers with positions (or prospective positions) in special education.
- EdE 484. LANGUAGE ARTS FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
Prerequisite: EdE 480.
- EdE 485. SOCIAL STUDIES FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
Prerequisite: EdE 480.
- EdE 486. ARITHMETIC FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
Prerequisite: EdE 480.
- EdE 487. OCCUPATIONAL ORIENTATION AND JOB TRAINING TWO CREDIT HOURS
A course in special education for teachers of slow learning children. Prerequisite: EdE 480.
- EdE 488. MATERIALS OF INSTRUCTION FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
This course deals with the preparation, selection, and adaptation of instructional materials for slow learning children at the primary, intermediate, and secondary level. It points out the imperative need to use materials that meet the special needs of slow learners, a need that is not adequately met by using materials that exist for a specific grade level. This course is required for state certification in Ohio for teachers of slow learners. Prerequisite: EdE 480.
- EdE 500. MATHEMATICS IN ELEMENTARY GRADES TWO CREDIT HOURS
A graduate course (or workshop) designed for teachers and school supervisors of the Modern Arithmetic Program. Demonstration of how the logical patterns of mathematical thought which are inherent in arithmetic can be readily acquired by pupils.
- EdF 501. ADVANCED PSYCHOLOGY OF LEARNING THREE CREDIT HOURS
A conscious effort to relate learning theories and current issues in the psychology of learning to major aspects of growth and development.
- EdF 502. COMPARATIVE PHILOSOPHIES OF EDUCATION THREE CREDIT HOURS
The historical development of educational philosophies; evaluation of major current philosophies; significant problems of the present day in educational philosophy. Prerequisite: Edu 419 Philosophy of Education, or equivalent where the student has already achieved a norm for evaluating the theories of modern education.
- EdF 503. RESEARCH METHODOLOGY AND STATISTICS THREE CREDIT HOURS
Designed to develop an understanding of the nature of research: methods, research techniques, sources, evaluation of research studies. Considers basic statistical concepts and their application in the analysis of education data.

- EdF 504. ADVANCED CHILD AND ADOLESCENT PSYCHOLOGY THREE CREDIT HOURS
Deals with the principal areas of growth and development through adolescence with special emphasis on mental development.
- EdA 506. SCHOOL ADMINISTRATION THREE CREDIT HOURS
General principles governing the administrative functions of planning, organizing, and controlling are presented and applications are made in the administration of both elementary schools and secondary schools.
- EdA 507W. THE PRINCIPALSHIP OF THE CATHOLIC ELEMENTARY SCHOOL TWO CREDIT HOURS
This workshop seeks to apply the principles of administration to the Catholic Elementary School. Particular attention is placed upon human relationships, in-service education of the professional staff, securing community participation in school policy formation, pupil personnel problems, curriculum development, and managerial responsibilities of the principal.
- EdA 509. SCHOOL SUPERVISION THREE CREDIT HOURS
A course in planning, organizing, and administering instructional supervision in public and private (parochial) school systems. Field observation required.
- EdA 510W. CURRICULUM OF THE CATHOLIC ELEMENTARY SCHOOL TWO CREDIT HOURS
A curriculum development workshop designed for implementation in the Catholic elementary schools. It includes consideration of the necessity of a complete system of Catholic education and the principles which dictate this necessity.
- EdA 511. ELEMENTARY SCHOOL CURRICULUM TWO CREDIT HOURS
A fundamental course in curriculum development designed to prepare the student for effective participation in cooperative efforts to improve the curriculum. Attention is directed to curriculum issues and to desirable instructional practices in the major areas of curriculum.
- EdA 512. SECONDARY SCHOOL CURRICULUM TWO CREDIT HOURS
A fundamental course in curriculum development designed to prepare the student for effective participation in cooperative efforts to improve the curriculum. Attention is directed to curriculum issues and to desirable instructional practices in the major curriculum areas.
- EdA 513. ELEMENTARY SCHOOL EVALUATION TWO CREDIT HOURS
Centers attention on systematic, total school self-evaluation as the basis for school improvement programs.
- EdA 514. SECONDARY SCHOOL EVALUATION TWO CREDIT HOURS
Centers attention on systematic, total school self-evaluation as the basis for school improvement programs.
- EdA 515. SCHOOL LAW TWO CREDIT HOURS
Problems in school administration which may give rise to court action.
- EdA 517. SCHOOL FINANCE TWO CREDIT HOURS
A course for school administrators covering principles of school finance, technical problems of budgeting, source of income, purchasing, accounting, and debt service.

- EdF 518. SCHOOL AND THE SOCIAL ORDER THREE CREDIT HOURS
 The relationship of the school to the total cultural pattern and the development of interaction between school and community are appraised and concrete suggestions are presented. The nature of the individual child and his relations with society and culture; the special culture of the school and its accompanying social world; school, teacher, and community relations.
- EdA 521. SCHOOL PUBLIC RELATIONS TWO CREDIT HOURS
 Covers philosophy and techniques of school-community relations for educational leaders. Attention given to parent contacts, citizens' participation, press, radio, television, printed material and other media.
- EdC 522. PRINCIPLES AND TECHNIQUES OF GUIDANCE THREE CREDIT HOURS
 An introduction to the scope, aims, and techniques of guidance; an introductory treatment of the basic guidance services and how the counselor and the teacher can make efficient use of them.
- EdC 523. OCCUPATIONAL INFORMATION AND COMMUNITY RESOURCES TWO CREDIT HOURS
 Selection, utilization, and evaluation of educational and occupational information materials; familiarization with standard labor market data and resources of the local community.
- EdS 527W. BUSINESS SYSTEMS AND DATA PROCESSING THREE CREDIT HOURS
 A graduate workshop in business automation, related procedures, and equipment; designed to develop a program of approach the secondary schools can use in educating students in office automation and business data processing. Explanation of the Cooperative Office Education Program of the Department of Education, State of Ohio, is included. This workshop fulfills a requirement for COE certification. Prerequisite: High School Certification in Business Education.
- EdC 530. PSYCHOLOGY OF INDIVIDUAL DIFFERENCES TWO CREDIT HOURS
 Nature, extent, and significance of variability; hereditary and cultural influences; theories of intelligence; trait organization; group differences.
- EdC 531. DYNAMICS OF PERSONALITY THREE CREDIT HOURS
 Required of all graduate students who are enrolled in the School Counseling, School Psychology, and Pupil Personnel programs. Personality theory and abnormal psychology are discussed with emphasis on dynamics of personal behavior.
- EdC 533. PSYCHOMETRICS THREE CREDIT HOURS
 Lectures and demonstrations in the principles and application of psychological measurement, with particular emphasis on standardized group tests of intelligence and scholastic achievement, interest tests, personality tests, and other areas pertinent to the graduate function. Practicum in test selection, use, and interpretation.
- EdC 535. PRACTICUM I: TEST INTERPRETATIONS AND CASE STUDIES TWO CREDIT HOURS
 Supervised experiences in typical school guidance policies and practices. Such experience will include: vocational guidance, educational guidance and curriculum structures, cumulative folder, test and profile interpretations. Prerequisites: EdC 522, 533.
- EdC 539. ADMINISTRATION OF A SCHOOL GUIDANCE PROGRAM TWO CREDIT HOURS
 Planning, developing and administering school testing and guidance services and group

guidance in the homeroom. This course covers also such matters as in-service training of guidance personnel, facilities, supplies, assembling and disseminating educational and occupational information, and liaison with both teachers and school administrators.

EdC 543. PRINCIPLES AND TECHNIQUES OF COUNSELING THREE CREDIT HOURS
 Basic theories, principles and techniques of counseling. A consideration of directive, non-directive and eclectic techniques as a function of the intelligence and grade-level of the child; ethical considerations. Prerequisites: EdC 531, EdF 503.

EdC 545. PRACTICUM II: COUNSELING TECHNIQUES THREE CREDIT HOURS
 Supervised experience in counseling, using role-playing and actual counseling cases. Both group and individualized instruction and supervision. Prerequisites: EdC 533, 543. Recommended: EdC 523.

EdC 546. PRACTICUM III: OCCUPATIONS THREE CREDIT HOURS
 Organized experiences for school counselors in local industries, with related seminars on campus. Prerequisite: The Master's degree and counselor certification.

EdE 547. PSYCHOLOGY OF EXCEPTIONAL CHILDREN TWO CREDIT HOURS
 Deals with the intellectual deviate, the socially and emotionally maladjusted. Concentration on educational guidance for the gifted and the mentally retarded.

EdE 564. ADVANCED SCIENCE IN ELEMENTARY SCHOOL THREE CREDIT HOURS
 This course or workshop is designed to train elementary school teachers to integrate science with all phases of the curriculum—by research projects in the basic areas of astronomy, biology, chemistry, geology, physics, and air-age education. Teachers also have the opportunity to study and evaluate the visual aids now available in the field of science. Prerequisite: EdE 460 Science in the Elementary School or another college course in physical science.

EdE 566W. THE EDUCATION OF GIFTED CHILDREN TWO CREDIT HOURS
 The workshop will deal with formal and informal methods of identifying giftedness, the potentials and problems of the gifted, assessment of special school programs, and positive provisions for the instructional program.

EdE 567. SURVEY OF RESEARCH IN READING INSTRUCTION THREE CREDIT HOURS
 A basic course for experienced teachers concerned with the psychology of learning Reading and with current problems and trends. The first course in a program designed to prepare specialists in Reading.

EdE 568. DIAGNOSIS AND CORRECTION OF READING DIFFICULTIES THREE CREDIT HOURS
 A study of the common causes for Reading disabilities or lack of adequate development in Reading. Also involves the study of types of observation and measurement to be used to identify disabilities and methods of instruction useful in correction.

EdE 569. PRACTICUM IN READING THREE CREDIT HOURS
 This is a laboratory course to be taken in connection with Diagnosis and Correction of Reading Difficulties. The students will become acquainted with the machines and materials in development, improvement, and remediation and will be given experience in dealing with individuals and groups of children.

- EdE 570. SUPERVISION AND CURRICULUM IN READING THREE CREDIT HOURS
 A study of selected curricula and the processes of planning a sound curriculum in Reading at different levels. It outlines the role of the Reading supervisor, providing guidelines for effective implementation of Reading programs.
- EdA 571W. EVALUATION OF CATHOLIC ELEMENTARY SCHOOLS TWO CREDIT HOURS
 This workshop is designed to enable Catholic school administrators to engage in depth studies relative to the evaluative criteria. The participants will engage likewise in discovering ways and means of implementing the criteria in their own schools or school systems.
- EdC 580. GUIDANCE IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
 A study of the most important concepts and techniques of guidance, with emphasis on the functions and responsibilities of the elementary teacher and counselor.
- EdC 581. COUNSELING IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
 An introduction to the principles and techniques of counseling elementary school children.
- EdC 583. GROUP GUIDANCE THREE CREDIT HOURS
 This course has two purposes: (1) to enable the counselor to work effectively with groups; and (2) to achieve the formation of deeper counselor self-understanding by actually participating in the group process. (One quarter of class time is devoted to lectures and three quarters to participation.)
- EdC 584. CHILD STUDY PROJECT I TWO CREDIT HOURS
 During the first year, each teacher studies one child, seeking and sharing sources of information about the child and developing skills in observing and recording data. Each teacher practices anecdotal recording and builds multiple hypotheses concerning causes of behavior. (Groups meet every other week from the first of October to the middle of May for a total of at least fifteen to eighteen sessions. The meetings last 1½ to 2 hours. A University consultant visits each group at least three times a year. Confidential anecdotal records are deposited with the University.)
- EdC 585W. CHILD STUDY LEADERSHIP I TWO CREDIT HOURS
 This workshop is designed to train teachers and school counselors for leadership roles in the Child Development Laboratory as conducted within approved school systems. It is in cooperation with the University of Maryland's sponsored Institute for Child Study. Provides training to persons who plan to participate as group members or leaders in the Child Study Program sponsored by the Institute. The workshop will provide suitable experience in its own right for persons whose role in schools can be enhanced through deeper understanding of children and youth, e.g., area principals.
- EdC 586. CHILD STUDY PROJECT II TWO CREDIT HOURS
 During the second year, each teacher studies a different child from the one studied the first year. Together with the other participants, he develops a systematic, organized picture of the forces that interact to produce the child's behavior. He classifies behavior for greater understanding of the child's developmental pattern. Prerequisite: EdC 584.
- EdC 587W. CHILD STUDY LEADERSHIP II TWO CREDIT HOURS
 An advanced Child Study Workshop emphasizing the major factors that affect human behavior. Prerequisite: EdC 585W.

