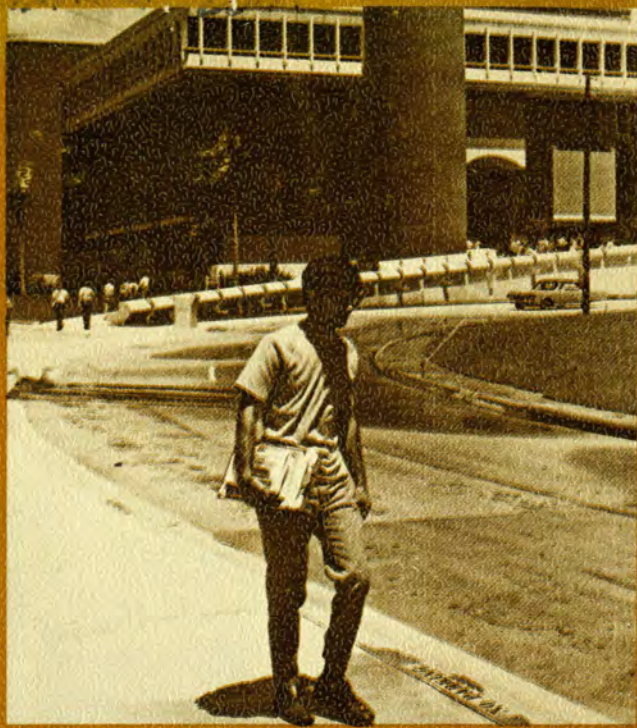


**FLORIDA
TECHNOLOGICAL
UNIVERSITY**



1970-71 BULLETIN

21P 32816

STUDENT - FACULTY RATIO

FLORIDA TECHNOLOGICAL UNIVERSITY
1970-71 BULLETIN

Volume 4, Number 2

April, 1971

Orlando, Florida 32816



PEGASUS was the winged horse of the muses in Greek Mythology. He carried their hopes, their aspirations, and their poetry into the skies. PEGASUS is as futuristic as tomorrow's space exploration in our solar system and into the universe beyond. The seal also bridges the gap between the humanities and space technology.

Florida Technological University reserves the right to change without notice any of the materials — information, requirements, regulations — published in this Bulletin.

Florida Technological University is an Equal Opportunity Employer.

ACCENT ON THE INDIVIDUAL and ON EXCELLENCE

Answer CR 72152

BARBARA WALDEN

Do NOT Remove.

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ENVIRONMENTAL SYSTEMS MGMT.

44 Qts. Hrs.	Freshman
45-90	Soph.
90-134	Jr.
134-	Senior

STATE OF FLORIDA BOARD OF EDUCATION

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Governor

Floyd T. Christian
Commissioner of Education

Richard B. Stone
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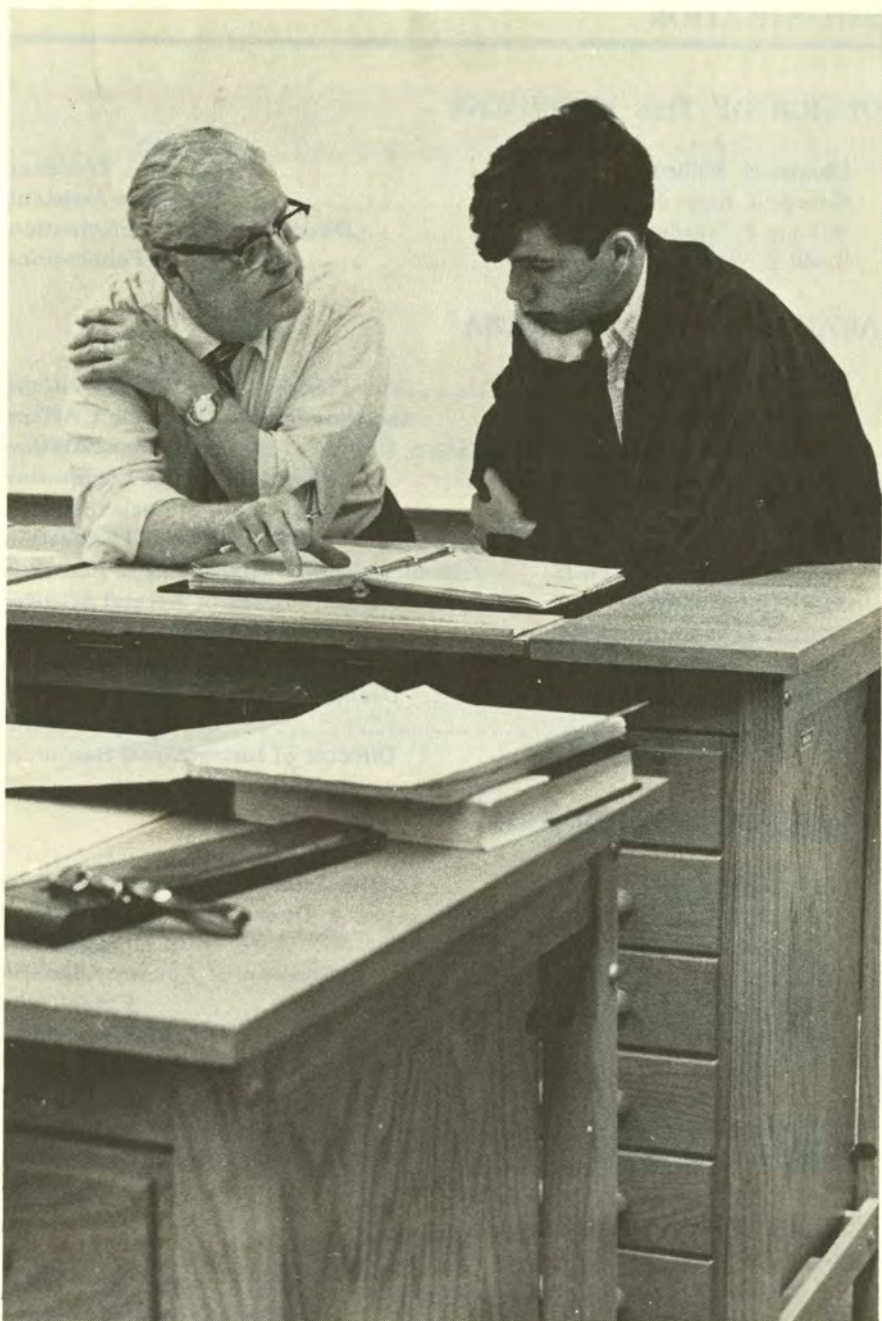
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"THE INDIVIDUAL STUDENT AT FTU IS THE CENTER OF ATTENTION. THERE IS A VERY FAVORABLE FACULTY-STUDENT RATIO OF 1-16."

ADMINISTRATION

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Joseph Gomez, M.Ed.A.	Comptroller
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John J. O'Rourke, M.S.	Director of Placement
William L. Proctor, Ph.D.	Dean of Men
Kenneth H. Renner, M.P.H.	Director of Intramural Sports
B. Gwen Sarchet, M.A.	Dean of Women
Edward W. Stoner, M.D.	Director of Student Health Service
David A. Tucker, Ph.D.	Director of Developmental Center

* Leave of Absence

WHERE TO GO FOR ANSWERS

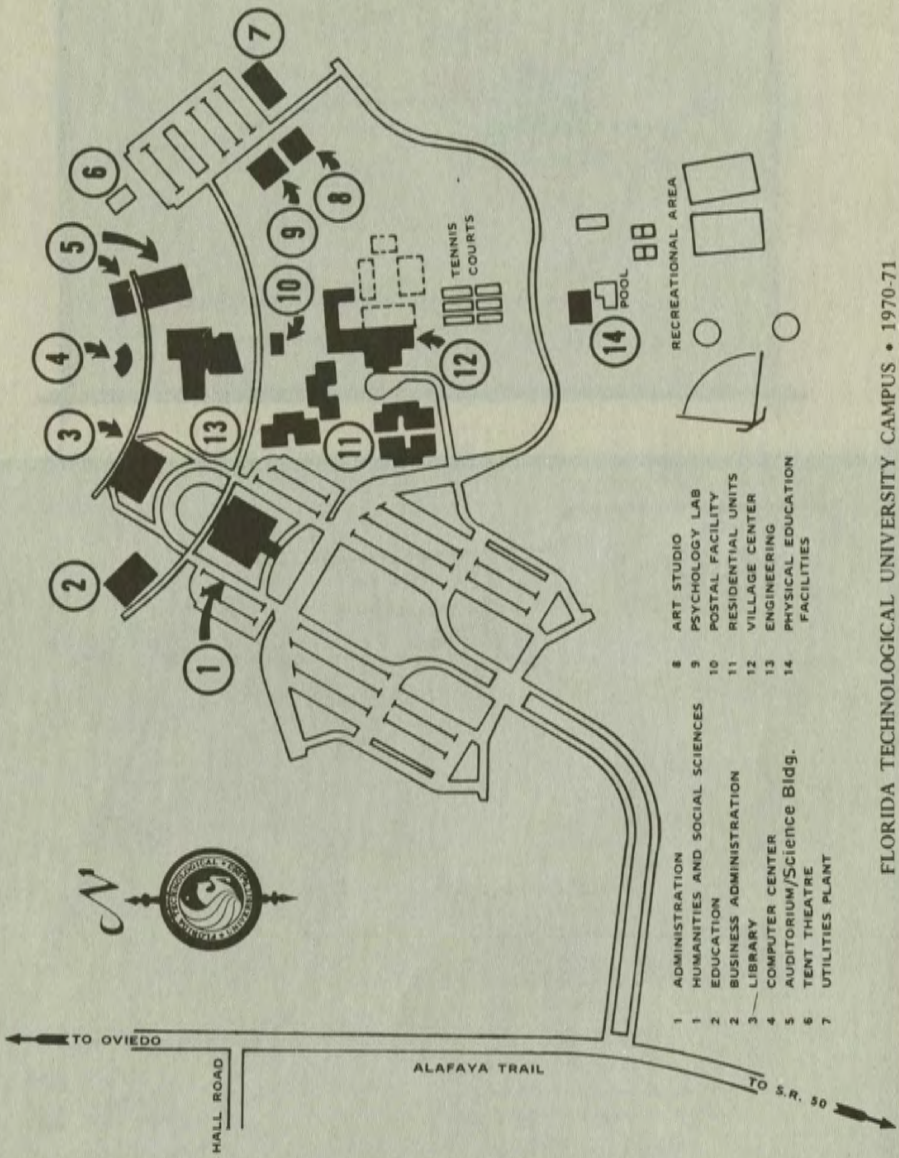
QUESTIONS REGARDING	WHO TO SEE	WHERE*
Academic Matters	Academic Adviser	
Academic Status	Registrar	AD 165
Admission, Graduate or Undergraduate	Admissions Office	AD 165
Add, Drop, or Change Courses	Registrar	AD 165
Books, Supplies, and Sundry Items	Bookstore	LR B-3
Borrowing Books from Another Library	Library	LR 4th Fl
Cashing a Check	Cashier	AD 159
Checking out Phonograph Records	Library	LR 4th Fl
Continuing Education Courses (Off Campus)	Continuing Education	AD 326
Credit by Examination	Dean of Appropriate College	
Graduate School	Director of Graduate Studies or Dean of Appropriate College	AD 225
Health Insurance	Student Health Service	VC
Graduation:		
Application	Registrar	AD 165
Fees	Cashier	AD 159
Cap & Gown	Bookstore	LR B-3
Positions	Placement Office	AD 282
Course Checkout	Student Adviser	
Help with Reading, Speech, and Hearing	Developmental Center	AD 132
Identification Cards	Registrar	AD 165
Intramurals	Student Affairs	AD 282
Loans, Scholarships, and Grants	Student Financial Aid	AD 269
Lost and Found	Village Center	Main Desk

Organizing a Club	Village Center (Mrs. Russell)	VC 142
Orientation	Student Affairs	AD 282
Paying University Bills	Cashier	AD 159
Personal Counseling	Developmental Center	AD 132
Placement	Placement Office	AD 282
Readmission following Withdrawal, Disqualification, or Exclusion	Admissions Office	AD 165
Records and Transcripts	Registrar	AD 165
Securing Redress of a Grievance	Student Affairs	AD 282
Student Employment	Student Financial Aid	AD 269
Test Scores (Admissions)	Academic Adviser or Developmental Center	AD 132
Tickets	Village Center	Main Desk
Traffic Violations	Campus Security Office	LR B-10
Vehicle Registration	Campus Security Office	LR B-10
Vocational Counseling	Developmental Center	AD 132
Withdrawing from a Course or from the University	Registrar	AD 165
CANNOT FIND AN ANSWER?	Information Booth	AD Lobby

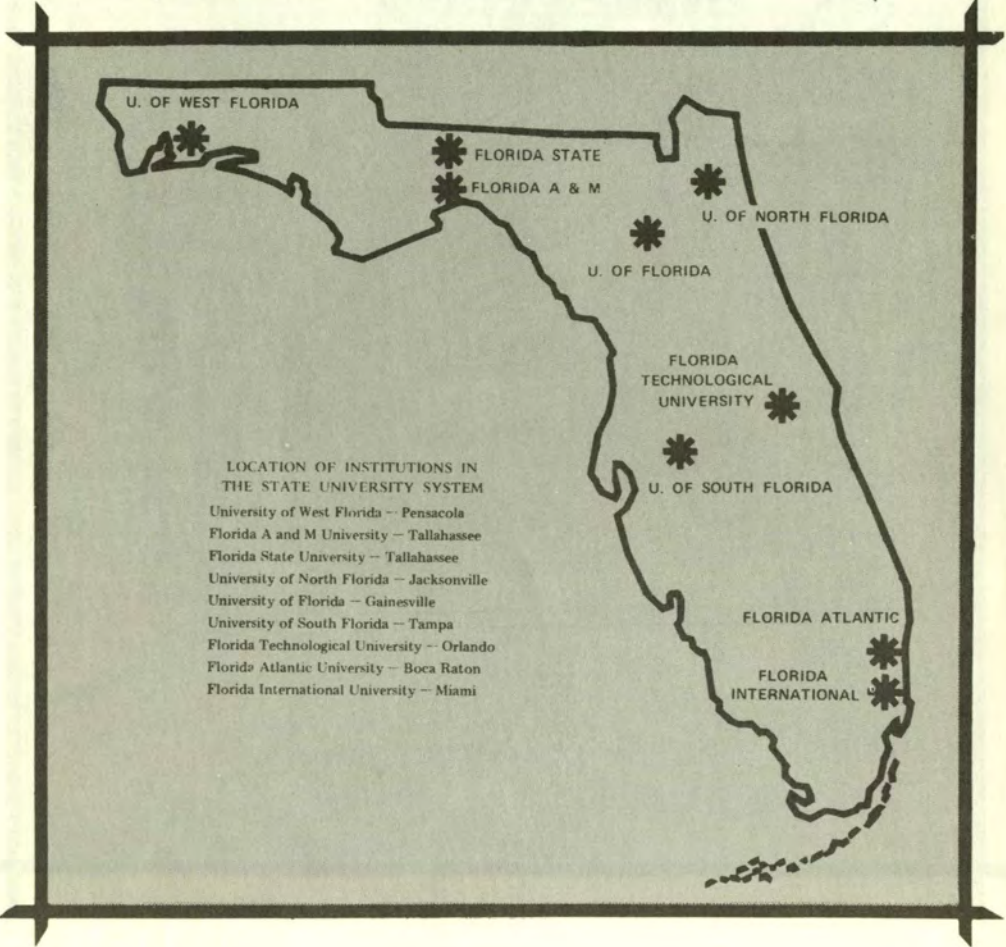
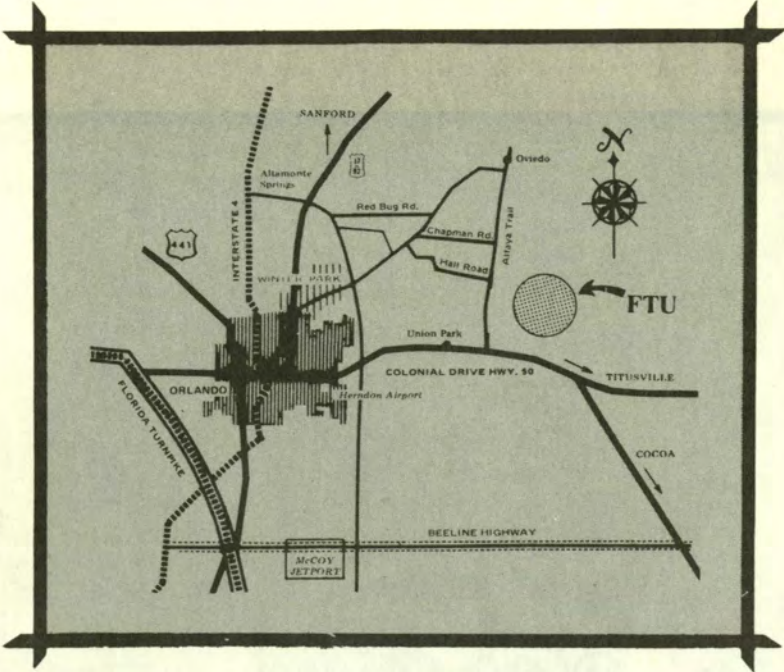
**AD - Administration Building*

LR - Library Building





FLORIDA TECHNOLOGICAL UNIVERSITY CAMPUS • 1970-71





ACADEMIC CALENDAR

MAY

S M T W T F S

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JUNE

S M T W T F S

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27	28	29	30			

- Apr. 9, Fri. Easter holiday.
- Apr. 12, Mon. Classes resume.
8:00 a.m.
- Apr. 24, Sat. Graduate Record Exam (at designated centers).
- Apr. 26, Mon. Deadline for withdrawal without penalty. Last day for removing Temporary Student status.
- May 26, Wed. Last day a student may withdraw from a course or from the University. Last day a student may change from Credit to Audit, if passing.
LAST DAY FOR JUNE
- May 24-28 Mon.-Fri. Educational counseling and student advisement for the Summer and Fall Quarters.
- May 31, Mon. Memorial Day holiday (under the 1968 Uniform Monday Holiday Act).
- June 1, Tues. Classes resume.
8:00 a.m.
- June 1, Tues. Last day for guaranteed registration for GRE given June 19, 1971.
- June 4, Fri. Classes end for Spring Quarter.
9:30 p.m.
- June 7-10 Final examinations.
Mon.-Thurs.
- June 11, Fri. All grades due in Registrar's Office.
12 Noon
- June 13, Sun. Commencement convocation.

SUMMER QUARTER 1971

- May 20, Thurs. Last day for receipt of Undergraduate applications for admission to Summer Quarter.
- June 3, Thurs. Last day for receipt of applications for readmission to Summer Quarter.

- June 14, Mon. Orientation and advisement for new freshmen, transfers, and advisement for returning students not pre-advised.
- June 16, Wed. Last day for receipt of Graduate applications for admission to Summer Quarter.
- (June 17, Thurs.) Registration by appointment of Graduate credit
6-8 p.m. students.
- (June 18, Fri.) Registration by appointment of returning
8:30 a.m.-3:30 p.m. Undergraduate credit students.
3:30-8:30 p.m. Registration by priority number for new freshmen and transfer students.
- June 19, Sat. Graduate Record Exam (at designated centers).
- June 21, Mon. Classes begin for Summer Quarter.
8:00 a.m.
- (June 23, Wed.) Late Registration (for Temporary Students).
4-6 p.m. All full-time students will be assessed a \$25.00 Late Fee.
- June 23, Wed. Last day to adjust class schedule (end of Add-Drop Period).
- June 30, Wed. Last day to make application for graduation for students who will complete requirements at end of Summer Quarter.
- July 5, Mon. Independence Day holiday.
- July 6, Tues. Classes resume.
8:00 a.m.
- July 16, Fri. Deadline for withdrawal without penalty. Last day for removing Temporary Student status.
- Aug. 13, Fri. Last day a student may withdraw from a course or from the University. Last day a student may change from Credit to Audit, if passing.
- (Aug. 16-20) Educational counseling and student advisement for Fall Quarter.
Mon.-Fri.
- Aug. 27, Fri. Classes end for Summer Quarter.
Special graduation ceremony.
- Aug. 30, Mon. All grades due in Registrar's Office.

JULY

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AUGUST

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FALL QUARTER 1971

Aug. 23, Mon. Last day for receipt of Undergraduate applications for admission to Fall Quarter.

Sept. 3, Fri. Last day for receipt of applications for readmission to Fall Quarter. Last day for receipt of Graduate applications for admission to Fall Quarter.

(Sept. 7-10
Tues.-Fri.
Sept. 13, Mon.) Academic year begins. Orientation and advisement for new freshmen and transfer students not pre-advised.

Sept. 13-14
Mon.-Tues. Advisement of current and former students not pre-advised.

(Sept. 14, Tues.)
6-8 p.m. Registration by appointment for Graduate students.

(Sept. 15, Wed.)
8:30 a.m.-7:30 p.m. Registration by appointment for current Undergraduate students.

(Sept. 16, Thurs.)
8-9 a.m. Registration by appointment for former Undergraduate students.

(Sept. 16, Thurs.)
9 a.m.-6 p.m. Registration by appointment for new full-time Undergraduate students.

(Sept. 16, Thurs.)
6:30-9 p.m. Registration by appointment for new part-time Undergraduate students.

(Sept. 17, Fri.)
8 a.m.-12 noon Registration by appointment for new full-time Undergraduate students and other students not yet registered.

Sept. 20, Mon.
8 a.m. Classes begin for Fall Quarter.

(Sept. 21, Tues.)
6-8 p.m. and
Sept. 24, Fri.
4-5 p.m. Late Registration (for Temporary Students). All full-time students will be assessed a \$25.00 Late Fee.

Sept. 24, Fri. Last day to adjust class schedule (end of Add-drop Period).

AUGUST

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SEPTEMBER

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- Oct. 1, Fri. Last day to make application for graduation for students who will complete requirements at end of Fall Quarter.
- Oct. 15, Fri. Deadline for withdrawal penalty. Last day for removing Temporary Student status.
- Oct. 23, Sat. Graduate Record Exam (at designated centers). Registration for examination must be made 2 weeks prior to this date.
- Nov. 15-19 Educational counseling and schedule advise-
Mon.-Fri. ment for Winter Quarter (for currently enrolled
students).
- Nov. 18, Thurs. Last day to withdraw from a course or from the University. Last day to change from Credit to Audit, if passing.
- Nov. 25-26 Thanksgiving holidays.
 Thurs.-Fri.
- Nov. 29, Mon. Classes resume.
 8 a.m.
- Dec. 6, Mon. Classes end for Fall Quarter.
 9:30 p.m.
- Dec. 7-10 Final examination period.
 Tues.-Fri.
- Dec. 10, Fri. Special Graduation ceremony.
- Dec. 11, Sat. Graduate Record Exam (at designated centers).
Registration for examination must be made 2
weeks prior to this date.
- Dec. 13, Mon. Grades due in Registrar's Office.
 12 noon
- Dec. 13, Mon. Christmas holidays begin.
 12 noon

WINTER QUARTER 1972

- Dec. 3, Fri. Last day for receipt of Undergraduate appli-
cations for admission to Winter Quarter.
- Dec. 17, Fri. Last day for receipt of applications for
readmission to Winter Quarter. Last day for

OCTOBER

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NOVEMBER

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DECEMBER

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receipt of Graduate applications for admission to Winter Quarter.

Jan. 3, Mon.

Orientation and advisement for new freshmen, transfers, and advisement for current and former students not pre-advised.

(Jan. 3, Mon.
8:30 a.m.-9 a.m.)

Registration by appointment for Graduate students.

9 a.m.-7:30 p.m.

Registration by appointment for current Undergraduate students.

(Jan. 4, Tues.
8:30 a.m.-9 a.m.)

Registration for any eligible current Undergraduate students not registered.

9 a.m.-9:30 a.m.

Registration for former Undergraduate students by appointment.