EdC 588. CHILD STUDY PROJECT III TWO CREDIT HOURS

The third year sees the teacher again studying one child, still different from the first two years, and attempting to achieve fuller understanding of the self-dynamics. Here he endeavors to perceive his pupils from the point of view of the learner. He studies how the individual functions, what his effect is on the group, and what the group's effect is on him. Prerequisite: EdC 586.

EdC 589W. CHILD STUDY LEADERSHIP III TWO CREDIT HOURS

An advanced Child Study Workshop emphasizing the child's self-concept and his relationship with the world around him. Prerequisites: EdC 585W, EdC 587W.

EdF 590. EDUCATIONAL RESEARCH DESIGN THREE CREDIT HOURS

This course has two major emphases: Part I is devoted to basic processes of scientific inquiry into educational problems; Part II is devoted to selected techniques which stress in greater detail specific methodological problems.

EdF 591. RESEARCH PROJECT THREE CREDIT HOURS

In special cases and with permission of the Dean, students may register for this course in lieu of EdF 592, Graduate Seminar.

EdF 592. GRADUATE SEMINAR THREE CREDIT HOURS

Provides students with general guidance in conducting their Research Projects and in preparing for the oral comprehensive examination. Emphasis is on the integration of the total graduate program. Should be taken after the student has completed all, or most, of his course work.

EdF 593. INTERPRETATION OF STATISTICS THREE CREDIT HOURS

The emphasis of this course is placed upon descriptive and inferential statistics. Descriptive statistics are used to describe observations of groups of individuals. Inferential statistics are used to make inferences about the total parameters in terms of observed samples and to draw valid inferences and interpretations which will be of use to the school psychologist. Attention is directed to consumer research in which statistical design is of vital importance.

EdC 594-595. INTERNSHIP FOR SCHOOL PSYCHOLOGISTS TWELVE CREDIT HOURS

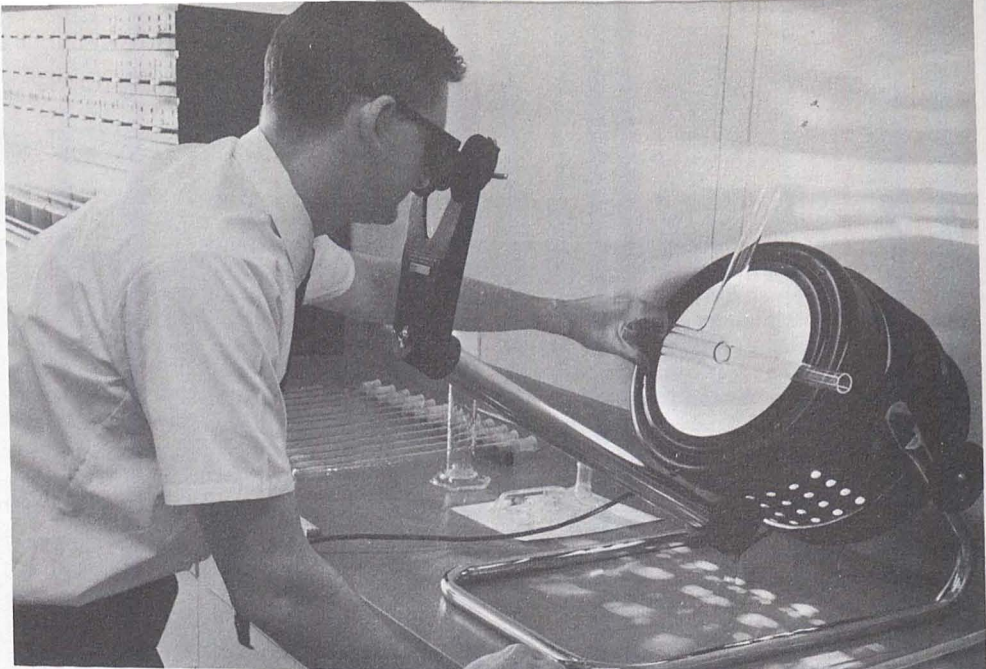
A job-related program for nine months under the immediate supervision of a trained school psychologist. The internist will be given a stipend, made available from the State of Ohio Foundation funds.

EdF 596-597. INTERNSHIP IN EDUCATION RESEARCH TWELVE CREDIT HOURS

Investigation of the literature of education research; experiences in developing research design; applications of data processing; conduct of major research activity. The Southwestern Ohio Educational Research Council and area schools are used as a locus of operations.

EdS 598. INTERNSHIP IN TEACHING EIGHT CREDIT HOURS

A full semester of directed teaching experiences under the supervision of a faculty adviser and of selected master teachers in local area schools. Weekly seminars on campus.



Civil Engineering (CIE)

Seymour J. Ryckman, *Chairman*

- CIE 502. PRESTRESSED CONCRETE** **THREE CREDIT HOURS**
 Discussion of the properties of concrete and prestressing steel. Theory and design of prestressed concrete beams, slabs, circular tanks and rigid frames. Prerequisite: Cie 407. (Open for enrollment of undergraduate students.)
- CIE 504. LIMIT DESIGN IN STEEL** **THREE CREDIT HOURS**
 A review of the physical properties of metal; the theory and application of limit design to simple and redundant members, trusses, and columns. A brief study of connection details. Corequisite: Cie 406. (Open for enrollment of undergraduate students.)
- CIE 506. ULTIMATE DESIGN OF REINFORCED CONCRETE** **THREE CREDIT HOURS**
 The theory and application of ultimate design in reinforced concrete as applied to the sections of beams, columns and members subject to both bending and direct stress. The latest report of the A.S.C.E.-A.C.I. Joint Committee is reviewed. Prerequisite: Cie 407. (Open for enrollment of undergraduate students.)
- CIE 524. FOUNDATION DESIGN** **THREE CREDIT HOURS**
 Analysis of earth pressure and stability of natural slopes; study of frost action, permafrost; the design of spread foundations, pile foundations, caissons, cofferdams, anchored bulkheads, bridge piers and abutments. Prerequisite: Cie 312; Corequisite: Cie 407. (Open for enrollment of undergraduate students.)
- CIE 542. HIGHWAY DESIGN I** **THREE CREDIT HOURS**
 Design and construction of pavements, including concrete, asphalt, aggregate and soil cement surfaces; designs of base courses; maintenance. Prerequisite: Cie 405. (Open for enrollment of undergraduate students.)
- CIE 544. TRAFFIC ENGINEERING** **THREE CREDIT HOURS**
 Characteristics of traffic, including the road user, the vehicle, origin, and destination

surveys; traffic regulation, control devices and aids, design, administration and planning.
Prerequisite: Cie 405. (Open for enrollment of undergraduate students.)

Electrical Engineering (ELE)

Bro. Louis Rose, S.M., *Chairman*

ELE 501. ANALOG AND DIGITAL COMPUTERS THREE CREDIT HOURS
Use of differential analyzers for solving linear integral-differential equations; digital computers and their design; input and output equipment; control unit. Prerequisite: Ele 313.

ELE 502. ADVANCED CIRCUIT ANALYSIS THREE CREDIT HOURS
Poles and zeros of polynomial functions and networks; numerical procedures; Chebyshev and Taylor approximations to brick wall functions; elementary and modern synthesis; low pass and band pass amplifiers; feedback amplifiers and stability. Prerequisites: Ele 413, Mth 341. (Open for enrollment of undergraduate students.)

ELE 505. QUANTUM ELECTRONICS: PRINCIPLES THREE CREDIT HOURS
Principles of quantum theory; classical and quantum statistics; many-particle systems; electromagnetic interactions with materials. Prerequisite: Ele 414.

ELE 507. ELECTROMAGNETIC FIELDS I THREE CREDIT HOURS
Fundamental concepts; introduction to waves; theorems of electromagnetics; plane wave function; cylindrical wave functions. Prerequisite: Ele 334.

ELE 508. ELECTROMAGNETIC FIELDS II THREE CREDIT HOURS
Spherical wave functions; perturbational and variational techniques; microwave networks. Prerequisite: Ele 507.

ELE 509. ANALYSIS OF LINEAR SYSTEMS THREE CREDIT HOURS
Modern methods of analysis of transient phenomena in electrical, mechanical, and thermal linear systems involving lumped and distributed parameters. (Consent of instructor.)

ELE 511. ADVANCED THEORY AND DESIGN OF ROTATING MACHINERY I THREE CREDIT HOURS
Basic principles and applied theory in practical design of induction machinery, commercial, aircraft and missile types. Prerequisite: Ele 403. (Open for enrollment of undergraduate students.)

ELE 512. ADVANCED THEORY AND DESIGN OF ROTATING MACHINERY II THREE CREDIT HOURS
Detailed theory and design of direct current and synchronous machines; permanent magnet and flux switch machines; heat transfer phenomena; the general temperature field. Prerequisite: Ele 511. (Open for enrollment of undergraduate students.)

ELE 513. COMMUNICATION THEORY THREE CREDIT HOURS
The application of Fourier series and integrals to the analysis of communication problems; theory of random signals, autocorrelation, power density spectra, and optimum filters. Prerequisite: Ele 413.

ELE 514. ANALYSIS OF NON-LINEAR SYSTEMS THREE CREDIT HOURS
An advanced study of methods of analysis of non-linear systems with applications in the fields of electric circuit theory and control systems. Prerequisite: Ele 509.

ELE 515. AUTOMATIC CONTROL THEORY THREE CREDIT HOURS
Representation and analysis of feedback control systems; Nyquist plots; Bode diagrams; the root-locus method and signal-flow diagrams; introductory treatment of sampled data systems. (Consent of instructor.)

ELE 516. GASEOUS ELECTRONICS AND PLASMAS THREE CREDIT HOURS
Transport theory; magnetic hydrodynamics; plasma oscillation. (Consent of instructor.)

Engineering (EGR)

EGR 501. APPLIED ELASTICITY THREE CREDIT HOURS
Equations of equilibrium and continuity; solution of two-dimensional problems in rectangular and curvilinear coordinates by means of stress functions; St. Venant's principle; energy methods; stress concentrations; introduction to three-dimensional and thermal stress problems; application of finite difference equations. Prerequisite: Egm 304.

EGR 502. MECHANICS OF FLUIDS THREE CREDIT HOURS
Fluid properties; important differential equations in fluid flow, laminar and turbulent flow, boundary layer flow; introduction to compressible flow.

EGR 503. THERMODYNAMICS THREE CREDIT HOURS
Thermodynamic concepts; the laws of thermodynamics; kinetic theory of gases; introduction to the Maxwell-Boltzmann statistics and their applications.