(9:30 a.m.-12 noon)

Registration for new Undergraduate students by appointment.

Jan. 5, Wed.

8:00 a.m.

Classes begin for Winter Quarter.

Jan. 7, Fri.

until 3 p.m.

Last day to adjust class schedule (end of Add-drop Period).

(Jan. 7, Fri.
4-6 p.m.)

Late Registration (for Temporary Students). All full-time students will be assessed a \$25.00 Late Fee.

Jan. 14, Fri.

Last day to make application for graduation for students who will complete requirements at end of Winter Quarter.

Jan. 15, Sat.

Graduate Record Exam (at designated centers). Registration for examination must be made 2 weeks prior to this date.

Feb. 1, Tues.

Deadline for withdrawal without penalty. Last day for removing Temporary Student status.

Feb. 26, Sat.

Graduate Record Exam (at designated centers). Registration for examination must be made 2 weeks prior to this date.

Feb. 28-Mar. 3

Mon.-Fri.

Educational counseling and schedule advisement for Spring Quarter.

JANUARY

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FEBRUARY

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- Mar. 3, Fri. Last day to withdraw from a course or from the University. Last day to change from Credit to Audit, if passing.
- Mar. 10, Fri. Classes end for Winter Quarter.
9:30 p.m.
- Mar. 13-16 Final examination period.
Mon.-Thurs.
- Mar. 16, Thurs. Special Graduation ceremony.
- Mar. 17, Fri. Grades due in Registrar's Office.
12 noon

SPRING QUARTER 1972

- Mar. 6, Mon. Last day for receipt of Undergraduate applications for admission to Spring Quarter.
- Mar. 17, Fri. Last day for receipt of applications for readmission to Spring Quarter. Last day for receipt of Graduate applications for admission to Spring Quarter.
- Mar. 21, Tues. Orientation and advisement for new freshmen, transfers, and advisement for former and current students not pre-advised.
- (Mar. 22, Wed.) Registration by appointment for Graduate
6-8 p.m. students.
- (Mar. 23, Thurs.) Registration by appointment for current
8:30 a.m.-7:30 p.m. Undergraduate students.
- (Mar. 24, Fri.) Registration for any eligible current Under-
8:30-9 a.m. graduate students not registered.
- 9:00-9:30 a.m. Registration for former Undergraduate students by appointment.
- 9:30 a.m.-12 noon Registration by appointment for new Undergraduate students.
- Mar. 27, Mon. Classes begin for Spring Quarter.
8:00 a.m.
- Mar. 29, Wed. Late Registration (for Temporary Students).
4-6 p.m. All full-time students will be assessed a \$25.00 Late Fee.

MARCH

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FLORIDA TECHNOLOGICAL UNIVERSITY

INSTITUTIONAL PURPOSE

Florida Technological University has been established as one of the nine state universities in Florida to provide higher educational opportunities to the people of the State through teaching, research, and service. Its assigned role is that of a four-year general purpose institution to offer baccalaureate degree programs, as well as master's and doctor's degree programs when established criteria for initiating such programs have been attained. Its uniqueness is in emphasizing the development of teaching and research programs in various technologies and the arts and sciences.

Florida Technological University offers baccalaureate degree programs in humanities and fine arts, social sciences, natural sciences and mathematics, business administration, education, and engineering. Master's degree programs are offered in business administration and education. Authorization for additional graduate degree offerings in selected disciplines will be sought at appropriate intervals. The University also offers an extension program of credit courses, short courses, conferences, etc., to the citizens of the East Central Florida Region through Continuing Education.

The University has developed an environmental studies program which emphasizes the social, political, and economic implications of technological development in modern society. In addition, developments within this context include opportunities for students to major in computer science, medical technology, inhalation therapy, and medical records science. Future developments will attempt to relate the traditional academic endeavors of the University to the technological orientation of industrial activities in this region of the State.

STATEMENT OF PHILOSOPHY

The philosophy of the University has two basic tenets: first, an ACCENT ON THE INDIVIDUAL, and second, an ACCENT ON EXCELLENCE. In view of the growing concern about the loss of individual identity in today's environment, Florida Technological University is indicating its attitude toward the individual worth of the student, his vitality, his character, and his development by placing an ACCENT ON THE INDIVIDUAL. The campus master plan has been designed to encourage face-to-face communication between students and faculty. One objective of this plan, called the "Village Concept," is to maintain a small college atmosphere in each of five villages, while at the same time providing educational and enrichment opportunities normally available only in a large university setting. Realizing that some of tomorrow's leaders will come from today's students, the University's accent is not only the individual but also on THE RESPONSIBLE INDIVIDUAL.

With an ACCENT ON EXCELLENCE, Florida Technological University provides an academic program for each individual student. Programs and courses have been developed to:

Develop the student's intellectual capacities so that he may have a better understanding of his present environment, the knowledge of his inheritance from past civilizations, and a basis for anticipating and mastering the conditions of his future.

Refine and intensify the student's powers of thinking and judgment necessary to stimulate his intellectual advancement and to establish him as a productive member of society.

Strengthen the student's awareness of the privileges and responsibilities of citizenship in a democracy.

Excite the student's intellectual interests and encourage him to continue to seek knowledge throughout his adult life.

Offer the student an opportunity to prepare for a profession and to develop competence in his chosen field — the pivot from which to expand his horizons in all areas of life.

It is our hope that each individual student will join with the others of the university community in striving not just for expansiveness in thought and action but also for excellence. While broadening our horizons, we must not forget to look upward and in seeking perfection, "Reach for the Stars".

MASTER PLAN FOR THE CAMPUS

The campus of Florida Technological University consists of 1,227 acres of land, much of which is covered with handsome pine, palm, cypress, cedar, and oak trees. Lakes and ponds contribute to the natural beauty of the campus. Lake Claire covers approximately forty acres and Lake Lee encompasses about fourteen acres. While the campus is in the process of development, every effort is being made to preserve and enhance the natural beauty of the site.

The Village Concept on which the University's campus master plan is based is so new that there are only a few in existence. In fact, the Florida Technological University village plan is unique. The present plan envisions a circle within which will be located all of the buildings and other facilities needed during the first ten years of the life of the University. The central core of the campus will contain the general and specialized academic buildings, such as the Library-Learning Resources Center and Science Buildings. Closely related academic disciplines will be clustered together for identity and convenience. In close proximity to and radiating from the central core of the campus in a concentric circle will be the separate student communities called "villages."

Among other facilities, plans call for each village to contain residence halls, a village (student) center, an infirmary, and a physical education recreation area. Five villages are planned during the first ten years, each one designed to serve about 3,000 students. The Village Concept will assist the University in maintaining a small college atmosphere for each student, while at the same time providing the student with the educational and enrichment opportunities available only in a university setting.

Growth and progress are two pertinent words today as FTU moves forward with an eye upon projected enrollments expected to reach 25,000 by 1980. The Fall of 1970 should see an enrollment of 4,500 full-time students on campus. That figure is expected to reach 8,200 by 1973, and 13,600 by 1976. All this depends, of course, upon the availability of adequate resources.

Not only is the student body expanding at a considerable rate but the faculty as well. Numbering 97 when FTU opened for classes in October 1968, the faculty is expected to number about 285 by Fall 1970. By 1978, in contrast, the figure will reach 875.

The University opened in 1968 with the first phase of construction representing an investment of about \$8.9 million which included the first phase of the Village Center (Student Union), the Library Building, Science Building and Science Lecture Hall, four Residence Halls and a utilities complex large enough to serve the needs of a small city.

Construction on the second phase of buildings at FTU is complete. The work represents a value of approximately \$6.5 million in modern, functional structures: the 31-classroom General Purpose Classroom Building; the Administration Building; and the massive Engineering Building.

Construction of a projected third phase is awaiting the availability of funds. This phase will include a Humanities/Fine Arts project, Biology project, and expansion of current utilities.

THE CAMPUS IN 1970-71

A winding road lined with oak and pine extends from the main entrance of FTU on Alafaya Trail (SR 520) to the heart of the campus. At the center of what some day will be a vast complex of buildings are the huge Library Building and Administration Building. The two are separated by a large reflecting pool. The imposing, five-story Library was the first major building completed at FTU. It serves a multitude of purposes. In addition to housing the library, it contains some classrooms, an instructional media center, language library, some faculty offices, and, temporarily, the FTU data processing center.

The attractive, new brick and concrete Administration Building, directly across the pool from the Library, houses the offices of the University

President, his three vice presidents, the Deans of three of FTU's Colleges, the offices of admissions/registrar, personnel, student affairs, public information, publications, certain key faculty members, and classrooms.

Looking to the right of the Library and Administration Buildings as you face East is the massive Science Technology Complex, only recently completed, that serves as the "headquarters" for the College of Engineering and FTU's Information Systems. Classrooms, laboratories, and several large lecture halls comprise the majority of space in the \$3.4 million building.

Adjacent to the Science Technology Building is the Science Building, occupied by the College of Natural Sciences. The structure contains teaching and research laboratories and classrooms and is adjoined by the Science Lecture Hall, which seats 320 persons.

To the left of the Library and Administration Buildings is the General Classroom Building, which serves, in addition to classroom space, as offices for two of FTU's Deans and faculty members.

The Village Center, commonly referred to on other campuses as the "student center" or the "student union," is the focal point of much student activity on the campus. Included in the Village Center are food service facilities, indoor recreational areas and equipment, offices for student organizations, the infirmary, and the Department of Music.

Adjacent to the Village Center are four residence halls, capable of housing 432 students. Each of the buildings has quarters for 108 residents. Two of the double-story buildings are for women students; two for men. Students live in suites composed of a bedroom-study area, a living room, and bath. There are 48 single-person suites in the four buildings; all others are designed for two students.

The outdoor recreational facilities are designed to accommodate the physical education academic programs, the organized intramural program, and the informal recreational activities. Available facilities include lighted tennis and handball courts, a flag football-soccer field, a swimming pool, a golf driving range with putting greens, volleyball courts and a baseball field.

THE EAST CENTRAL FLORIDA AREA

The University is located in the center of the dynamic East Central Florida region of the State. This area is well endowed with a rich heritage of educational, cultural, industrial, and recreational activities.

The public school systems of the area have experienced rapid growth in recent years while maintaining high-quality programs. The several privately supported colleges and public junior colleges have served the higher educational needs of Central Florida, the State, and the Nation for a

number of years. Florida Technological University became a part of this group in September of 1968.

The arts flourish in East Central Florida. About 297,000 library volumes are shelved in the new Orlando central public library and its eight branches. The Florida Symphony Orchestra, located in Orlando, was the first all-professional symphony orchestra in the State. Each year it presents subscription concerts, as well as pop and children's concerts. For the past three years, the Summer Music Festival in Daytona Beach has featured the London Symphony Orchestra. There are several art galleries and museums in the area, as well as wide participation in the annual Winter Park Sidewalk Art Festival. Housing one of the South's few planetariums, the Central Florida Museum and Planetarium presents celestial shows, exhibits and displays, many of them with a space-age orientation. Several theater groups are active in the area.

Business, industry, and finance in this area have experienced considerable expansion in recent years. Much of this growth in East Central Florida has been in the "technical" industries, including electronics, aircraft, missiles, and scientific instruments. The location of the John F. Kennedy Space Center, NASA, about 35 miles east of the campus site, accounts for a significant amount of the economic activity in both technical and nontechnical industries. Agri-industry makes a significant contribution to the area's economy. It is based principally on citrus and truck crops. The area is a manufacturing and distributing center for consumer products for the entire State. Central Florida is also expanding as a Regional insurance center.

Recreational and entertainment activities are both varied and numerous. Since it is located near the center of the State and is a crossroads for several major highways, this area either includes or is close to many of the educational, cultural, and tourist attractions of Florida. For example, Daytona Beach, St. Augustine, and Cypress Gardens are within short driving distance of the campus. Regularly scheduled tours make it easy to visit the Kennedy Spaceport, "Gateway to the Moon."

Sports enthusiasts will appreciate the many opportunities for boating, fishing, and swimming. Orange County alone provides several parks open to the general public. Orlando fields its own professional football team — the Orlando Panthers of the Continental Football League — and is the spring headquarters for the American League Minnesota Twins baseball club, as well as the home of the Class A Orlando Twins.

This section of the Bulletin would not be complete without a description of the plans for Florida Disney World. This huge complex is being built approximately 15 miles southwest of Orlando; 43 square miles of land have already been acquired and preliminary work is well under way at the site. Disney World will include as its major features:

- A. A Theme Park. Similar to Disneyland in California, but considerably larger, the Theme Park is expected to open in October of 1971.

Adjoining the Theme Park will be hotel, motel, recreational, and entertainment facilities for the entire family.

- B. An Industrial Park. In the 1,000-acre Industrial Park, the Disney staff will work with individual corporations to create a showcase of industry at work. This facility also will provide employment for many residents of Disney World.
- C. EPCOT (The Experimental Prototype Community of Tomorrow). Since EPCOT will depict urban life 25 years into the future, it will never be complete, but will always be introducing, testing, and demonstrating new ideas and new technologies. EPCOT is designed to serve an initial population of 20,000.

The estimated 1970 population in the East Central Florida region is about 979,000 and is projected for 1,466,000 by 1975.

ACCREDITATION

The University is accredited by the Southern Association of Colleges and Schools, the official accrediting agency for all educational institutions in the South.

FTU is listed in *Report of Credit Given By Educational Institutions*, 1969 (page 23) with an "A" Rating. An "A" rating means "Transcript of record given full value." This handbook published by the American Association of College Registrars and Admission Officers shows the acceptability of transfer credits based upon their (AACRAO) evaluation.

FLORIDA TECHNOLOGICAL UNIVERSITY FOUNDATION, INC.

The FTU Foundation, Inc., is a corporate body formed with the primary function of assisting the University financially in the financial aid program, scholarship program and in institutional development. The funds raised by the Foundation for financial aid to students are granted based upon the recommendation of the Director of Student Financial Aid. Requests for assistance should be submitted to the Student Financial Aid Office.

LIBRARY SERVICES

The University Library is designed to provide Florida Technological University students maximum service in the pursuit of their education, as well as to encourage personal and leisure time reading. The collection now numbers approximately 100,000 volumes, and will be increased by some 25,000-40,000 volumes each year. The library is planned as the center of academic activity on the campus, and all books are placed on open shelves to encourage browsing.

The library operates on a full schedule of hours, including evenings and weekends. During all hours of opening, a well-trained staff of professional librarians is on duty to provide reference service to the library's patrons. In addition, instruction in the use of the library and its resources is available to the students.

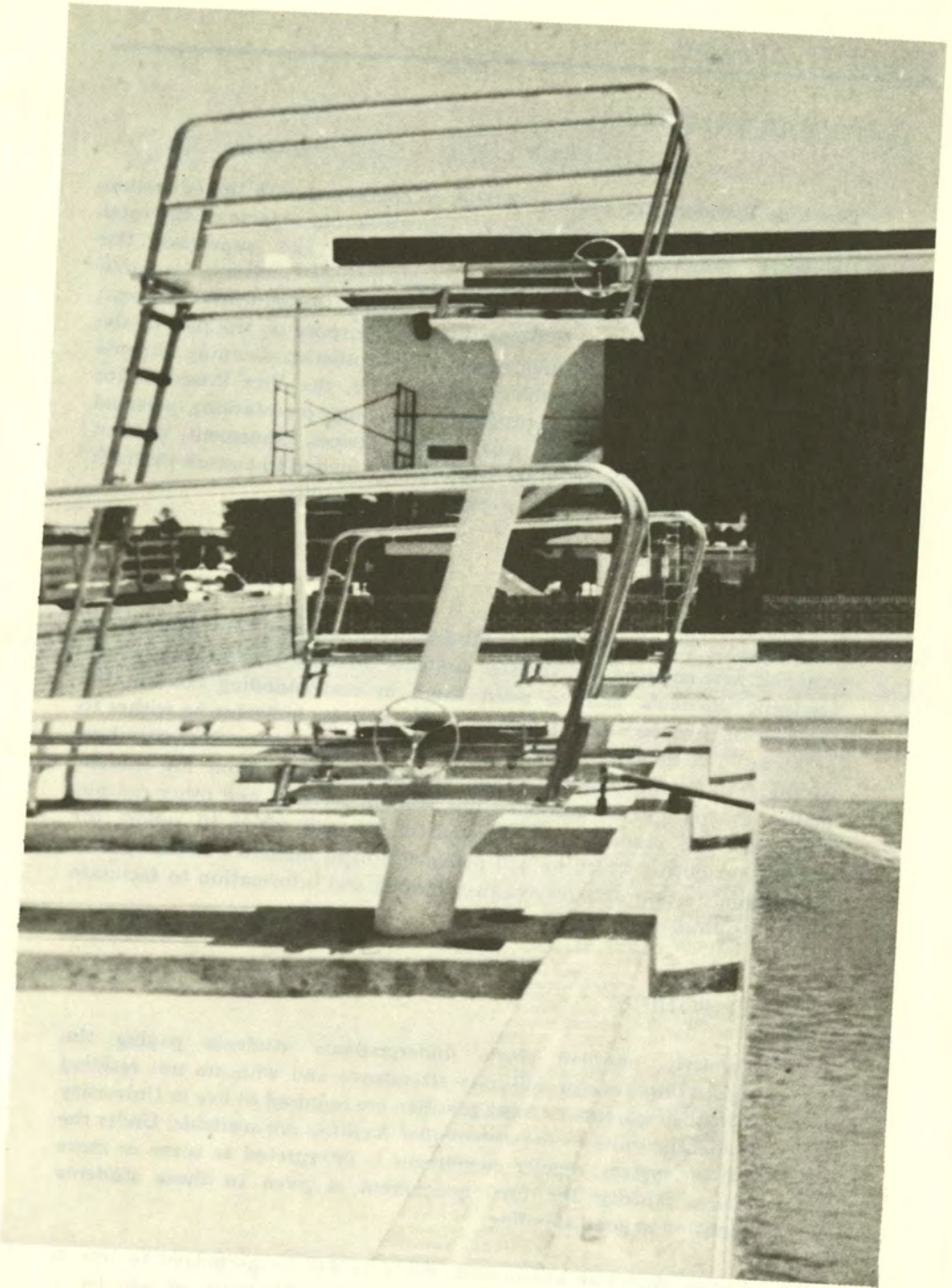
The Department of Instructional Media, operated in conjunction with the University Library, provides films, tapes, slides, sound recordings and other instructional media for class use and for recreational use. In addition, complete graphic and photographic services are provided to support educational and other programs of the University.

UNIVERSITY BOOKSTORE

The University Bookstore, located in the basement of the Library Building, carries required textbooks, supplemental books, and associated supplies for all FTU courses. In addition, a complete line of school and art supplies, sundries, paperbacks, gifts, and other items of interest are available. A Customer Service Desk is provided for special orders, such as class rings, books, etc.

During the last three days of each quarter, the Bookstore has a "buy-back" period for used text books.





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STUDENT AFFAIRS

INTRODUCTION

The Vice President for Student Affairs is concerned with the education and welfare of students as affected by non-classroom aspects of the total University program; therefore, he coordinates and supervises the non-academic areas of student life. His goals include creating a favorable environment for student learning; personalizing the educative process; encouraging self-discipline, self-direction, and purpose on the part of the individual student; and fostering respect and brotherhood among students and faculty. Assisted by members of his staff, the Vice President for Student Affairs administers programs involving orientation, personal counseling, housing, financial aids, health services, placement, student government, and special activities. Students are invited to consult the staff of Student Affairs concerning any aspect of campus life.

ORIENTATION

The purpose of orientation at Florida Technological University is to acquaint new entering and transfer students with the various colleges and academic curricula and to assist them in understanding college life. Orientation for the student begins at the time he indicates he wishes to enroll in FTU. He will receive a number of communications from members of the faculty and administration, and subsequently from the student body, advising him on academic life, student services, and other campus activities. The student will be advised by mail when to report for orientation during which he will personally meet members of the faculty and administration and receive instructions and information to facilitate his registration.

HOUSING POLICY

- I. Regularly enrolled single undergraduate students paying the registration fee for full-time attendance and who are not residing with their parents or legal guardian are required to live in University residential units *to the extent that facilities are available*. Under the quarter system, regular enrollment is interpreted as seven or more hours. Priority for final assignment is given to those students admitted in good standing.
- II. Unless otherwise announced, students will be permitted to live in off-campus accommodations if they are 21 years of age by 1 October of the first quarter; 1 January of the second quarter; 15 March of the third quarter; and 1 June of the fourth quarter. Those students who become 21 years of age while in residence must complete their current housing contract.

- III. Students not living with parent or guardian will be permitted to live in off-campus accommodations if they meet any one of the following qualifications:
- (a) Married student living with spouse
 - (b) Enrolling for less than seven hours
 - (c) Living with adult relatives with the written approval of parent or guardian.
- IV. Applications for exemptions to the above are to be directed to the Dean of Men or Dean of Women.
- V. The above policy does not apply to part-time evening students who are employed in full-time positions.

HOUSING AND FOOD SERVICES

Each applicant submits, as a part of the admissions procedure, a housing declaration form on which he may request a housing and food service contract. The priority for room reservation is based upon the date of receipt of the application for admission accompanied by the housing declaration or subsequently by the date of receipt of a written request for housing.

ALL CONTRACTS ARE FOR ROOM AND BOARD. Two boarding plans are available. A 21-meal plan provides three meals per day, seven days per week; a 15-meal plan provides three meals per day, five days per week Monday through Friday.

STUDENT HEALTH SERVICE

The University is concerned with the physical and emotional health of the student, as well as the promotion of individual and general health in the University community. A Health Service will be maintained on an out-patient basis for routine and emergency health needs, to promote health education, and to protect the student body from communicable diseases. A physician is on campus Monday through Friday during routine clinic hours and is available on an on-call basis for emergencies. A staff of registered nurses will be on duty 24 hours during quarters. Medical care in the students' living quarters is not provided. A student health insurance program is in effect for full-time students; however, participation is optional for part-time students.

While it is not compulsory for the student to use the Student Health Service in case of illness or injury, except in matters of public or campus health, the insurance program is based upon the primary utilization of the Student Health Service. Referral will be made in the more serious cases. The right of the student to choose his own source of medical care on referral will be recognized. Medical records are privileged communications,

and will not be released without the consent of the student, except when information is essential to public health.

A campus emergency vehicle, manned by security personnel, is available for transporting emergency cases to the Student Health Service or to local hospitals.

STUDENT FINANCIAL AID

The Student Financial Aid program is designed to assist any qualified student to attend the University regardless of financial need. The basic presupposition of the University is that the student and his family have the primary responsibility for meeting the educational costs. It is the task of the Office of Student Financial Aid to work with the family and the student in preparing a reasonable and realistic financial program. The University also assumes that the family will make long-range preparation to finance the student's education.

While need is the basic factor in arranging any program, other considerations may also include an evaluation of the total profile of the student's past record.

Student Financial Aid may involve one or more of the three basic forms of assistance: scholarships and grants; loans; employment opportunity. These programs are available to full-time students who have proven financial need.

MAKING APPLICATION FOR AID

To apply for aid the student should follow the three basic steps:

- (1) File a copy of the Application for Student Financial Aid. This is available upon request by writing to the Director of Student Financial Aid.
- (2) File a copy of an approved financial statement with the College Scholarship Service. In most cases this means the Parents' Confidential Statement. Fully independent students should write to the Director of Student Financial Aid to see if they qualify for a different form. Remember that it may take several weeks for this form to be processed and returned to the University.
- (3) Be accepted for admission. No award is made to a student until the Office of Admissions notifies the Office of Student Financial Aid that the student has been accepted in good standing.

A special effort is made by the University to seek out students from very low income families, especially those of various minority groups.

STUDENT FINANCIAL AID DEADLINES

The deadline for initial applications is April 1. Applications will be accepted later than that date, but will have no priority since all funds could have been committed. Students receiving aid must apply annually for the renewal of that aid. This requires filing a copy of the Parents' Confidential Statement or its approved equivalent and a copy of the Application for Renewal of Student Financial Aid. The deadline for all renewal applications is March 1.