EGR 504. MASS AND ENERGY TRANSPORT THREE CREDIT HOURS
Basic concepts, principles and definitions, rate equations, thermodynamic principles, applications.

EGR 505. PROPERTIES OF MATERIALS THREE CREDIT HOURS
Structure, properties, and behavior of materials. Conductivity, diffusivity, electro-chemistry, elasticity, plasticity, fracture, viscosity.

EGR 506. SOLID STATE DEVICES THREE CREDIT HOURS
Introduction to the theory of solid state devices; electron emission devices, semi-conductor devices, dielectric devices, and magnetic devices. Mathematical technique beyond differential equations will be developed as needed.

EGR 507. ADVANCED ENGINEERING ANALYSIS I THREE CREDIT HOURS
The use of fundamental laws to illustrate mathematical techniques of engineering utility.

EGR 508. ADVANCED ENGINEERING ANALYSIS II THREE CREDIT HOURS
A continuation of Egr 507.

EGR 512. RELIABILITY THREE CREDIT HOURS
Application of statistical theory to the design of reliability systems in the broadest sense; theory behind, and techniques to be used in designing testing methods and procedures for determining reliability of component parts and total systems; environmental test design; statistical analysis of, and inference from test results. Prerequisite: Mth 331.

EGR 513. SYSTEMS ANALYSIS, DESIGN & EVALUATION THREE CREDIT HOURS
A total systems approach to problem solving. This course considers techniques which treat quite sophisticated and difficult problems. Proofs and the characteristic rigor of

mathematics are avoided but the essential subtlety of the techniques remain. This course relates mathematical courses on the one hand and applied engineering courses on the other. Prerequisite: Egr 512.

EGR 516. MODERN ELECTRON DEVICES THREE CREDIT HOURS
Attention is directed toward late developments in electronic devices exclusive of transistors and conventional electron tubes. Some specific topics include low noise traveling wave tubes, parametric amplifying devices, and several devices from the area of quantum electronics. Stress is placed on basic physical principles and theory of operation. Prerequisites: Egr 507, 508, Phy 505 or equivalent.

EGR 517. TRANSPORT PROPERTIES THREE CREDIT HOURS
Momentum, energy and mass transport including viscosity and mechanism of momentum transport, thermal conductivity and mechanism of energy transport, diffusivity and the mechanisms of mass transport. Prerequisites: Egr 507, 508, Egr 504.

EGR 518. COMPRESSIBLE FLOW THREE CREDIT HOURS
One-dimensional compressible flow, two- and three-dimensional subsonic flow, two-dimensional supersonic flow, mixed flow, and flow of real gases with viscosity and heat conductivity. Prerequisites: Egr 507, 508, Egr 502.

EGR 519. ANALYTIC DYNAMICS THREE CREDIT HOURS
Kinematics, relative motion, constraints and generalized coordinates, Hamilton's principle, Lagrange's equations, variational principles. Applications to particle dynamics and rigid body motion. Prerequisites: Egm 301, Mth 301, or equivalent.

EGR 520. ADVANCED STRUCTURAL ANALYSIS THREE CREDIT HOURS
Methods of moment-areas, slope-deflection, moment distribution, column analogy, and virtual work. Includes consideration of such problems as frames of variable cross section, plates and shells, and space frames. Prerequisites: Cie 407, Egm 304.

EGR 521. THEORETICAL SOIL MECHANICS THREE CREDIT HOURS
General principles involved in the theories of soil mechanics. Discussion includes stress conditions for failure, active and passive pressure, plastic equilibrium in a semi-infinite mass, bearing capacity, semi-infinite elastic solids and subgrade reaction. Prerequisite: Cie 312.

EGR 522. PHILOSOPHICAL FOUNDATIONS OF ENGINEERING THREE CREDIT HOURS
The place of engineering and the engineer in present day society. The philosophical bases for engineering enterprise and the meaning of engineering achievement. (May be replaced by Phl 503 or Phl 510.)

EGR 525. AUTOMATIC CONTROL THEORY
System representation, steady state and transient analysis of feedback control systems, modes of control, Laplace transform, root-locus method, analog computers and frequency-response methods.

EGR 526. INFORMATION THEORY THREE CREDIT HOURS
A study of techniques available to analyze statistical communication and correlated subjects; probability, power density spectrum of random processes, concepts of signal and noise; application of theory. Prerequisite: Permission of the instructor.

EGR 598. SPECIAL PROBLEMS IN ENGINEERING SCIENCE TWO TO SIX CREDIT HOURS
Particular assignments to be arranged and approved by the Chairman, Graduate Study Committee, School of Engineering.

EGR 599. GRADUATE ENGINEERING THESIS ZERO TO SIX CREDIT HOURS
Students engaged in thesis research must enroll for this course for a total of six credit hours.

Engineering Mechanics (EGM)

EGM 501. EXPERIMENTAL STRESS ANALYSIS TWO CREDIT HOURS
A study of the experimental analysis of stress as an aid to design for strength and economy with emphasis on electrical strain gauges. Also covered are photoelasticity, brittle coatings, photoelastic coatings, analogies, structural similitude. Prerequisite: Egm 304; Corequisite: Egm 501L.

EGM 501L. EXPERIMENTAL STRESS ANALYSIS LABORATORY ONE CREDIT HOUR
Experiments and problems to acquaint the student with the basic techniques of the use of strain gauges, photoelasticity, and brittle coatings in stress analysis. Corequisite: Egm 501.

English (ENG)

Dr. B. J. Bedard, *Chairman*

Any 400 level undergraduate course in English may yield graduate credit under the conditions described in the degree requirements. Prerequisite for enrolling in any of the following courses for graduate credit is at least twenty-four semester hours in literature. All 500 level courses meet for two hours but yield three hours credit. The starred courses can be repeated for graduate credit when the topic or content changes.

*ENG 505. CREATIVE WRITING THREE CREDIT HOURS
Supervised practice in writing in various literary forms. Conducted both by group discussions and by individual conferences and critiques. Permission of Chairman required.

ENG 511. MIDDLE ENGLISH THREE CREDIT HOURS
A study of the developments in the English language from 1066 to 1500 with an ancillary treatment of representative literary specimens.

*ENG 514. STUDIES IN MEDIEVAL LITERATURE THREE CREDIT HOURS
A treatment of the principal forms and movements in the literature of the Middle Ages, usually read in translation.

ENG 516. CHAUCER I THREE CREDIT HOURS
An intensive analysis of *The Canterbury Tales*.

ENG 517. CHAUCER II THREE CREDIT HOURS
A study of *Troilus and Criseyde* and the minor poems of Chaucer. Eng 516 is *not* prerequisite.

*ENG 522. STUDIES IN SIXTEENTH CENTURY LITERATURE THREE CREDIT HOURS
A treatment of the non-dramatic literature of the English Renaissance.

- ENG 526. SHAKESPEARE I THREE CREDIT HOURS
 A consideration of the development of Shakespeare's art from the beginning to *Twelfth Night*. The course includes the early comedies and tragedies, the histories, and the romantic comedies.
- ENG 527. SHAKESPEARE II THREE CREDIT HOURS
 An analysis of Shakespeare's development from *Hamlet* to *The Tempest*. The course includes the major tragedies, problem plays, and dramatic romances. Eng 526 is *not* a prerequisite.
- *ENG 532. STUDIES IN SEVENTEENTH CENTURY LITERATURE THREE CREDIT HOURS
 A consideration of the principal poets and prose writers of the Stuart, Commonwealth, or Restoration Periods.
- *ENG 536. STUDIES IN DRAMA TO 1642 THREE CREDIT HOURS
 A survey of English drama from the beginning to the closing of the theatres.
- *ENG 538. STUDIES IN MILTON THREE CREDIT HOURS
 A treatment of the major and minor poems and related prose of Milton.
- *ENG 542. STUDIES IN EIGHTEENTH CENTURY LITERATURE THREE CREDIT HOURS
 A study of the writers of the Augustan, Post-Augustan, and Pre-Romantic Ages.
- *ENG 546. STUDIES IN THE NOVEL THREE CREDIT HOURS
 A consideration of the development and characteristic forms of the novel.
- *ENG 552. STUDIES IN ROMANTICISM THREE CREDIT HOURS
 The nature and progress of English Romanticism as revealed in the principal poets of the early part of the Nineteenth Century.
- *ENG 556. STUDIES IN NINETEENTH CENTURY LITERATURE THREE CREDIT HOURS
 A treatment of the significant poets and essayists of the Victorian Age.
- *ENG 562. STUDIES IN TWENTIETH CENTURY LITERATURE THREE CREDIT HOURS
 A study of significant movements, forms, and writers in the literature of the Twentieth Century.
- *ENG 566. STUDIES IN DRAMA SINCE 1660 THREE CREDIT HOURS
 A selective study of significant developments in drama from the Restoration to the present.
- ENG 572. TRANSCENDENTALISM IN NINETEENTH CENTURY AMERICAN LITERATURE THREE CREDIT HOURS
 A consideration of the writers of the Romantic Age in America.
- *ENG 576. MAJOR AMERICAN WRITERS THREE CREDIT HOURS
 An intensive comparative study of two or three American writers considered in depth.
- *ENG 582. STUDIES IN AMERICAN LITERATURE SINCE THE CIVIL WAR THREE CREDIT HOURS
 A consideration of the principal movements in poetry, fiction, or drama of the late Nineteenth or Twentieth Century.
- *ENG 590. TEACHING OF COLLEGE ENGLISH ONE CREDIT HOUR
 Discussion, instruction, and practice in the methods of teaching composition and literature. Required of and open only to Assistants.

ENG 592. PHILOSOPHICAL AND CRITICAL FOUNDATIONS OF LITERATURE THREE CREDIT HOURS
An intensive treatment of the philosophical assumptions underlying the influential literary theories from antiquity to the present. Required of all degree applicants.

ENG 595. RESEARCH AND BIBLIOGRAPHY THREE CREDIT HOURS
An introduction to the methods and tools of literary scholarship. Required of all degree applicants.

ENG 599. THESIS THREE-SIX CREDIT HOURS

HISTORY (HST)

Dr. Wilfred J. Steiner, *Chairman*

Any 300-400 upper level undergraduate course in History may be taken for graduate credit under the usual conditions.

HST 500. HISTORIOGRAPHY THREE CREDIT HOURS
The course will concentrate on a study of the principal historians and the chief contributions to the development of historical writing. Some familiarity with historical method will be required in the composition of research papers.

HST 503. MODERN NILOTIC AFRICA THREE CREDIT HOURS
Focus on the interrelated history of the countries of the Nile—Ethiopia, Uganda, the Sudan, and Egypt—in the 19th and 20th centuries. Emphasis also on the area's impact on the world.

HST 506. MEDIEVAL CIVILIZATION THREE CREDIT HOURS
An interpretation of the culture of the Middle Ages, including Christian thought from St. Augustine to St. Thomas Aquinas, humanism and the classical revival, the rise of vernacular literature, the fine arts, education, and scientific development. A general knowledge of medieval history is presupposed.

HST 508. HISTORY OF MEDIEVAL SPAIN THREE CREDIT HOURS
A study of the development of the Christian and Moslem kingdoms of the Iberian peninsula through the Reconquest to the Age of Ferdinand and Isabella.

HST 517. MODERN EUROPEAN NATIONALISM THREE CREDIT HOURS
The course will present the meaning, promoters, characteristics, and development of continental nationalism from the eighteenth century to the present time.

HST 521. TUDOR-STUART ENGLAND THREE CREDIT HOURS
A study of England—1485 to 1714. For the Tudor period, chief emphasis will be given to the development of the national state, royal absolutism, and the Reformation. The evolution of the constitutional question will be the main theme in the treatment of the Stuart era and Cromwellian Interregnum. The social, economic and cultural aspects of the period, as well as its diplomacy, will be fully covered.

HST 522. VICTORIAN ENGLAND THREE CREDIT HOURS
The study of Great Britain from the Congress of Vienna in 1815 to the end of World War I. The course examines domestic politics, imperial affairs, the Oxford and Evangelical Movements, the Industrial Revolution, the development of Socialism, and major intellectual and cultural currents.

- HST 523. BRITAIN IN THE ERA OF REVOLUTION, 1760-1815 THREE CREDIT HOURS
 A survey of the changes in British political, social and economic institutions. The neo-classical and Romantic movements, Wesleyism, and the beginnings of Evangelicalism will be studied.
- HST 525. 20TH CENTURY BRITAIN THREE CREDIT HOURS
 A study of the principal political, social, economic, and intellectual trends since 1900. Emphasis will be placed on Britain's changing role in world affairs and on the development of the welfare state.
- HST 535. HISTORY OF CHINA'S TRADITIONS THREE CREDIT HOURS
 A survey of the genesis and development of the Sinitic Civilization and its relationships to Indian, Islamic, and Western civilizations from the earliest beginnings to the 19th century.
- HST 539. JAPAN SINCE PERRY THREE CREDIT HOURS
 A historical study of the economic, social, and political developments of modern Japan from the end of the "Seclusion" to the present time.
- HST 540. INTERPRETATIONS IN WORLD HISTORY THREE CREDIT HOURS
 Specific topics will be chosen for investigation and interpretation as determined by the instructor. The course will be designed to assist students in following recent trends in the interpretation of historical events. A general knowledge of World History is a prerequisite.
- HST 542. THE BALKANS SINCE 1453 THREE CREDIT HOURS
 The course covers the historical evolution of the Balkan area (Hungary, Rumania, Yugoslavia, Albania, Bulgaria and Greece) within the framework of Byzantine, Hapsburg and Ottoman influence. Emphasis will be on 19th and 20th centuries.
- HST 544. CONTEMPORARY MIDDLE EAST THREE CREDIT HOURS
 A study of Iran, Iraq, Turkey, Afghanistan, Syria, Lebanon, Israel, Egypt, Saudi-Arabia and Yemen since World War II. Stress is placed on institutional histories and recent developments.
- HST 545. SEMINAR IN NON-AMERICAN HISTORY THREE CREDIT HOURS
 Discussions and reports. The topics will depend, in part, upon the interest of the members of the class.
- HST 550. THE PHILOSOPHY OF HISTORY THREE CREDIT HOURS
 After surveying the various metaphysical interpretations of the meaning of history, the course then analyzes the literature concerned with the epistemological problems of writing history.
- HST 552. THE AMERICAN REVOLUTION THREE CREDIT HOURS
 The course will treat the following topics: the problems of empire-relationships since 1754; the causes, conduct, and consequences of the American Revolution; the postwar problems leading to the adoption of the Federal Constitution.
- HST 557. AGE OF YOUNG AMERICA (1840-1860) THREE CREDIT HOURS
 A detailed study of the major political, economic, intellectual, and social developments of the period. Emphasis on the various expansionist movements and failures of the sectional compromises.

- HST 570. THE OLD SOUTH THREE CREDIT HOURS
 A study of political, social, economic, and cultural history, emphasizing presiding themes of pre-Civil War Southern life—ruralism, cotton culture, extractive economics, slavery, developing political minority status in the nation. A general knowledge of American History is a prerequisite.
- HST 571. THE POPULIST REVOLT THREE CREDIT HOURS
 An intensive study of political, social, and economic developments during the administrations of Cleveland, Harrison, and McKinley.
- HST 575. LATIN AMERICAN DICTATORS THREE CREDIT HOURS
 A study of the social, economic and political forces creating a climate for dictatorship in Latin America, including case studies of the major tyrants and their impact.
- HST 579. HISTORY OF NORTH AMERICAN RELATIONSHIPS THREE CREDIT HOURS
 This course emphasizes an interpretation of the political, diplomatic, economic, and military relationships of the United States, Canada, and Mexico from the colonial era to the present.
- HST 585. SCIENCE AND TECHNOLOGY IN AMERICAN HISTORY THREE CREDIT HOURS
 A descriptive and interpretative study of the role of American scientists, inventors, and technologists in American history from the colonial era to the present time, with particular emphasis upon the Machine Age. A general knowledge of American History is a prerequisite.
- HST 590. INTERPRETATIONS IN AMERICAN HISTORY THREE CREDIT HOURS
 Specific topics will be chosen for investigation and interpretation as determined by the instructor. The objective of the course is to study new interpretations of historical events. A general knowledge of American History is a prerequisite.
- HST 593. U.S. POLICY IN THE FAR EAST THREE CREDIT HOURS
 An objective study and thorough analysis of United States-Far Eastern relations with special emphasis on the evolution of American policy in the Far East since 1900.
- HST 595. SEMINAR IN AMERICAN HISTORY THREE CREDIT HOURS
 Students will examine selected topics in American History. A research paper will be required of each student.
- HST 599. THESIS THREE-SIX CREDIT HOURS

Mathematics (MTH)

Dr. Kenneth C. Schraut, *Chairman*

The following courses may be taken by individuals outside the Mathematics Program for completion of requirements for their Master's degree.

- MTH 401. ADVANCED CALCULUS FOR SCIENTISTS AND ENGINEERS I THREE CREDIT HOURS
 Prerequisite: Mth 202 or 218.
- MTH 402. ADVANCED CALCULUS FOR SCIENTISTS AND ENGINEERS II THREE CREDIT HOURS
 Prerequisite: Mth 401.
- MTH 411. PROBABILITY AND STATISTICS I THREE CREDIT HOURS
 Prerequisite: Mth 202 or 218.

Mth 412. PROBABILITY AND STATISTICS II Prerequisite: Mth 411.	THREE CREDIT HOURS
Mth 413. PROBABILITY AND STATISTICS III Prerequisite: Mth 412.	THREE CREDIT HOURS
Mth 421. ADVANCED CALCULUS I Prerequisite: Mth 202 or 218.	THREE CREDIT HOURS
Mth 422. ADVANCED CALCULUS II Prerequisite: Mth 421.	THREE CREDIT HOURS
Mth 432. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS Prerequisite: Mth 422.	THREE CREDIT HOURS
Mth 461. INTRODUCTION TO THE THEORY OF FUNCTIONS OF A COMPLEX VARIABLE Prerequisite: Mth 422.	THREE CREDIT HOURS
Mth 465. MODERN OPERATIONAL MATHEMATICS Prerequisite: Mth 202 or 218.	THREE CREDIT HOURS
Mth 471. TOPOLOGY Prerequisite: Mth 422.	THREE CREDIT HOURS

NOTE: Only Mth 411, 412 and 413 may be applied to the Master's degree in Mathematics. The description of all these courses may be found in the undergraduate catalog.

Master of Science in Education degree with a concentration in Mathematics

Students following the Master High School Teacher Program in the School of Education who desire a concentration in mathematics should take the courses listed below. Normally, these courses, which satisfy all the recommendations of the M.A.A. and N.C.T.M. for teacher training in high school mathematics, are taught only in the Summer Session as part of an N.S.F. Institute program. For a more detailed description of the Master High School Teacher program leading to the Master of Science in Education degree, see pages 56 and 60 of this catalog.

Mth 501-502. FUNDAMENTAL CONCEPTS OF ALGEBRA THREE CREDIT HOURS EACH TERM

An introduction to the basic concepts of abstract algebra such as number postulates, groups, rings, fields, mappings, classes, and sets, as well as certain concepts taken from the classical theory of equations. An intensive study of the relation of these topics to the topics of high school algebra as proposed by several curriculum revision groups.

Mth 503-504. FUNDAMENTAL CONCEPTS OF GEOMETRY THREE CREDIT HOURS EACH TERM

A study of the axioms and concepts upon which various geometries are built. A comparison is made between Euclidian, metric and projective geometries and to a lesser extent consideration is given to non-Euclidian geometries. A comparison is also made between synthetic and analytic methods of proof with some consideration given to vector notation. An intensive study of the relation of these topics to the topics of high school geometry as proposed by several curriculum revision groups.

Mth 505-506. FUNDAMENTAL CONCEPTS OF PROBABILITY AND STATISTICS

THREE CREDIT HOURS EACH TERM

Topics to be discussed include: the basic laws of probability, frequency distributions (Binomial, Poisson, Normal, etc.), sampling estimation of parameters, sampling distribu-

tions, confidence intervals, tests of hypotheses, regression, and analysis of variance. An intensive study of the relation of these topics to the topics of high school probability and statistics as proposed by several curriculum revision groups.

MTH 507-508. FUNDAMENTAL CONCEPTS OF ANALYSIS THREE CREDIT HOURS EACH TERM
This course will include the concepts of number, sequence, function of a single real variable and function of several real variables, limit, continuity, total derivative and partial derivative, single integral and multiple integral, infinite series, and applications to geometry, as well as their relation to the material in the high school curriculum.

The Master's degree in Mathematics

See page 30 of this catalog for a description of the requirements for this degree.

MTH 511-512. STATISTICAL INFERENCE THREE CREDIT HOURS EACH TERM
Distribution theory including conditional distributions, order statistics, sufficient statistics, the Rao-Blackwell theorem, point and interval estimation, maximum likelihood estimation, hypothesis testing, likelihood ratio tests, Chebyshev's inequality, central limit theorem.

MTH 521-522. REAL VARIABLES THREE CREDIT HOURS EACH TERM
A brief discussion of some of the elementary notions of set theory, functions, cardinality, order types and ordinals; the topology of the real line, continuity, the Stone-Weierstrass theorem, Lebesgue measure, measurable functions, Lebesgue integration; differentiation and integration, absolute continuity; the classical Banach spaces, product measures and Fubini's theorem; extensions of the Lebesgue integral.

MTH 523-524. MEASURE THEORY AND INTEGRATION THREE CREDIT HOURS EACH TERM
Abstract measure theory; extensions and completions of measures; integration; general set functions; signed measures; Jordan-Hahn decompositions: the Radon-Nikodym theorem and applications; integration over locally compact spaces; regularity; the Riesz-Markoff theorem; integration over locally compact groups. Prerequisites: Mth 521-522 and Mth 471 or 571.

MTH 525-526. COMPLEX VARIABLES THREE CREDIT HOURS EACH TERM
Fundamental concepts, integral theorems, series and the expansion of analytic functions in series, singularities, entire functions; meromorphic functions; analytic continuation; conformal representation. Prerequisite: Mth 422.

MTH 531-532. ADVANCED DIFFERENTIAL EQUATIONS THREE CREDIT HOURS EACH TERM
Existence theorems and numerical methods; linear equations and systems; singularities; asymptotic behavior and stability; self adjoint differential systems and boundary value problems. Prerequisite: Mth 521.

MTH 535-536. PARTIAL DIFFERENTIAL EQUATIONS THREE CREDIT HOURS EACH TERM
Classification of partial differential equations, reduction to canonical form; existence theorems and the generalized Cauchy problem; methods of solution, orthogonal functions, Green's Theorem, and operational methods; the wave equation, Laplace's equation, some problems in the conduction of heat, motion of viscous fluids, the hodograph methods; numerical solutions and existence theorems related to these methods. Prerequisites: Mth 421 and 461.