ESTIMATING THE COLLEGE BUDGET

The Office of Student Financial Aid is concerned with the total expense of a college education. It has, therefore, established an estimated college budget for the "average" student as a resident or commuting student. In estimating need, consideration is made between the contribution from the family and student and the estimated expenses listed below.

ESTIMATED COLLEGE BUDGETS FOR THREE QUARTERS*

Resident Living On-Campus		Commuter	
Registration and fees	\$ 465	Registration and fees	\$ 465
Books and supplies	150	Books and supplies	150
Room and food	1000	Meals on campus	200
Recreation	100	Transportation	300
Clothing, laundry, etc.	200	Recreation	100
Personal and miscellaneous	100	Clothing, laundry, etc.	200
		Personal and miscellaneous	85
Total	\$2,015	Total	\$1,500

*Non-Florida Residents should add \$300 out-of-state tuition per quarter to the above totals.

FORMS OF AID AVAILABLE

SCHOLARSHIPS AND GRANTS

The Educational Opportunity Grant — This grant is available to students from low-income families who might not otherwise be able to attend the University. Its source is the federal government.

Various scholarships — As a new University, FTU is in the process of raising funds for scholarships and grants. The Florida Technological University Foundation has responsibility for seeking these funds. At present, a small number of scholarships are available but it is hoped that in the near future more funds will be given for this purpose. Those presently available are listed below.

The Rossini Scholarship in Music — Given anonymously, this scholarship is awarded to a student in music as an honors award for \$100 per year.

The Richmond I. Barge Associates Scholarship in Humanities — This award is for \$500 and is available to juniors or seniors with preference going to students majoring in history.

The Martin Marietta Management Club Scholarship — This \$500 award was made available to "a worthy student pursuing a business-oriented curriculum."

The Osburn, Henning and Company Scholarship in Accounting — This award may be made to a junior or senior in the field of accounting. Its value is \$500.

The Beardall Scholarship — This award is available to students of proven academic ability with financial need. The scholarship derives from the income of \$10,000 gift from the William Beardall Foundation.

The Allstate Insurance Scholarship — This award of \$100 per year is made available by the Allstate Insurance Company.

The East Orange Rotary Club Scholarship — This award provides tuition costs to a student of outstanding academic ability and proven financial need.

Student Government Scholarships — The 1969-70 Student Government allocated funds for ten scholarships of \$450 each. These are based on proven financial need and the recipients must have no less than a 3.0 overall average. These will be used during the 1970-71 academic year.

LOANS

The National Defense Student Loan — One of the federal government's student aid programs, the National Defense Student Loan is a deferred payment loan which accrues no interest and requires no repayment until the student has graduated or withdrawn from school. Thereafter, it carries a 3% simple interest rate. Regulations limit this loan to a maximum of \$1,000 per year.

The Federally Insured Loan — This loan is negotiated through approved banks, savings and loan associations, credit unions and other lending agencies. Undergraduates may borrow up to \$1,500 for three quarters of academic work. Applications and further information may be secured from any lending institution participating in the program.

The Florida Student Loan — These deferred payment loans are made available from the State of Florida and must be renewed annually. The interest rate following graduation is 4%. This loan is limited to Florida residents.

The Colleen Rhea Brown Memorial Scholarship Loan Fund — This award has been established to the memory of the late Colleen Rhea Brown who

was one of the first employees of Florida Technological University. This was the first scholarship to be established at FTU and is available to women of junior or senior classification majoring in secretarial science or business education.

The Dr. P. Phillips Foundation Loan Fund — This fund provides loans to students preparing for careers in the scientific fields. During the 1969-70 academic year, \$1,000 will be available for loans to qualified students.

University Short Term Loans — A limited number of short-term loans have been provided by the Florida Technological University Foundation. These loans are available at the beginning of a quarter and must be repaid before the end of the quarter. Due to the limitation of funds the maximum amount for a loan is \$100.00. There is a 2% service charge made on each loan.

Student Emergency Loan Fund — These funds are intended for students' use in case of serious emergencies. Application must be made by personal interview with the Director of Student Financial Aid. Emergency loans are funded by traffic and parking fines.

EMPLOYMENT OPPORTUNITIES

The College Work-Study Program — Funds for this program are provided by the federal government to provide employment for students with financial need. Under this program, work is limited to a maximum of 15 hours per week during the school year. When classes are not in session, students may work up to 40 hours per week, when work is available. Minimum wage begins at \$1.45 per hour.

University Employment — Priority for all on-campus employment is given to students on the College Work-Study Program. Some jobs, however, are available to other students. Application may be made in the Office of Student Financial Aid.

Off-Campus Employment — Orlando area firms often contact the Office of Student Financial Aid when part-time employees are needed. Lists of available jobs are retained in the Office of Student Financial Aid and posted on bulletin boards.

Florida Technological University is an equal opportunity employer.

LAW ENFORCEMENT EDUCATION PROGRAM

This program utilizes funds provided through the United States Department of Justice. It is designed to assist law enforcement personnel in their education. Two types of aid are available:

Grants In-Service employees of police, courts and corrections agencies enrolled in courses related to law enforcement can receive the amount of

tuition for these courses. Grant recipients must agree to remain in the service of their employing agency for at least two years following completion of their courses.

Loans Full-time students enrolled in degree programs directly related to law enforcement can receive up to \$1,800 per year but not to exceed estimated college budgets. Special consideration is given to criminal justice employees on academic leave from their jobs. Loan recipients must intend to pursue or resume full-time employment in the criminal justice field upon completing courses. The loan is cancelled at the rate of 25% per year of full-time employment in law enforcement.

PLACEMENT CENTER

Career planning, campus interviews, and employer contacts are essential aspects of the Placement Center. The provision of these services, however, requires the development of student personnel files and resumes as well as the accumulation of an extensive amount of information pertaining to job opportunities in business, industry, government, education, etc. Both career planning and job placement are facilitated through early student contacts with the Placement Center.

All students are urged to register with the Placement Center at least three quarters prior to graduation. All inquiries should be directed to the Director of Placement.

DEVELOPMENTAL CENTER

The Developmental Center offers a professional staff of counselors to aid students in selecting vocational-educational objectives, overcoming study difficulties, solving problems of personal-social adjustment, and developing speech or hearing skills. A full range of tests are available along with an occupational library, developmental reading and study skills service, a listing of students available as tutors, and a speech and hearing service.

Any student may request the assistance of the Center whenever he feels the need. He might, for example, desire increased understanding of himself and of his relationship with others or he might seek to gain additional satisfaction from his learning experiences. A commonly used diagnostic procedure includes the administration of tests to help the individual student evaluate his own interests, aptitudes and abilities. The services of the Center are voluntary and all aspects of counseling are confidential.

STUDENT ACTIVITIES

Student leadership may, in part, be enhanced and developed through informed, experienced, dedicated University and community participation. Frequently activities are referred to as "extracurricular", but at Florida

Technological University student activities are regarded as a part of the total educational program; a supplement to the individual student's academic program. The University, through student cooperation and with the assistance of student organizations, will sponsor a variety of cultural and entertainment programs which will contribute to the student's academic, recreational, and cultural activities. Additionally, he will be provided ample opportunity to become a member of occupational, professional, social, and honorary organizations. The student will play an important role in organizing student organizations within the framework of the University to enhance his personal development. It is the desire of the University to appeal to the individual student's interest and provide him an opportunity to become acquainted with his fellow students and faculty members.

STUDENT GOVERNMENT

The purpose of the Student Government at Florida Technological University is to represent student opinion; advance the cause of students both socially and academically; promote communication, cooperation and understanding among students, faculty, and administration; suggest improvements necessary for the welfare of the students; and to insure that Student Government shall continue to be used as a democratic instrument of change at FTU.

The Student Government of FTU represents the interests of students through its executive and legislative branches. There are representatives from every college and class in the Senate. In addition to these elected offices, there are many openings available for appointed offices or on Student Government Committees. By active participation in Student Government, or by voicing his opinions and ideas through his legislators, the student gains valuable experience in the democratic processes — its freedoms and responsibilities. Students interested in working with the Student Government may obtain information from the Student Government Office located in the Library Building, any Government member, or from the Office of Student Affairs.

VILLAGE CENTER

The center of student life on the Florida Technological University campus is the Village Center, a campus-community facility serving students, faculty, University patrons, alumni and guests. It contains food service facilities, conference rooms, and lounge areas where the student may relax during his leisure moments. Offices for the Panhellenic Council, Intrafraternity Council, the newspaper, the yearbook, Village Center Student Activities and other student organizations are located in the Village Center. Under the administration of the Director of the Village Center, many student activity programs are conducted for the social, cultural and recreational interests of all students.

INTRAMURAL SPORTS PROGRAM

The Intramural Sports Program affords many opportunities for the student to participate in a variety of recreational and competitive activities designed to meet the needs and interests of the men and women of the University. Healthful sports, good sportsmanship and friendly competition are stressed. Residence halls, social organizations, clubs and independent groups are the basic units for competition.

Students are encouraged to assist in the planning and execution of the program as well as in the actual participation. Recreational equipment is furnished for many activities and is available upon request.

STUDENT CONDUCT

Students are subject to federal and state laws and local ordinances as well as regulations prescribed by Florida Technological University and the Florida Board of Regents. The breach or violation of any of these laws or regulations may result in judicial or disciplinary action.

When a student is involved in an offense resulting in criminal charges, the circumstances of the case may be reviewed by the appropriate Student Affairs Committee to consider the student's status at the University as well as eligibility for extracurricular activities. When the welfare of the individual, the Student Body, or the University indicates the necessity of prompt decision, immediate administrative action may be taken without convening the Committee. If circumstances warrant, the case may be presented to the Committee as soon as possible thereafter for approval or possible change.





**E.T.U.
MISS SNOWFLAKE
CANDIDATES**

SCHEDULE OF FEES ¹

A student's basic expenses at the University will be for tuition fees, room and board, textbooks, other instructional supplies, and miscellaneous items.

Required fees are established by the Board of Regents and the Florida State Legislature and are subject to change without notice.

It is required that all University fees be paid at or before regular registration time. University policies do not permit deferring fees or paying by installments during the quarter.

The following schedule applies to all Florida Technological University students:

General Fees and Costs

A. Application fee (required with all applications for admission to the University and not refundable) \$ 15.00

B. Registration Fees (per quarter)

ON-CAMPUS COURSES

	Resident ²	Non-Resident
Undergraduate		
Full-time (7 hours or more)	\$150.00	\$450.00
Part-time (6 hours or less)	14.00 per hour	39.00 per hour
Graduate		
Full-time (7 hours or more)	175.00	475.00
Part-time (6 hours or less)	16.00 per hour	41.00 per hour

For purposes of assessing fees, a full-time student is an individual who registers for a minimum of seven (7) quarter hours.

OFF-CAMPUS COURSES³

	Resident ²	Non-Resident
Undergraduate	\$ 17.00 per hour	\$ 42.00 per hour
Graduate	19.00 per hour	44.00 per hour

C. Room and Board (required of students living in University residence halls) per quarter \$313.00-\$348.00

Charge for late payment \$ 15.00

¹Effective Fall Quarter, 1970.

²To determine Florida residence requirements, see pages

³Since off-campus or Continuing Education students are considered part-time students, they may register for an unlimited number of courses on an hourly basis. A combination of off-campus and on-campus hours will not be used to determine full or part time status.

- D. Books and Supplies (estimated) per quarter \$ 50.00
- E. Late Registration (for students who register after the time provided under the academic calendar) \$ 25.00
- F. Vehicle Registration (required of everyone operating a motor-powered vehicle on campus) per calendar year for full-time, part-time students, and courtesy students from other institutions. Students' fee \$ 2.00

Checks

The University will accept personal checks for accounts due the University. Each student is urged to make his own financial arrangements through his choice of commercial banks. The University Cashier and the Bookstore will cash personal checks not exceeding \$50.00.

Refund of Fees

A refund of fees will be made under certain conditions upon presentation at the Cashier's Office of a Certification of Withdrawal issued by the Registrar.