MTH 545. SPECIAL FUNCTIONS

THREE CREDIT HOURS

The special functions frequently encountered in engineering and the physical sciences are studied. The hypergeometric function and generating functions are used throughout to develop the theory. The theories of infinite products and asymptotic expansions are also discussed. Prerequisites: Mth 422 and 461.

MTH 551-552. METHODS OF MATHEMATICAL PHYSICS

THREE CREDIT HOURS EACH TERM

Linear transformations and matrix theory; the series expansion of functions; linear integral equations; the calculus of variations; linear and non-linear oscillators; eigenvalue problems; partial differential equations and potential theory; functional transformations; special functions. Prerequisite: Consent of instructor.

MTH 555-556. ADVANCED NUMERICAL ANALYSIS

THREE CREDIT HOURS EACH TERM

Quadrature methods and the numerical solution of ordinary differential equations; matrices and large scale linear systems; norms and spectral radii of matrices; modern iterative matrix methods, including the successive overrelaxation method; numerical solution of partial differential equations. Consideration will be given to methods suitable for use on digital computers. Prerequisite: Consent of instructor.

MTH 561-562. MODERN ALGEBRA

THREE CREDIT HOURS EACH TERM

Semi-groups, rings, integral domains and fields; extensions of rings and fields, elementary factorization theory, groups with operators; modules and ideals; finite and infinite field extensions; fields with valuations, real fields and Galois Theory.

MTH 565-566. LINEAR ALGEBRA

THREE CREDIT HOURS EACH TERM

Vector spaces, linear transformations and matrices; determinants, invariant direct-sum decomposition, rational and Jordan canonical forms; inner product spaces, the spectral theorem, bilinear and quadratic forms. Prerequisite: Mth 361 or equivalent.

MTH 571-572. TOPOLOGY

THREE CREDIT HOURS EACH TERM

An axiomatic treatment of the concept of a topological space; various operators on a set which define a topology; bases and subbases; connectedness, compactness; continuity, homeomorphisms, separation properties and countability axioms; regular and normed spaces, filters, function and quotient spaces; metrizable, paracompactness. Uniform spaces.

MTH 573-574. NORMED LINEAR SPACES

THREE CREDIT HOURS EACH TERM

The study of various topologies within linear spaces, with emphasis on Banach and Hilbert Spaces; review of Lebesgue integration; orthogonal expansions; projections, linear transformation, Banach algebras and spectral theory.

MTH 575. DIFFERENTIAL GEOMETRY

THREE CREDIT HOURS

Vector and tensor algebra; covariant differentiation. An introduction to the classical theory of curves and surfaces treated by means of vector and tensor analysis.

MTH 581. MATHEMATICAL LOGIC

THREE CREDIT HOURS

Formalization of propositional calculus, first order theories including predicate calculi, formal number theory, recursive functions, Goedel's incompleteness theorem.

MTH 582. AUTOMATA THEORY

THREE CREDIT HOURS

Finite automata, sequential machines, Turing machines, computability, existence of self-reproducing machines. Prerequisite: Mth 581.

MTH 585-586. RECURSIVE FUNCTIONS THREE CREDIT HOURS EACH TERM

Alternate formulations of effectiveness including recursive functions, Turing machines, Markov algorithms, Church's lambda-computability, Post's normal systems, and Herbrand-Goedel computability; Church's thesis; informal recursive functions and recursively enumerable sets; reducibility, degrees of unsolvability, and the arithmetical hierarchy. Prerequisite: Mth 581.

MTH 590. TOPICS IN MATHEMATICS THREE CREDIT HOURS EACH TERM

This course will be given upon appropriate occasions and will deal with specialized material not covered in the regular courses. It may be taken more than once in different areas. Prerequisite: Consent of Chairman.

MTH 591. CONTEMPORARY PHILOSOPHY OF MATHEMATICS THREE CREDIT HOURS

Cartesian, Humean, Leibnizian, and Kantian doctrines which underlie contemporary philosophy of mathematics; Logicism, Formalism, Intuitionism, and the positions of twentieth-century philosophers of mathematics including Russell, Hilbert, Wittgenstein, and Whitehead. Prerequisite: Mth 581.

MTH 598. THESIS THREE TO SIX CREDIT HOURSMTH 599. PHILOSOPHICAL FOUNDATIONS OF MATHEMATICS THREE CREDIT HOURS

Survey of mathematical logic, Goedel's incompleteness theorem; contemporary philosophy of mathematics; the historical interrelation of philosophy and mathematics. May be replaced by Phl 510 or Mth 591.

Philosophy (PHL)

Dr. Richard R. Baker, *Chairman*

PHL 409. HISTORY OF RECENT PHILOSOPHY THREE CREDIT HOURSPHL 503. PHILOSOPHY OF MAN THREE CREDIT HOURS

A philosophical investigation of man's dignity as discovered through an analysis of his nature, his origin, and his destiny. (Only for those students without sufficient philosophical background for Phl 510.)

PHL 510. PHILOSOPHY OF SCIENCE THREE CREDIT HOURS

A study of the more profound problems that arise in the realms of the sciences but which transcend the boundaries of any special science; such as the definition of science, the foundations of science, the methods of science, the nature of scientific demonstration, the divisions of the sciences, and the unification of scientific knowledge.

PHL 525. THOMISTIC TEXTS AND COMMENTARIES THREE CREDIT HOURS

This course features carefully selected philosophical readings from the writings of Aquinas to be submitted to a critical analysis through the aid of commentaries, including a correlation to the primary Grecian, Neoplatonic, Patristic and Arabic historical sources. A reading knowledge of Latin is desirable.

PHL 540. ARISTOTLE'S *De Anima* AND ST. THOMAS' COMMENTARY THREE CREDIT HOURS

A comparative study relative to problems touching on the philosophy of man, as well as some problematics of human knowledge; but principally contrasting the animistic hylomorphism of Aristotle with the synolistic hylomorphism of Aquinas.

PHL 541. TEXTS OF PLATO

THREE CREDIT HOURS

A detailed analysis of prescribed texts of Plato. The texts selected may vary from year to year. This course, therefore, may be repeated for credit when the topics vary.

PHL 542. TEXTS OF ARISTOTLE

THREE CREDIT HOURS

A detailed analysis of prescribed texts of Aristotle. The texts selected may vary from year to year. This course, therefore, may be repeated for credit when the topic varies.

PHL 545. MODERN FRENCH PHILOSOPHY

THREE CREDIT HOURS

An examination of the leading philosophical movements in France with particular emphasis on the rationalism of Descartes, the spiritualistic realism of Bergson, the positivism of Comte, and the existentialism of contemporary philosophers.

PHL 555. MODERN GERMAN PHILOSOPHY

THREE CREDIT HOURS

A tracing of post-Kantian influences in modern Germanic philosophy through the idealistic developments of Fichte, Schelling and Hegel; stressing their "rationalistic" theological thought, their return to metaphysics and their varying intellectual intuitionisms.

PHL 560. MODERN BRITISH PHILOSOPHY

THREE CREDIT HOURS

A survey of the 17th and 18th century reactionary and transitional empiricists from Bacon and Hobbes through Locke, Berkeley and Hume. Points of stress include: (1) their psychologico-epistemological approach to experience and fact; (2) their relation to positivism; (3) a critique of ideas, the value of knowledge, the notion of substance, causality and realism.

PHL 570. EXISTENTIALIST PHILOSOPHY

THREE CREDIT HOURS

A penetrating study of the existentialist movement, its nature and causes, along with a survey of the position of some of the outstanding existentialists, such as Kierkegaard, Sartre, Jaspers, Heidegger, and Marcel.

PHL 575. CONTEMPORARY PHILOSOPHIES OF EVOLUTION

THREE CREDIT HOURS

A study of the influence of evolutionary thought in Bergson, Pragmatism of James and Dewey, Marxism, contemporary Christian thought, especially that of Teilhard de Chardin.

PHL 580. CONTEMPORARY NATURALISM AND REALISM

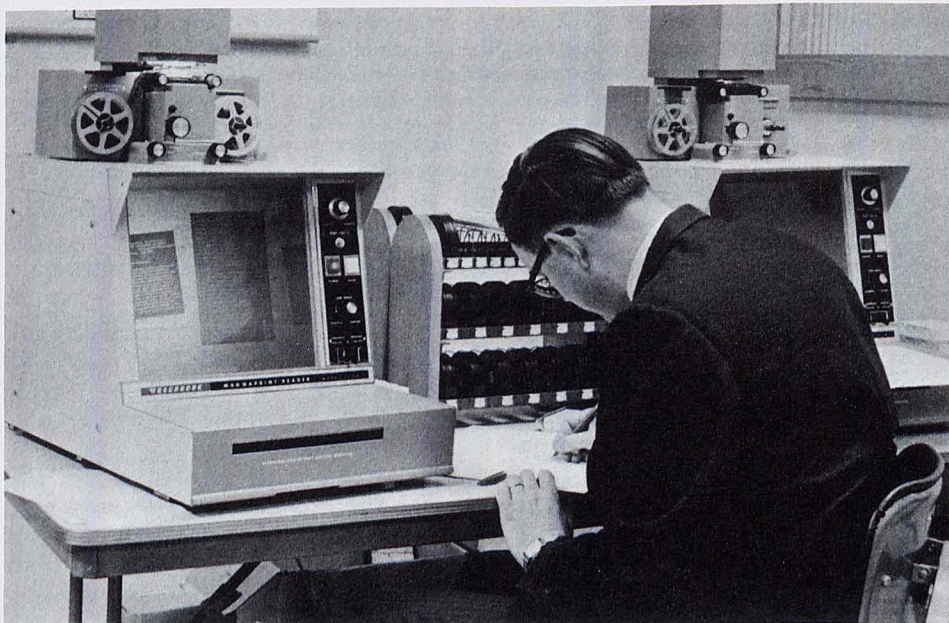
THREE CREDIT HOURS

An expository and critical study of some areas of contemporary currents in philosophical thought: naturalism, principally the American naturalism of John Dewey; the intentionality and axiological qualities of a realistic philosophy; the philosophy of the human personality in its philosophico-Christian dimensions.

PHL 585. PHENOMENOLOGY

THREE CREDIT HOURS

An analysis of the phenomenological method based primarily on a critical study of Husserl's *Cartesian Meditations*, the fundamental commentary of the founder of phenomenology on his own method.



Physics (PHY)

Dr. Joseph Kepes, *Chairman*

Any 300-400 level course in Physics may be taken for graduate credit under the usual conditions. All such courses must have the approval of the student's faculty advisor.

PHY 505. MODERN PHYSICS FOR ENGINEERS

THREE CREDIT HOURS

Selected topics in atomic physics, the solid state, and nuclear physics; elementary quantum mechanics and application to the free-particle and the one-electron atom; X-rays, elementary particles, cosmic rays will also be studied to some extent.

PHY 511. CLASSICAL MECHANICS

THREE CREDIT HOURS

Analytical dynamics; variational techniques; Hamilton's Principle; the Lagrangian, the Hamiltonian, Hamilton-Jacobi and Poisson Bracket formulations of mechanics; Galilean and Lorentz invariance; and relativistic dynamics. Prerequisite: Phy 303-304 or equivalent.

PHY 512. CLASSICAL THEORY OF FIELDS

THREE CREDIT HOURS

Hamilton's Principle extended to fields; Lagrangian formulation used to obtain conservation laws, symmetry and invariance principles; the Klein-Gordon, Maxwell, and Dirac equations cited as examples of scalar, vector, and spinor fields; interacting fields and radiative solutions. Prerequisite: Phy 511 or consent of Instructor.

PHY 513. ELECTROMAGNETIC THEORY

THREE CREDIT HOURS

Electrostatic Fields; Poisson's and Laplace's Equations; Green's Theorem; vector and scalar magnetic potential; Maxwell's Equations; electromagnetic waves; dipole radiation;

retarded potentials; Lienard-Wiechert Formulation; interference and diffraction, plus other selected topics. Prerequisite: Phy 511.

PHY 515. STATISTICAL MECHANICS THREE CREDIT HOURS

Basic assumptions; statistics of independent particles; the Maxwell Boltzman Distribution; Fermi-Dirac, Bose-Einstein Statistics; applications of distribution laws.

PHY 516. PHILOSOPHICAL BASIS OF MODERN PHYSICS THREE CREDIT HOURS

The implications of physical concepts are studied; nature, basis and method of physics; the historical relationship between philosophy and physics from the time of the Greeks.

PHY 517. QUANTUM MECHANICS THREE CREDIT HOURS

The Schroedinger Wave Equation; matrix mechanics, operators; perturbation theory; approximation methods and scattering theory. Prerequisite: Phy 511.

PHY 520. ADVANCED SOLID STATE PHYSICS THREE CREDIT HOURS

Crystal structure, thermal properties of solids; insulators; band theory of solids; semiconductors; luminescence. Prerequisite: Phy 517 or consent of instructor.

PHY 521. ADVANCED NUCLEAR PHYSICS THREE CREDIT HOURS

Basic properties of the nucleus; the deuteron; nuclear binding energies; scattering; nuclear forces; high energy particles. Prerequisite: Phy 517 or consent of instructor.

PHY 523. ADVANCED ELECTRICITY AND MAGNETISM I THREE CREDIT HOURS

The boundary value problems of electrostatics and magnetostatics in material media; conservation laws; existence and nature of electromagnetic radiation derived from Maxwell's equations; wave guides and Resonant Cavities.

PHY 524. ADVANCED ELECTRICITY AND MAGNETISM II THREE CREDIT HOURS

Radiating Systems, interference, and diffraction; special applications of electromagnetic theory made to plasmas, charged particle collisions, Cherenkov radiation, Bremsstrahlung, and multipole fields. Prerequisite: Phy 523.

PHY 525. QUANTUM MECHANICS I THREE CREDIT HOURS

The physical basis of quantum mechanics, wave packets, free particle motion; Schroedinger's equation applied to potential problems; Harmonic Oscillator and the hydrogen atom; three dimensional extrapolation and scattering. Prerequisite: Phy 511.

PHY 526. QUANTUM MECHANICS II THREE CREDIT HOURS

Linear vector spaces and spin; time dependent and time independent perturbation theory; the formal theory of scattering is developed and the importance of symmetries and rotations is discussed. Prerequisite: Phy 525.

PHY 531. ADVANCED GRADUATE LABORATORY THREE CREDIT HOURS

Advanced experiments in classical mechanics, electricity, magnetism, atomic, nuclear and solid state physics. Prerequisite: Approval of Graduate advisor.

PHY 590. GRADUATE THESIS UP TO SIX CREDIT HOURS

A research problem in selected topics of physics resulting in a written thesis.

PHY 595. GRADUATE SEMINAR NO CREDIT

Weekly Seminars presented by graduate students, faculty and guest lecturers on current topics.

PHY 599. SPECIAL PROBLEMS

ONE TO THREE CREDIT HOURS

Laboratory or library work in selected topics of physics. Topics include: Plasma Physics, Polymer Physics, Advanced Quantum Mechanics. Prerequisite: Approval of Graduate Advisor.

Political Science (POL)

Dr. Norbert C. Brockman, S.M., *Chairman*

Graduate students in Political Science may take 300-400 level courses for graduate credit, under the usual conditions, but only with the permission of the Chairman of the Department.

POL 501. SCOPE AND METHOD IN POLITICAL SCIENCE

THREE CREDIT HOURS

Explores the relation of Political Science to other disciplines, the proper methodologies, and the basic concepts of the study of politics.

POL 504. THE SOVIET BLOC

THREE CREDIT HOURS

Considers the political structure and economic organization of the communist world, with emphasis upon the Soviet Union and Communist China.

POL 506. GEOPOLITICS

THREE CREDIT HOURS

Basic geopolitical concepts of land, sea, air, and military power are studied in the context of global geostrategy. A series of critical areas are taken in depth.

POL 508. AMERICAN FOREIGN POLICY

THREE CREDIT HOURS

Attention will be given to the process of policy development and the substance of American foreign policies in regard to selected areas and problems.

POL 510. FEDERAL PUBLIC ADMINISTRATION

THREE CREDIT HOURS

A study of the administrative system and the administrative process in the American national government. Structural and behavioral approaches are compared.

POL 513. POLITICAL PHILOSOPHY

THREE CREDIT HOURS

A study of the nature, origin and end of the political community; the forms and functions of government; and such specific topics as war and peace, political authority, and individual rights.

POL 514. JURISPRUDENCE

THREE CREDIT HOURS

After a brief survey of the history of legal philosophy, the basic problems in the philosophy of law are investigated, with a consideration of legal reasoning in the common-law system.

POL 515. LATIN AMERICAN POLITICAL SYSTEMS

THREE CREDIT HOURS

A study of the governments and political systems of the Latin American states, concentrating on the major nations. U.S. policies toward this area are discussed.

POL 521. INTERGOVERNMENTAL RELATIONS

THREE CREDIT HOURS

Interaction of different levels of government in the United States; problems of federalism; interstate compacts; federal-urban problems.

POL 525. AFRICAN POLITICAL SYSTEMS

THREE CREDIT HOURS

A study of the politics and governments of Black Africa, with emphasis upon contemporary developments.

- POL 530. INTERNATIONAL LAW THREE CREDIT HOURS
Principles and practice in public international law, including study of sources, institutions, and leading cases.
- POL 535. PUBLIC FINANCE THREE CREDIT HOURS
Study of tax systems, the budgetary process, and public fiscal management, with emphasis on current practice and problems.
- POL 541. CHURCH AND STATE THREE CREDIT HOURS
A definition of the problem in terms of institutions; its historical perspectives with emphasis upon its contemporary significance. A presentation of the basic elements involved in any solution of the problem.
- POL 545. COMMUNITY POLITICS AND MOBILIZATION THREE CREDIT HOURS
A study of the formal and informal patterns of political action and government in urban areas, relations among government units, community power structure and the formulation and execution of public policy.
- POL 550. GOVERNMENT AND BUSINESS THREE CREDIT HOURS
An analysis of the economic aspects and consequences of government regulation over social and business activities.
- POL 552. COMMUNITY PLANNING THREE CREDIT HOURS
Urban land utilization with an emphasis upon zoning, housing, and economic development. Urban renewal and criteria for land-use in inner-city areas are considered.
- POL 564. MARXIST POLITICAL THOUGHT THREE CREDIT HOURS
Early influences on Marxist thought; political philosophy of Marx and Engels; development of communist thought in the Soviet Union; Mao Tse-tung.
- POL 568. STUDIES IN POLITICAL THEORY THREE CREDIT HOURS
Directed research and readings on specific topics. May be repeated once.
- POL 569. SEMINAR IN POLITICAL THEORY THREE CREDIT HOURS
A research seminar with emphasis upon the effective use of research methods in studying particular problems. May be repeated once when the content changes.
- POL 571. CONSTITUTIONAL LAW THREE CREDIT HOURS
A study of the judicial process in the development of the American Constitution. Competing constitutional philosophies are explored in the context of landmark cases. Emphasis is placed upon contemporary developments.
- POL 572. ADMINISTRATIVE LAW THREE CREDIT HOURS
The judicial functions and activities of federal agencies; formal and informal processes in administrative hearings; basic principles of administrative law; judicial interpretation; the question of the increased judicialization of the administrative process.
- POL 576. PUBLIC PERSONNEL ADMINISTRATION THREE CREDIT HOURS
A survey of the development of personnel administration in government. Specific questions such as position classification, morale, and recruitment are considered. Supplemented by visiting lecturers from government agencies.

- POL 577. MUNICIPAL GOVERNMENT THREE CREDIT HOURS
An analysis of urban government in the United States, with emphasis on contemporary problems of organization of services, urban renewal, and city planning.
- POL 578. STUDIES IN PUBLIC ADMINISTRATION THREE CREDIT HOURS
Directed research and readings on specific topics. May be repeated once.
- POL 579. SEMINAR IN GOVERNMENT THREE CREDIT HOURS
A research seminar with emphasis placed upon the effective use of research methods in studying particular problems. May be repeated once when the content changes.
- POL 588. STUDIES IN INTERNATIONAL RELATIONS THREE CREDIT HOURS
Directed research and readings on specific topics. May be repeated once.
- POL 589. SEMINAR IN INTERNATIONAL AFFAIRS THREE CREDIT HOURS
A research seminar with emphasis placed upon the effective use of research methods in studying particular problems. May be repeated once when the content changes.
- POL 595-596. GOVERNMENT INTERNSHIP THREE CREDIT HOURS EACH TERM
Assignment to appropriate government agencies or units for the purpose of gaining wide experience with the administrative system through a rotating program of work experience. Previous experience in government service or with community agencies may be evaluated and applied toward this requirement.
- POL 599. THESIS SIX CREDIT HOURS
A research monograph demonstrating basic command of appropriate literature and research methodology.

Psychology (Psy)

Dr. Anthony Debons, *Chairman*

- PSY 402. PSYCHOLOGICAL TESTS AND MEASUREMENTS THREE CREDIT HOURS
Historical background of testing and the ethics involved. Concentrates on the requirements of acceptable tests in general. Reviews principal tests of intelligence, personality, aptitude, etc. Prerequisite: Psy 302, 204 or 201.
- PSY 412. INTERVIEWING AND COUNSELING PROCEDURE THREE CREDIT HOURS
Theories and techniques of interviewing and counseling are discussed and evaluated. Practice provided by role playing and by case study.
- PSY 501. ADVANCED STATISTICS THREE CREDIT HOURS
To provide a greater depth of understanding of the basic concepts of statistics and to introduce the students to some advanced statistical methods. Prerequisite: None.
- PSY 504. COMPUTERS AND RESEARCH DESIGN I THREE CREDIT HOURS
An introduction to computer technology with emphasis on the use of computers in facilitating psychological experimentation. Student required to design experiment and to use the computer in the implementation of the experiment. Prerequisite: Psy 501, and two semesters of Experimental Psychology. Two hours lecture and one two-hour lab per week.
- PSY 505. COMPUTERS AND RESEARCH DESIGN II THREE CREDIT HOURS
Continuation of Psy 504. Prerequisite: Psy 504. Two hours lecture and one two-hour lab per week.

Psy 508. ADVANCED EXPERIMENTAL PSYCHOLOGY THREE CREDIT HOURS
 Theory of scaling; concepts on the transformation of data as applied to problems of sensory and cognitive functions. Prerequisite: Psy 501, permission of advisor. Two hours lecture and one two-hour lab per week.

Psy 511. INDIVIDUAL TESTING I THREE CREDIT HOURS
 Focuses upon individual testing theory and methodology of children and pre-school youngsters. Familiarization with the clinical application of those individually administered instruments for assessing cognitive functioning will be treated generally while major emphasis will be upon the administration, scoring, and interpretation of the Stanford-Binet and Wechsler Intelligence Scale for Children. Prerequisite: Psy 306, 402.