1. Full refund up to the end of the "drop/add" period.
2. No refund after the end of the "drop/add" period, except:
 - a. Involuntary call to active military service (full refund less \$30.00).
 - b. Death of student (full refund less \$30.00)
 - c. Where a student contracts an incapacitating illness of such duration and severity as to prevent the successful completion of the academic program for the term enrolled, a fee refund will be made on the following schedule:

Cancellation or Withdrawal	Registration Fee		Out-of-State Tuition
	Undergraduate	Graduate	
At end of 2nd week of classes	\$120	\$145	\$260
At end of 3rd week of classes	100	125	220
At end of 4th week of classes	80	105	180
At end of 5th week of classes	60	85	140
After 5th week of classes	None	None	None

No refunds will be made under this policy except upon proper application. Commensurate refunds will be made to part-time students.

ADMINISTRATIVE & ACADEMIC POLICIES

ADMISSIONS REQUIREMENTS — *First-time College & Transfer*

Freshman Applicants (First College Attended)

The following classes of applicants are eligible for consideration as candidates for admission to credit courses. Eligibility is subject to satisfactory receipt and review of all items requested in the admissions process. All applicants must have earned 12 high school academic units (i.e., from the areas of English, foreign language, mathematics, science, or social studies).

Graduates of Accredited Florida High Schools who receive a favorable character recommendation from officials of their high school, have an overall average of "C" or better for all academic subjects, and have earned a minimum score of 300 on the Florida State-Wide Twelfth Grade Test.

Graduates of Accredited High Schools Outside Florida who receive a favorable character recommendation from officials of their high school, have grades placing them in the upper 40 percent of their graduating class, and have acceptable test scores, i.e.:

900 total or higher on the SAT (CEEB) - with no lower than 400 on either the verbal or math portion.

21 composite or higher on the ACT

60% or higher on the CQT (Senior College Freshman Norms)

Graduates Possessing a High School Equivalency or a General Education Development (GED) Diploma who have a favorable recommendation from their employer, have an acceptable high school record for the portion attended, and have a minimum individual score (percentile) of 50 and a minimum average of 60 on the GED test. (Note: A USAFI Certificate is *not* an Equivalency Diploma.)

Graduates Who Meet Requirements in the First Two Categories Above, But Who Were Graduated from a Regionally Unaccredited High School may enter on provisional admission. By obtaining a 2.0 (C) GPA or better at the end of the quarter during which 12 or more quarter hours are attempted, the provisional status shall be removed.

Graduates Who Do Not Meet These Entrance Requirements and are Considered Borderline Admission Cases are referred to the University Admissions and Standards Committee for review. Occasionally, it may be recommended that a student attend a Junior College to further his

competency and to earn an Associate in Arts degree before reapplying to FTU.

Graduates Who Score Below 300 on the Florida State-Wide Twelfth Grade Test and who have a satisfactory high school record will be considered for admission assuming the other requirements previously stated have been met.

Transfer Applicants

Undergraduate students transferring to degree programs from another institution must have a minimum 2.0 (C) GPA on all college work previously attempted, must be eligible to return to their *last* previously-attended institution, and must present a satisfactory score on a general ability test. Should the applicant have less than 90 quarter hours of transferrable college credit and not possess a university parallel degree from an approved Florida junior college, he must meet the University's freshman entrance requirements.

Only credits in which the applicant has achieved a grade of "C" (2.0) or better are transferable.

No credit will be awarded for college-level GED tests, for courses given without a grade, nor for courses carrying grades but not credit hours. However, evidence of satisfactory completion will be posted on the student's permanent record.

Final determination regarding applicability of credits accepted in transfer toward the fulfillment of degree requirements resides with the College in which a student is enrolled.

Completed service school courses may be evaluated on the basis of the recommendations of the American Council on Education when official credentials have been properly presented. Credit may be granted when courses are equivalent to those offered by the University. However, recommendations by the A.C.E. are not binding upon the University, and application for service school course credit should be made at the time of admission.

Graduates from other accredited four-year institutions who apply for admission to work toward a second undergraduate degree must meet the regular graduation requirements of the University (e.g., See General Regulations for All Undergraduate Degree Students, page 44,45 and Second Bachelor's Degree, page 54).

Transfer students from Florida State Junior Colleges or Universities may satisfy the Basic Environmental Studies Program requirements by completing, prior to transfer, the general education program prescribed by the junior college or university. Transfer applicants with incomplete

General Education Programs (FTU Environmental Studies Program) from state institutions will have their credits evaluated on an individual basis.

1. *Florida State Junior College Transfers.* Admission to the University is normally granted to any graduate of an accredited junior college in the State of Florida who has completed the college parallel program and graduated with a 2.0 GPA based upon all work attempted. Admission Standards for all Florida state-supported universities are established by the Florida Board of Regents.*
2. *Private Colleges and Out-of-State Institutions.* The general education program credits of transfer applicants from private junior and senior colleges and out-of-state institutions will be evaluated on an individual basis.
3. *Unaccredited Colleges or Universities.* Transfer applicants who otherwise meet all requirements, but who are entering from unaccredited colleges, may enter on provisional admission. By earning a 2.0 GPA or better at the end of the quarter during which 12 or more quarter hours are attempted, the provisional status shall be removed and any credit to be transferred may be validated.

The Admissions and Standards Committee membership is composed of representatives from the faculty, the student body, the Student Affairs Office and the Admissions Office. This committee meets weekly to review marginal cases and to consider the appeal of applicants.

ADMISSIONS — Provisional

Students who transfer from regionally unaccredited high schools or colleges shall be admitted provisionally. Failure to perform satisfactorily will result in the student's being placed on warning, probation, or disqualification, as his academic record warrants.

APPLICATION DEADLINE

Applications for degree credit should be received 28 days prior to the first day of classes for the quarter in which the student wishes to enroll. Candidates whose application has not cleared because of failure to receive supporting documents may be admitted as Temporary Students. Temporary Students are required to register at one of the late registration periods and pay a late registration fee of \$25.00.

*Board of Regents Manual pages 2-50 through 2-55.

RECORDS DEADLINE — All Support Documents

All records requested must be received not later than 15 days preceding the first day of classes, otherwise the applicant shall be required to register on a temporary basis at late registration period and pay a Late Registration Fee of \$25.00. Records of Temporary Students must be officially received within four weeks (20 class days) from the first day of classes, or the student may be withdrawn at the discretion of the University Registrar and no fees will be refunded.

RECORDS — Validity of Support Documents

All support documents indicated in the Application for Admission must be received directly from the issuing institution, testing agency, or physician.

READMISSION — After Voluntary Withdrawal

Students not in attendance during an academic quarter (exclusive of the summer term) or who withdrew from the University before the end of a quarter (including the most recent quarter), must submit an application for readmission and such other information as may be required. The application must be returned not later than two weeks before the beginning of the quarter of expected attendance. (See calendar).

Any former student who withdrew with a cumulative or overall grade point average of less than 2.0 (C) and who is considered readmissible, will be readmitted on academic probation.

SPECIAL STUDENTS

Students of demonstrated academic ability who do not meet the regular requirements for admission may register for occasional courses at FTU. Permission to enroll in this Special Student category should be obtained from the Dean of the College in which the student wishes to take course work.

If the prospective special student is a minor, in addition to the above he must:

1. obtain the written permission of his parents,
2. request a statement of recommendation from the principal of his high school or, if employed, from his employer (to be mailed directly to the University Admissions Office), and
3. have an interview with the Director of the Developmental Center.

Applications may be obtained from the Admissions Office.

Failure to perform at a "C" level in all courses attempted at FTU will result in a student being unable to take further courses until he has met the regular requirements for admission.

All credits earned at FTU will always be a part of the student's permanent record.

TEMPORARY STUDENT

Any student who applied before the application deadline date and is permitted to register and attend classes without a complete admission file, is granted a maximum of four weeks (first 20 class days) to furnish all required records. Failure to do so or if records indicate ineligibility, will result in withdrawal at the discretion of the University Registrar and no fees will be refunded.

TRANSIENTS

FTU Students. A Florida Technological University degree-seeking student who wishes to earn credit at another college or university must obtain prior permission and approval of courses from the Dean or Department Chairman of his respective college and the Registrar of FTU. Credit earned without this transient approval may not be accepted.

Students from Other Colleges or Universities. Students in good standing with a 2.0 overall academic average in any accredited college or university wishing to enroll for one quarter at FTU may be considered for admission as a transient. Such enrollment terminates at the end of one quarter and does not presuppose regular acceptance by any college or department of the University. A statement of good standing (on the FTU Transient Form) indicating their willingness to accept the credits earned is required by the parent institution in lieu of official transcripts and other supporting documents.

AUDITORS

University Students. Any degree credit student may be admitted to a class as an auditor with the approval of the chairman of the department in which the course is offered. For degree credit students, a course may be changed from audit to credit only during the Add-Drop Period and then only with his faculty adviser's consent. Auditors will not receive university credit, nor is the instructor obligated to administer any tests.

No student may change from credit to audit unless passing.

Non-University Students. With the approval of the chairman, any person not enrolled in the University may be admitted to classes as an auditor if the class is not already filled. A simplified application may be completed and registration accomplished at one of the two late registration periods scheduled during the Add-Drop Period. No late fee is required, no university credit is given, and the instructor is under no obligation to give tests to auditors. Those admitted shall pay the normal fees per quarter hour, and no refund is possible after a class has been attended. The University reserves the right to deny admission as an auditor without cause.

CONTINUING EDUCATION STUDENTS

Application, registration, and payment of fees for those taking a course off-campus may be completed prior to, or during, the first or second class meeting. Receipts will be mailed to students registering during the first or second class. No registration will be accepted after the first class meeting of the second week. The regular institutional calendar will apply to Continuing Education classes with the following exceptions:

- No late registration fee will be charged.
- Enrollment in these courses will be closed after the end of the first class meeting of the second week.
- The student may receive a complete refund if he withdraws prior to the end of the first class meeting of the second week.
- The Add-Drop Period will extend through the end of the first class meeting of the second week.

CONCURRENT ENROLLMENT

Concurrent enrollment in another institution is permitted only when approval to be a transient student has been obtained.

NON-DEGREE STUDENTS — *On-Campus*

Non-degree students (21 years of age or older) without previous college experience, or who are eligible to return to their last previously-attended college, may provide evidence (viz., an acceptable

high school record, or approved test scores, or satisfactory transcripts, plus a favorable recommendation that they are qualified to do the proposed work) and enroll as non-degree students in classes without meeting all of the requirements established for the degree programs. Persons under 21 years of age wishing to enter as non-degree students must meet the same admissions requirements as degree-seeking students.

Only students furnishing complete records may register for as many as 12 quarter hours.

Non-degree-seeking students applying to change their status and work toward a degree must meet the admissions requirements of such students and earn a minimum of 24 quarter hours with a minimum 2.0 GPA on all college work attempted. Not more than 32 credit hours earned as an unclassified non-degree student may be counted toward a degree if and when the student's category changes to that of degree-seeking.

HEALTH AND CITIZENSHIP

All full-time (7 or more quarter hours) applicants must have a satisfactory health and citizenship record.

FLORIDA RESIDENCE

All students who do not qualify as Florida students are classified as non-Florida students.

A minor applicant whose father is a member of the military establishment and claims residency should outline the period of time that his father has resided in Florida, whether his father entered service from Florida, whether or not his home on his military records is Florida and other information that would assist in determining residency.

For the purpose of assessing tuition, applicants are classified as Florida or non-Florida students. In applying this regulation, "applicant" shall mean a student applying for admission to Florida Technological University if he is 21 years of age or older. When he is a minor, the regulation shall apply to his parents, parent, or guardian. If an applicant has not resided and had his home in the State of Florida for at least 12 months immediately preceding his registration, he is required to pay the tuition and other charges of non-Florida students. However, the applicant cannot claim continuous residence in Florida by virtue of enrollment in any college or university in the state of Florida for the required period.

ORIENTATION AND ADVISEMENT

After the applicant has been advised of his admission, he will be assigned a priority number and time for registration. However, prior to registration, he is required to attend a University orientation program to be followed by a conference with his academic adviser. Adviser assignments are based upon the major area indicated on the student's application.