Psy 512. INDIVIDUAL TESTING II THREE CREDIT HOURS
 Focuses upon individual testing theory and methodology of adolescents and adults. The clinical implementation of individually administered instruments which are generally employed for determining levels of intellectual or cognitive functioning will be presented to the student on technical and practical familiarization levels while the major emphasis will be upon the administration, scoring, and interpretation of the Wechsler Adult Intelligence Scale and the Wechsler-Bellevue Scales. Prerequisite: Psy 315, 402, 501.

Psy 513. PROJECTIVE TEST I TWO CREDIT HOURS
 Survey of the historical background and theoretical rationale underlying projective techniques, excepting the Rorschach and Thematic Apperception Test. Introduction to principles governing their administration, scoring, and interpretation. Prerequisite: Psy 315, 402, 560.

Psy 514. PROJECTIVE TEST II TWO CREDIT HOURS
 Intensive study of the Rorschach and Thematic Apperception Test. Training in administration and principles of scoring, and introduction to interpretation. Prerequisite: Psy 315, 402, 560.

Psy 519. PRACTICUM IN PROJECTIVE TECHNIQUES THREE CREDIT HOURS
 To give the student a first opportunity to gain familiarity with the administration, scoring, and interpretation of projective tests. The Rorschach and TAT will be emphasized, but the student will also be expected to show progressive mastery of other projective tests.

Psy 521. DEVELOPMENTAL PSYCHOLOGY THREE CREDIT HOURS
 Theory and research on psychological development from conception through adolescence, maturation of behavior systems, the role of social learning in development, the effects of early experience on personality development, critical stages in development. Prerequisite: Permission of advisor.

Psy 525. PSYCHOLOGY OF OCCUPATIONS THREE CREDIT HOURS
 Intended for students in counselling, this course surveys from a psychological standpoint the nature and meaning of work in the life of man. Occupational classifications, theories of work, and personality variables related to work are explored.

Psy 530. LEARNING THREE CREDIT HOURS
 To familiarize the students with the basic approach, concepts, and findings in the area of the psychology of learning. Prerequisite: None.

- Psy 531. LEARNING THEORY THREE CREDIT HOURS
To familiarize the students with the important learning theories of the past and the present; and the major issues among the theories. Prerequisite: Psy 501 and 530.
- Psy 532. THEORIES OF PERCEPTION THREE CREDIT HOURS
A systematic study of methods and research findings in the field of human perception, together with an evaluation of theoretical interpretations. Prerequisite: Psy 501, 508 or 504, and permission of advisor.
- Psy 533. DECISION PROCESSES THREE CREDIT HOURS
The purpose of this course is to provide an understanding of the theoretical and empirical developments in the psychology of human decision-making and choice behavior. The relation of various models of decision behavior to other problem areas in psychology, e.g., learning and perception, are studied.
- Psy 535. HISTORY AND SYSTEMS OF PSYCHOLOGY THREE CREDIT HOURS
Analysis and critical evaluation of contemporary psychological systems with an overview of their historical antecedents. Prerequisite: None.
- Psy 540. INTRODUCTION TO INFORMATION SYSTEMS THREE CREDIT HOURS
Survey of information systems in medicine, government, industrial management, library operations, and in other areas. General principles governing the design and implementation of such systems are studied.
- Psy 541. COMPUTER APPLICATIONS TO BEHAVIORAL SCIENCE THREE CREDIT HOURS
A survey is made of several psychological studies in which the use of the computer was critical to the experimental design. Prerequisite: Psy 504, permission of the advisor.
- Psy 542. COMMUNICATION THEORY I THREE CREDIT HOURS
Introduction to the concepts of signs, order, information and entropy. Survey of communication techniques and theory. Codes, signs and redundancy, speech production and speech perception. Phonemics and acoustical signal analysis are discussed.
- Psy 543. COMMUNICATION THEORY II (PSYCHOLINGUISTICS) THREE CREDIT HOURS
A continuation of Communication Theory I. Primary emphasis is on psycholinguistics.
- Psy 560. THEORIES OF PERSONALITY THREE CREDIT HOURS
Exposition and discussion of contemporary personality theories with illustrations of the relation between theory and research. Prerequisite: None.
- Psy 561. CLINICAL PSYCHOLOGY THREE CREDIT HOURS
An integrated approach to the subject matter of clinical psychology through clinical inquiry (research) and clinical service (practice). Theory and use of clinical methods in psychology including interviewing, individual testing, observation, case documentation and professional problems. Aim is to view the so-called "disease entities" and "facts" as constructs of clinical experience and valid only to the extent that the methods through which they were inferred are valid. Prerequisite: Psy 312, permission of advisor.
- Psy 562. CLINICAL DIAGNOSIS THREE CREDIT HOURS
To train the student to develop sensitivity in interviewing, clinical observation, and test interpretation leading to a complete and unified psychological report.

Psy 563. THEORIES OF THERAPEUTIC COUNSELING THREE CREDIT HOURS
 Conceptions of counseling; place of counseling in psychology and allied fields; philosophical issues in counseling; values in counseling; the counseling process; the nature of counseling and psychotherapy; comparative techniques; training of the counselor; experiments in counseling. Prerequisite: Permission of advisor.

Psy 565. PSYCHOPHYSIOLOGY THREE CREDIT HOURS
 The neurophysiological analysis of attention, sensation, perception, emotion, motivation, and learning. Electrophysiological methods are studied as techniques in the study of the nervous system and behavior.

Psy 579. PRACTICUM IN INTERVIEWING AND COUNSELING TWO CREDIT HOURS
 This course is designed to give the graduate student experience in counseling undergraduate students under supervision. This course would follow courses in theory in the counseling area. Prerequisite: Permission of advisor.

Psy 580. DEVELOPMENT OF MAN-MACHINE SYSTEMS THREE CREDIT HOURS
 Description of man-machine systems is provided upon which information processing, environmental engineering, and principles of system development are studied and discussed. Prerequisite: Permission of advisor.

Psy 581. CONTROL DISPLAY SYSTEMS THREE CREDIT HOURS
 The course is designed to help the student relate the measurement techniques and the findings of experimental psychology to the engineering problems of the operation by people of machines, particularly vehicles and computer systems. The information flow through the human operator in these systems will be covered from the standpoint of theory, research, evaluation of systems, and the input (displays) and output (controls) equipment on which that flow depends.

Psy 583. SIMULATION THEORY AND PRACTICE THREE CREDIT HOURS
 Simulation as differentiated in the various scientific and engineering disciplines is studied. Simulation experiments are described to emphasize differences in design and methodology. Prerequisite: Psy 540.

Psy 585. EXPERIMENTAL SOCIAL PSYCHOLOGY THREE CREDIT HOURS
 Develop an understanding and working knowledge of scientific method in general and social psychology methods in specific. Demonstrate an ability to plan, conduct, and report on investigations in social psychology. Stress is placed on applying design methods to concepts and issues relevant to social psychology. Prerequisite: Psy 302, 308, 408.

Psy 590-591. INTRODUCTION TO MATHEMATICAL PSYCHOLOGY THREE CREDIT HOURS EACH TERM
 To familiarize the students with the role of mathematics, as a discursive, normative, and descriptive tool in psychology. Prerequisite: Mth 210, 211, Psy 508, 530.

Psy 592. SEMINAR IN STATISTICS THREE CREDIT HOURS
 To give the student a working knowledge of specialized statistical techniques such as analysis of variance, nonparametric statistics, correlational methods, etc. The specific statistical technique covered in the course may be different from one offering to the next depending upon the interests and desires of the graduate students and the judgments of the departmental faculty. Prerequisite: Psy 501.

Psy 597. READINGS ONE-THREE CREDIT HOURS
 Intended to stimulate graduate students for establishing competence in areas of research and investigation.

Psy 598. SELECTED PROBLEMS ONE-SIX CREDIT HOURS
 Individual graduate students explore particular psychological areas of interest. A term report is required. May be repeated. Prerequisite: Permission of advisor.

Psy 599. THESIS THREE CREDIT HOURS
 Under guidance of major advisor student develops problem, constructs apparatus, collects data and provides interpretation of the data for staff assessment.

Students pursuing the M.S. program may take courses from the following, based upon the recommendation of their advisor.

Cps 314. ELECTRONICS FOR SCIENTISTS THREE CREDIT HOURS

Cps 365. APPLIED BOOLEAN ALGEBRA THREE CREDIT HOURS

Cps 481. MATHEMATICAL LOGIC THREE CREDIT HOURS

Cps 482. INTRODUCTION TO AUTOMATION THEORY THREE CREDIT HOURS

Cps 399. SPECIAL PROBLEMS (IN COMPUTER SCIENCE) ONE TO THREE CREDIT HOURS

Cps 499. SPECIAL TOPICS THREE CREDIT HOURS

INE 421-2. RELIABILITY THREE CREDIT HOURS

All students in the graduate program in Psychology are required to take Phl 510 Philosophy of Science as part of their core program.

Theological Studies (THL) Rev. Matthew F. Kohmescher, S.M., *Chairman*

Any of the 300 and 400 level undergraduate courses in Theological Studies may count for graduate credit under the usual conditions. Prerequisite for all non-majors in theology for any graduate course is Thl 504, Introduction to Theology.

THL 502. THE COMPARATIVE STUDY OF RELIGION TWO CREDIT HOURS
 An introduction to the comparative study of religion from Max Mueller to contemporary critical authors and methodologies. This will include a brief approach to the major religions not included in the other core courses.

THL 503. WORLD RELIGIONS TWO CREDIT HOURS
 An historical survey of the origin, thought, action, and fellowship of the world's religions excluding Judaism and Christianity, and stressing Islam, Hinduism, Buddhism, Taoism, Confucianism, and Shinto.

THL 504. INTRODUCTION TO THEOLOGY TWO CREDIT HOURS
 An introductory graduate course for the student who is specializing in another graduate department of the university. After this prerequisite he may pursue other courses in theology.

THL 506. SYSTEMATIC THEOLOGY TWO CREDIT HOURS
 An analysis of the content of key Christian doctrines including God, man, Christ,

redemption, Church, grace, and eschatology, with special attention given to sources, methodology, theological language, and the relation to philosophy.

- THL 507. PHENOMENOLOGY OF RELIGION TWO CREDIT HOURS
 The place of religion in phenomenology; an analysis of the phenomena of the person, of the sacred, and of God.
- THL 508. NON-RELIGIOUS INTERPRETATIONS OF REALITY IN THE
 TWENTIETH CENTURY TWO CREDIT HOURS
 An attempt to investigate and analyze without religious presuppositions, representative authors and movements that offer a non-religious understanding of reality in art, literature, philosophy, the social sciences, science, and politics, and concluding with a theological appraisal.
- THL 509. THEOLOGY AND PHILOSOPHY TWO CREDIT HOURS
 An examination of the historical development between Theology and Philosophy, attempting to establish the future relationship between theological method and philosophical inquiry.
- THL 510. THE PATRISTIC PERIOD TWO CREDIT HOURS
 A study of the life and thought of the Church during the patristic age emphasizing the theology of the Greek and Latin Fathers and the early Church Councils.
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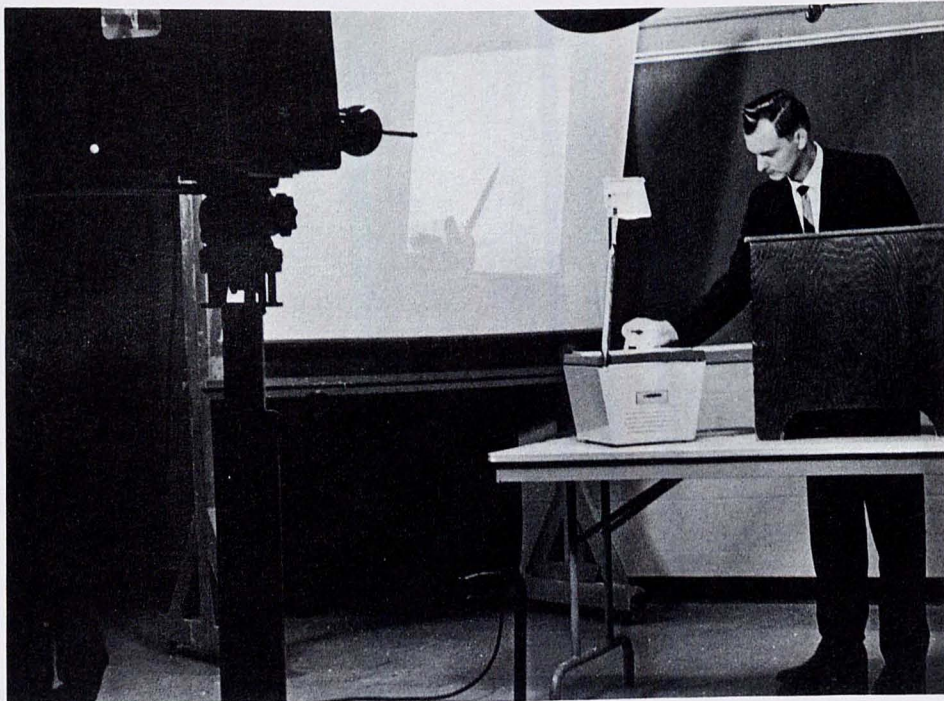
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 Snyder, Barth J., M.A., J.D.
 Viktor, Desider, Ph.D.
 Walden, Esther, Ph.D.
 Winger, Bernard J., M.A.