TRANSFER CREDITS

A transfer grade of less than "C" may not be utilized to satisfy credit hour requirements for graduation. However, a course in which a "D" grade was received may be used to fulfill a specific subject matter requirement provided a higher grade was earned in a more advanced course in the subject sequence.



CREDIT BY EXAMINATION

Students of superior ability and preparation who have already gained a knowledge of subjects offered at the University may be permitted, with permission of the Dean of their College, to take credit by examination in certain courses. Such credit may not have been previously used to satisfy high school graduation requirements. Degree credit will be awarded for those courses successfully completed by examination.

Permission to utilize such examinations is granted by the Dean of the College in which the course is offered. The Dean will also establish the conditions for the examination. Permission may be given, subject to the following conditions:

1. Credit by examination is limited to 45 quarter hours. This credit may not be used to reduce the University's minimum residence requirements. The 45 quarter hour limit may not be in addition to correspondence, extension, and/or service school credit.
2. The student must have been admitted to the University and must be in good standing. The examinations must be taken while the student is enrolled in the University, and credit will be granted at the end of the quarter in which the examination was passed.
3. On notification that permission is granted, the Registrar will issue an official permit. An Instructor may not give an examination until the official permit has been received.

4. If a grade of "D" or higher is earned on the examination, the appropriate grade received in the course will be entered with its corresponding grade points. If a grade lower than "D" is earned, only the fact that the examination has been attempted will be recorded. The student may attempt to earn credit by examination in the same course only once.

ADVANCED PLACEMENT PROGRAM

Florida Technological University will participate in the advanced placement program conducted by the College Entrance Examination Board. Provisions now exist for examinations in Biology, Chemistry, English, European History, French, German, Latin IV, Latin V, Mathematics, Physics, and Spanish. Examinations in Russian are being added. Advanced placement and credit will be granted in appropriate subjects to freshman students who have taken the advanced placement examinations and achieved a grade of four (4) or five (5). When the grade is three (3), the decision regarding the credit will be referred to the judgment of the individual department.

COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

Credit in the Environmental Studies area may be granted to those who score 550 or above on any of the 5 basic sections of the *General Examinations*.

Area	Score	Credit	Environmental Studies Area
English	550 or above	3 Q/H	Communications III (Eng. 102 or 103)
Humanities	550 or above	3 Q/H	Humanities
Mathematics	550 or above	4 Q/H	Scientific Environment I (Math 100)
Natural Science	550 or above	4 Q/H	Scientific Environment II
Social Studies	550 or above	3 Q/H	Social Environment I

Students interested in receiving exemption or credit by this means should write directly to ETS for application, lists of certified testing centers, and dates of testing. Write to:

EDUCATIONAL TESTING SERVICE
College Level Examination Program
Princeton, New Jersey 08540

DEGREE REQUIREMENTS

Undergraduate

The University graduation requirements must be met by each student who wishes to receive a degree from Florida Technological University.

The minimum bachelor degree requirements for all students are as follows:

A minimum of 183 quarter hours credit with at least a "C" average (2.0 GPA) for all course work attempted (both FTU and transfer).

A minimum of 90 quarter hours of work taken for the bachelor's degree must be earned in a senior institution.

A minimum of 72 quarter hours of work taken for the bachelor's degree must be taken in 300-level courses or above.

A minimum of (and the last) 45 quarter hours must be earned in residence at FTU.

A maximum of 45 quarter hours of extension, correspondence, Armed Forces credit, and credit by examination are applicable toward a degree.

A student has the option of fulfilling the course requirements for graduation under any single FTU Bulletin in force during his most recent period of continuous attendance. The use of a combination of Bulletins to fulfill degree requirements is not permitted. Should his attendance be interrupted, his continuous attendance would begin with his most recent readmission. Summer quarters are not included in determining interrupted attendance. Except for the foregoing, the Administrative and Academic Policies of the current Bulletin will be considered official for graduation. A junior college graduate may elect to use the FTU Bulletin in force at the beginning of his most recent continuous attendance at the junior college, provided his attendance continues uninterrupted including his transfer to FTU.

Graduate

The University graduation requirements must be met by each student who wishes to receive a degree from Florida Technological University. To meet minimum master's degree requirements, all students must complete at least 45 quarter credit hours of graduate work, with a minimum average of "B" for all courses attempted. At least one-half of the minimum required course work must be numbered 600 or higher.

Additional degree requirements are specified in this Bulletin in the section on Graduate Studies and in the appropriate sections of the individual colleges offering graduate programs.

All students must take the Graduate Record Examination (GRE), except those students in Business Administration who must take the Admission Test for Graduate Study in Business (ATGSB).

DEGREES OFFERED

Undergraduate

The University offers the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in

Engineering, and Bachelor of General Studies. These degrees are available in the following Colleges, with majors and options or areas of concentration as indicated:

I. Bachelor of Arts (B.A.)

College of Education

Major: Elementary Education

Major: Secondary Education

Specializations: Biology, Business Education, Chemistry, English, Foreign Languages, Mathematics, Physics, Social Sciences, Speech

Comprehensive (1-12): Music, Physical Education, Visual Arts

College of Humanities and Fine Arts

Majors: Art, English, Foreign Languages (French and Spanish only), History, Humanities, Music, Theatre

College of Social Sciences

Majors: Communication, Economics, Political Science, Psychology, Sociology

II. Bachelor of Science (B.S.)

College of Engineering

College of Natural Sciences

Majors: Biological Science (with options in Biology, Botany, Microbiology, and Zoology), Chemistry, Computer Science, Inhalation Therapy, Mathematics, Medical Records Science, Medical Technology, Physics, and Statistics

III. Bachelor of Science in Business Administration (B.S.B.A.)

College of Business Administration

Major: Business Administration, with areas of concentration in Accountancy, Business Administration, Economics, Finance, Management, Marketing

IV. Bachelor of Science in Engineering (B.S.E.)

College of Engineering

Major: Engineering, with areas of concentration in Civil Engineering and Environmental Sciences, Electrical

Engineering and Communication Sciences, Engineering Materials Sciences, Industrial Engineering and Management Systems, Mechanical Engineering and Aerospace Sciences, plus other interdisciplinary areas such as Biomedical Engineering, Engineering Design, Engineering Operations, Engineering Physics, Systems Engineering

V. Bachelor of General Studies (B.G.S.)

Offered through the office of the Vice President for Academic Affairs.¹

Graduate

Graduate degrees are available in the College of Business Administration and the College of Education, as follows:

1. Master of Education (M.Ed.)
College of Education
2. Master of Business Administration (M.B.A.)
College of Business Administration

TEACHER CERTIFICATION FOR STUDENTS NOT ENROLLED IN THE COLLEGE OF EDUCATION

Students who wish to major in the Colleges of Business Administration, Engineering, Humanities and Fine Arts, Social Sciences, or Natural Sciences, and receive teacher certification must successfully complete both the professional education requirements and teaching specialization requirements as specified in the College of Education Career Teaching Program.

QUARTER HOURS EXPLAINED

The graduation credit value of each course of instruction is stated in terms of quarter hours. A quarter hour of credit represents one class hour of work (or two or three laboratory hours of work) per week for a quarter.

GRADING SYSTEM

The University will utilize an alphabetic grading system. This system, with a grade point equivalent per quarter hour, is as follows:

¹See General Studies — page 64

A - Excellent	4 grade points
B - Good	3 grade points
C - Average	2 grade points
D - Passing . . . . .	.1 grade point
F - Failure . . . . .	.0 grade point
I - Incomplete . . . . .	.0 grade point
R - Must Repeat (non-credit course) . . . . .	.0 grade point
S - Satisfactory (credit or non-credit course) . . . . .	.0 grade point
W - Withdrawal (no penalty) . . . . .	.0 grade point
X - Audit . . . . .	.0 grade point

The grade point average (GPA) is the average number of grade points per quarter hour attempted and is computed by dividing the total number of grade points assigned by the total number of quarter hours attempted, less hours resulting from W, X, and I grades. The grade point average for graduation requirements is 2.0 (C) and will be computed on the student's total academic program.

INCOMPLETE GRADE

A grade of "I" (Incomplete) is assigned by the instructor when a student is unable to complete a course due to extenuating circumstances, and when all requirements can clearly be completed in a short time following the close of regular classes. The Registrar's Office must be notified of the appropriate grade to be assigned during the next successive quarter when requirements for the removal of the "I" have been completed. It is the student's responsibility to arrange with the instructor for the removal of the "I" grade during the following quarter. If the instructor is not available, arrangements should be made with the chairman of the department responsible for the course. The grade of "I" becomes a part of the student's permanent record if not removed during the following quarter. A student may reregister for a course in which an "I" was received.

HONORS

Each student graduating from Florida Technological University will, as his achievement warrants, be recognized in the graduation program and have these honors posted on his permanent record, according to the following schedule of grade point averages.

1. Total grade point average 3.80 to 4.00 - summa cum laude
2. Total grade point average 3.40 to 3.79 - magna cum laude
3. Total grade point average 3.00 to 3.39 - cum laude

General honors are based on a minimum of 72 quarter hours of full-time attendance. The grade points used are those earned prior to the quarter

preceding graduation. For students who have attended FTU only, their FTU grade point average is used, and for transfer students their overall grade point average is used.

DEANS' LIST

The Deans' list is recognition of scholastic honors for students who register for and complete at least 12 Quarter Hours with a 3.0 GPA and no grade less than "C" during a quarter. These students are eligible for the Deans' List according to the following classifications:

Summa cum laude list . . . . .	.3.80 to 4.00 Qtr. GPA
Magna cum laude list . . . . .	.3.40 to 3.79 Qtr. GPA
Cum laude list . . . . .	.3.00 to 3.39 Qtr. GPA

This list will be published by the colleges each quarter.

SCHEDULE CHANGES — Add-Drop Policy

Add: Students may add a course during the official Add-Drop Period (the first three to five days of each quarter - see calendar). After the first five class days, no course may be added. Approval of the student's faculty adviser is necessary before any course change. (For Continuing Education courses "Add's" will be accepted up to and including the second class meeting.)

Drop: Students may drop a course during the official Add-Drop Period (the first three to five days of each quarter - see calendar). The fact that the student was enrolled in a class so dropped will not appear on the permanent record. Approval of the student's faculty adviser is necessary before any course change. For withdrawal after the first five class days, consult the Withdrawal Policy.

STUDENT LOAD — *Maximum*

A student who is enrolled in 15 quarter hours of course work is considered to be carrying a normal academic load. Students desiring to take 19 or more quarter hours of course work must obtain written permission from the Dean of the College in which they are enrolled for presentation in the registration line.

ACADEMIC STANDING

It is of major concern to the University that each student should make reasonable progress toward his educational goal. A guidance

and counseling service is provided to aid all students at all times, but special attention is given when a student is not progressing satisfactorily. Every effort will be made to aid him in the resumption of satisfactory progress.

Acceptable academic standing at the University is reserved for those students who achieve and retain a GPA of 2.0 (C) or higher. A student remains in good standing academically as long as he achieves normal academic progress required for graduation.

STUDENT CLASSIFICATIONS

Students will be classified by level, on the basis of quarter hours satisfactorily earned:

FRESHMAN:	through 44 hours
SOPHOMORE:	45-89 quarter hours
JUNIOR:	90-134 quarter hours
SENIOR:	135 or more quarter hours, prior to completion of baccalaureate requirements
POST-BAC-CALAUREATE:	any student enrolled in graduate-level courses who has a baccalaureate degree but not admitted to a Graduate Program
GRADUATE:	any student enrolled in Graduate courses who has been admitted to a Graduate Program

Students will be classified as "full-time", based on the quarter-hour load for which they register each quarter, according to the following minimum schedule:

	Undergraduate	Graduate
Fee-assessing purposes	7 Qtr. Hrs.	7 Qtr. Hrs.
Selective Service	12 Qtr. Hrs.	12 Qtr. Hrs.
Veteran's benefits (full allowance)	14 Qtr. Hrs.	12 Qtr. Hrs.
Veteran's benefits (3/4 allowance)	10 Qtr. Hrs.	9 Qtr. Hrs.
Veteran's benefits (1/2 allowance)	7 Qtr. Hrs.	6 Qtr. Hrs.