School of Education

- Anderson, Gladys M., M.A.
 Bourgeois, Sr. M. Audrey, C.PP.S., Ph.D.
- Campanelle, Thomas C., Ph.D.
 Chavez, Simon J., Ed.D.

Edgington, Orman R., Ph.D.
Joseph, Ellis A., Ph.D.
Leary, Daniel L., Ph.D.
O'Donnell, John R., Ed.D.
Panzer, Bro. Joseph J., S.M., Ph.D.

Riley, Sr. M. Felicitas, C.P.P.S., Ph.D.
Stueve, Rev. Bernard, S.M., Ph.D.
Toth, John P., Ed.D.
Wogaman, Maurice A., Ed.D.

School of Engineering

Bobal, Michael A., Ph.D.
Chuang, Henry N., Ph.D.
Horwedel, C. Richard, Ph.D.
Kraft, David C., Ph.D.
Lewis, Donald E., Ph.D.
Ray, Alden E., Ph.D.

Ryckman, Seymour J., M.S.
Schmid, Merle D., Ph.D.
Schmidt, Bernhard M., Ph.D.
Tsui, James B., Ph.D.
Wilder, Jesse H., M.S.
Willis, Max S., Ph.D.

RETROSPECT AND PROSPECT

The first organized program of graduate work at the University of Dayton was set up in the summer of 1939. It was modest in its beginnings, being limited to offerings in the fields of Education and English. This summer program was continued immediately in the regular school year of 1939-40, with an additional field in Philosophy. The faculty and students of the new unit formed a distinct division, having its own administration and its own objectives within the general framework of the educational policies of the University.

In the summer of 1942 the offerings of the Graduate Division were further extended to include the fields of Economics and Psychology, and in January of 1943 Political Science was added.

The content, policies, and scope of the graduate work at the University of Dayton grew out of the discussions and under the guidance of the Graduate Council of Ohio, particularly those held at Columbus in 1939, and out of the needs and demands of students in the Dayton area.

In this form the graduate division of the University carried on a successful program of work until 1949, when it was temporarily discontinued by the University on its own initiative, in order to devote all its facilities and personnel to the rapidly expanding undergraduate enrollment that flooded the campus after World War II.

During the period from 1945 to 1956, the University, therefore, concentrated its efforts on strengthening the undergraduate program in its facilities and faculty, having in view at all times the resumption of graduate work at the earliest possible date.

In 1956-57 a searching self-survey of the University was conducted, followed by an intensive program of self-improvement over the succeeding years, that gave ground for taking up again, with prudence and discretion, the kind of advanced work which the very name "University" connotes.

Accordingly, with clearance from the North Central Association of Colleges and Secondary Schools, and with the authorization of the State Department of Education of Ohio, the graduate work of the University of Dayton was reactivated in the summer of 1960, with three distinct programs in the field of Education, leading toward a Master of Science in Education degree.

Through a rigorous investigation by a Committee on Graduate Studies, specifically created for the purpose, the departments of Theological Studies, History, Mathematics, and Chemistry were cleared for advanced work, and, in the summer of 1961, the Graduate School of Arts and Sciences was inaugurated to administer programs leading to the Master of Arts and Master of Science degrees.

After careful study of local needs and the resources of the School of Engineering, the University further expanded its graduate offerings by the initiation of a program of study leading to the Master of Science in Engineering degree. This program was launched in the fall semester 1961-62.

Finally, the School of Business Administration was cleared for graduate work leading to the M.B.A. degree, in the school year 1963-64.

For more detailed information on any program, write to either the Office for Graduate Studies or to the Dean of the appropriate School.

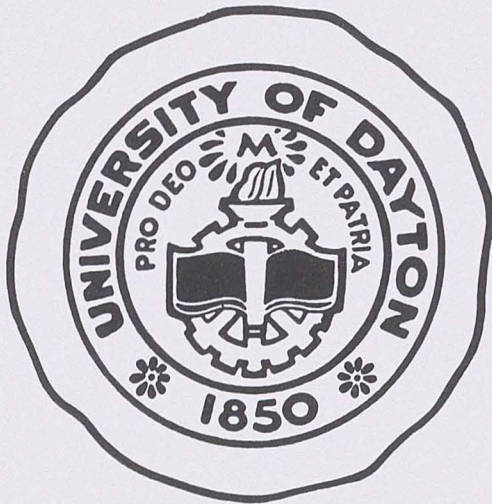
Office for Graduate Studies	Office hours:
St. Mary's Hall—Room 122	8:30 a.m. to 12:00 noon
Telephone extension, 317	1:00 p.m. to 4:30 p.m.
	After 4:30 p.m., by appointment

Dr. Leonard A. Mann, S.M.	Office hours:
Dean, College of Arts and Sciences	Please arrange an appointment
Sherman Hall—Room 108	
Telephone extension, 232	

Dr. Joseph J. Panzer, S.M.	Office hours:
Dean, School of Education	Please arrange an appointment
Chaminade Hall—Room 106	
Telephone extension, 532	

Dr. Maurice R. Graney	Office hours:
Dean, School of Engineering	Please arrange an appointment
Wohlleben Hall—Room 319	
Telephone extension, 217	

Prof. William J. Hoben	Office hours:
Dean, School of Business Administration	Please arrange an appointment
Miriam Hall—Room 230	
Telephone extension, 361	



The Seal of the University of Dayton was created in 1920 when the school amended its articles of incorporation with the State of Ohio to change its name from St. Mary's College. The date 1850 represents the original foundation of this institution.

The open book together with the geared wheel fittingly conveys the interrelation between the humanities and the sciences both illuminated by the torch of God-given intellect and faith. The flaming torch serves, moreover, to emblazon the letter "M" proclaiming the Marian spirit of the religious organization (Marianists) which conducts the University.

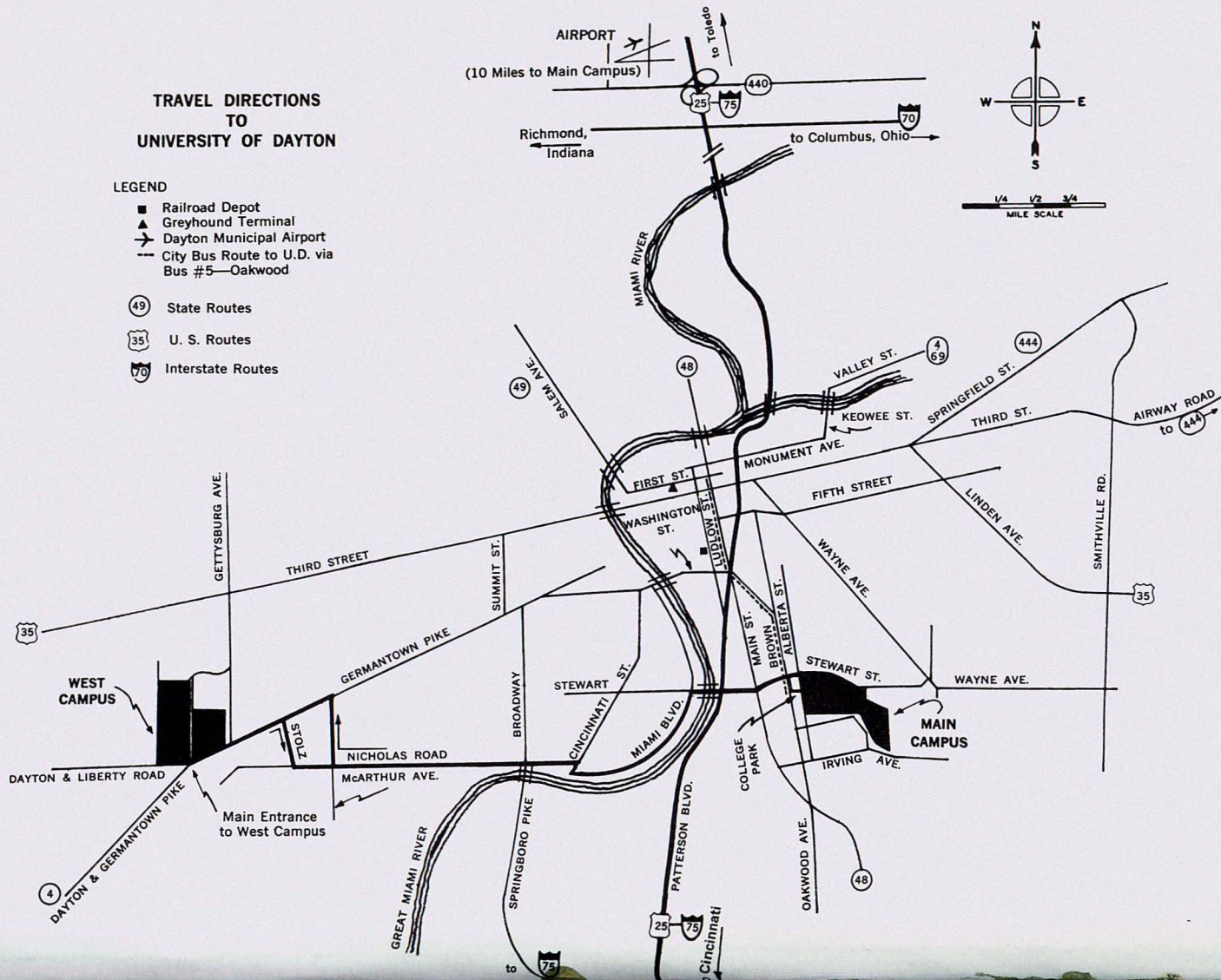
Finally the University's motto "Pro Deo et Patria" (For God and Country) is a constant reminder that the completeness of education lies in serving both God and mankind.

TRAVEL DIRECTIONS TO UNIVERSITY OF DAYTON

LEGEND

- Railroad Depot
- ▲ Greyhound Terminal
- Dayton Municipal Airport
- City Bus Route to U.D. via Bus #5—Oakwood

- (49) State Routes
- (35) U. S. Routes
- (70) Interstate Routes



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