Students registered for less than seven quarter hours in any one quarter will be considered "part-time" students.

Other Student classifications are as follows:

AUDITOR: A student registered for any credit course who is not seeking credit.

NON-CREDIT: A student registered for non-credit offerings, such as Remedial English, Mathematics, etc.

SPECIAL STUDENT: A student of demonstrated academic ability who does not meet the regular requirements for admission.

TEMPORARY: A student that applied on time and is permitted to register and attend class pending completion of his admissions file.

TRANSIENT: (1) A student registered at Florida Tech with the approval of some other university or college where he is regularly enrolled, or (2) an FTU student temporarily in attendance at another university or college, with the approval of FTU.

UNCLASSIFIED: A student earning credit, but not working on a degree program.

ACADEMIC STANDARDS FOR LEADERSHIP

To be eligible for any position of leadership or responsibility with any recognized student organization, publication, or activity, a student must be enrolled in a minimum of 12 quarter hours, possess an FTU grade point average of at least 2.0 (C), and must not be on academic warning, probation or disciplinary probation. Applications for appeals due to extenuating circumstances are available in the office of the Dean of Student Affairs.

ACADEMIC TERMS & ACTIONS DEFINED

Quarter Average	Grade Point Average on work attempted during any given quarter.
FTU Average	Grade Point Average on all work attempted while in attendance at Florida Technological University.
Overall Average	Grade Point Average on all work attempted since entering college, including work from all previously attended institutions.
Academic Warning	First action taken when a student's FTU overall GPA drops below 2.0. An FTU student is placed on Academic Warning only once. Subsequent action will be Academic Probation.
Academic Probation	Action taken if a student on Academic Warning does not achieve a 2.0 GPA or better in the subsequent quarter. This action is also taken when a student who has previously been on Academic Warning lets his overall FTU GPA drop below 2.0. Academic Probation will continue until such time as the student's overall GPA reaches 2.0 or better.
Disqualified	A student on Academic Probation is Disqualified when he fails to achieve a 2.0 GPA during the subsequent quarter. A student who is Disqualified may not enroll at the University for one quarter following disqualification.

Exclusion	If a student is readmitted after an appeal to the Admissions and Standards Committee following disqualification and still fails to achieve a 2.0 GPA, he is excluded from the University. Exclusion implies permanence and has no time limit.
Appeal	Every student has the right to Appeal any of the preceding four academic actions either in person or in writing. The Appeal should be made to the Admissions and Standards Committee. Contact the Director of Admissions for procedure.
Readmission	If a student has dropped out of the University for any reason, he must reapply on the appropriate form 30 days prior to the quarter he wishes to reenter.

First time FTU students may be admitted on either Academic Warning or Academic Probation at the discretion of the Admissions Officer or the Admissions and Standards Committee. Academic Warning and Probation are intended to inform the student making unsatisfactory progress of his need to alter study habits and to seek additional counseling. Early recognition will indicate to the student and to his parents the possible jeopardy to his academic goals, and will also allow an opportunity to demonstrate acceptable performance.

EARNING CREDIT WHILE DISQUALIFIED OR EXCLUDED

A student disqualified while a Freshman or Sophomore and who subsequently receives an A.A. degree (with a 2.0 average on all college work attempted) from an accredited State of Florida junior college may be readmitted to the university with credit earned accepted in accordance with standard University policies.

In all other instances, during the quarter immediately following disqualification from Florida Technological University, a student may not earn credit toward a degree at FTU by taking credit in residence at another institution or through any extension or correspondence courses.

A student who attends other colleges or universities after the period of disqualification has elapsed will be classified as a transfer student and his readmission will be based on his total educational record.

WITHDRAWAL POLICY — From a Course (After Add-Drop Period) or from the University.

In order to withdraw from a course after the first five days, the student must have the approval of his faculty adviser and the

instructor. Withdrawal forms may be obtained from and must be returned to the Registrar's Office.

A "W" grade will be entered for a student who withdraws prior to the end of the fourth week of classes. A "W" will be entered for a student who withdraws while passing after the fourth week. An "F" will be entered for any student who withdraws while failing after the fourth week. A student who ceases to attend a class or the university without approval at any time prior to the reporting of final grades will receive a grade of "F" in the course or courses so dropped.

Students may not change from credit to audit after the fourth week unless passing in the course to be changed.

Students may not withdraw from a class or from the University or change from credit to audit during the last two weeks of any quarter.

These withdrawal policies apply to part-time, as well as to full-time, students and are effective whether the student withdraws from one course or from the University.

In order that the student's record at Florida Technological University may be complete at all times, a terminal interview with the Dean of the College and the Dean of Student Affairs must be arranged. Forms for *Withdrawal In Good Standing* may be obtained at the Registrar's Office and must be returned to the Registrar. When signed by designated individuals, the student will be entitled to a status of good standing.

A student leaving the University during or at the end of the quarter with financial obligations to the University unfulfilled (for example, library fines, breakage fees, and so forth) will have the statement *Not in Good Standing* entered on the permanent record.

STEPS IN THE GRADUATION PROCESS

Students should apply to the Registrar for graduation before registering for their final quarter of attendance. Following completion of 150 quarter hours of course work applicable toward an undergraduate degree, the student is notified by and should report to the Registrar's Office and initiate the process of application for graduation. The last possible day to complete an Application for Graduation is the last day of the Add-Drop Period for the quarter in which the student expects to complete degree requirements.¹

1. The student must report to the Registrar's Office and make formal application for graduation.

¹See Academic Calendar — pages 10-15.

2. The candidate is sent to his adviser with the forms necessary to check the courses needed to determine graduation requirements. The form will be completed and forwarded to the Dean of the appropriate college for his approval.
3. Upon the completion of graduation requirements, the student's academic record will be checked by both the Dean of the College and the Registrar. If for any reason, graduation requirements have not been met, the student will be notified immediately.

Successful completion of the degree requirements stated in the catalog under which the student has indicated he wishes to graduate shall constitute a recommendation of the respective college faculty that the degree be awarded, assuming the student is in good standing in the University.

All candidates certified to be eligible for a degree are expected to be present for graduation. In the event that circumstances or hardships prohibit attendance, permission to receive the degree in absentia may be obtained from the Registrar's Office.

Candidates for graduation who anticipate enrolling in any graduate courses should register for, complete, and furnish satisfactory scores on the Graduate Record Examination (GRE), or the ATGSB for business majors, before they will be considered for admission. Contact the Developmental Center to complete this requirement.

DOUBLE MAJORS (FTU STUDENTS)

Any student satisfying all requirements for two majors shall be granted a single degree showing both majors.

SECOND BACHELOR'S DEGREE (FTU STUDENTS)

Graduates from accredited four-year institutions who apply for admission to work toward a second baccalaureate degree at Florida Technological University must meet the regular graduation requirements of the major department and the 45-quarter-hour residency requirement.

Any Florida Technological University student desiring to obtain two baccalaureate degrees must meet the requirements for both degrees and earn a minimum of 225 quarter hours.

Each student is responsible for reading and understanding the graduation requirements as stated in the catalog under which he plans to graduate.

Charter Graduation Class — 1970



GRADUATE STUDIES

GENERAL INFORMATION

The Office of Graduate Studies consists of a Director who is assisted by a Graduate Council of appointed representatives from each college and the Faculty Senate. The Office of Graduate Studies is responsible for the establishment and monitoring of minimum general standards of graduate work in the University and for the coordination of the graduate programs of the various colleges of the University. The responsibility for the detailed operation of graduate programs is vested in the individual colleges. Prospective students are referred to the particular college section in this bulletin offering the graduate program in which they are interested.

GRADUATE PROGRAM

At this printing, graduate study is available in the College of Business Administration and the College of Education. Additional graduate study areas may be authorized later.

ADMISSION TO GRADUATE STUDIES

APPLICATIONS

Applications for admission to graduate study may be obtained from the Registrar, the Dean of the College offering the program, or from the Director of Graduate Studies. Applications which appear to meet minimum standards for admission are referred to the Dean of the appropriate College for his recommendation.

Applications will not be considered without complete official transcripts of all undergraduate and graduate work attempted. All transcripts must be received directly from the Registrar of the institution in which the work was attempted.

ADMISSION REQUIREMENTS

Unqualified admission to graduate study is normally dependent upon the presentation of a baccalaureate degree from an accredited college with a grade point average (GPA) of at least 2.8 and acceptance by the Department or administrative unit offering the graduate program to which the prospective student is applying. A student may be provisionally admitted with less than a 2.8 GPA upon recommendation of the Dean of the College to which he seeks admission. Conditions for advancement to regular status will be stipulated by the appropriate College Dean (or Deans) based on the recommendation of the student's major Department (or administrative unit) and subject to approval of the Director of

Graduate Studies. Applicants will receive their notice of acceptance and registration appointment from the admissions office.

While the general admission requirements described above apply generally throughout the University, certain additional requirements may be established by the individual Colleges.

TRANSFER OF GRADUATE CREDIT

Normally, nine quarter credits may be transferred to FTU for application to a Masters program. A greater number of credits as provided for by FTU Criteria for Master's Degree Graduate Programs may be transferred at the discretion of the Dean of his College upon a petition made by the student.

GRADUATE RECORD EXAMINATION REQUIREMENT

All students are required to submit scores on the Graduate Record Examination (GRE), except those in Business Administration*, for admission to graduate study. Those scores which constitute a satisfactory performance on the GRE are determined by the College to which the student is applying. Each applicant must submit scores on the aptitude section of the GRE but is encouraged, either at the request of the department concerned or of his own volition, to submit additional scores on one or more advanced subject matter tests of the GRE.

The GRE is given in October, December, January, February, April, and July at numerous locations in the United States. To determine the exact dates and most convenient locations, applicants should write to the Educational Testing Service, Princeton, New Jersey 08540. Advance registration is required and scores are usually received about a month after the examination.

Students who apply for admission too late to take the GRE before their matriculation date may apply for admission presenting scores on Miller Analogies Test or Doppelt Mathematical Reasoning Test, or Minnesota Engineering Analogies Test, as appropriate to their chosen area. These tests are available at numerous locations in the United States and on request at the Florida Technological University Developmental Center. The student is cautioned that such tests are not substitutes for the GRE. The GRE must be taken with satisfactory results prior to graduation at dates determined by the appropriate College.

If a particular county school superintendent so recommends, the GRE requirement may be waived for his educational personnel taking summer school courses for certification purposes.

Students applying for admission to graduate study in Business Administration are required to submit scores on the Admission Test for

*ATGSB required. See last paragraph of this section.

Graduate Study in Business (ATGSB). This test is given in November, February, April, July, and August at many locations in the United States. To determine exact dates and most convenient locations, students should write to the Educational Testing Service, Princeton, New Jersey 08540.

GENERAL REGULATIONS

STUDENT RESPONSIBILITY

The student is responsible for informing himself of all rules, regulations, and procedures required by the Office of Graduate Studies, and the College offering the course or program he is pursuing. Regulations will not be waived or exceptions granted because a student pleads ignorance of the regulation or claims failure of his adviser to keep him informed.

STUDENT'S COMMITTEE

It is the intent that the student's committee be influential in designing a program for the student; that it should provide continual guidance; and that it should be the principal mechanism for evaluation of the student's progress.

This committee must have at least three (3) members. Members of the committee will be appointed by the Dean of the College in cooperation with the Department or appropriate unit in which the student is enrolled.

STUDENT'S PROGRAM

A total program of study must be established for each student prior to completion of 12 hours of graduate credits or his first quarter of full time work. This program must be developed by the student in cooperation with his committee and should be approved by the appropriate College Dean. A copy of the program and names of the student's committee members will be filed with the Office of Graduate Studies prior to the start of the student's second quarter.

LOADS

The maximum graduate registration allowed in any quarter is 15 credits, although a minimum of 9 credits may constitute a full load. Students applying for assistance under Public Law 89-358 (Veterans' Readjustment Benefits Act of 1966) must register for 12 credits per quarter to qualify for certification as a full-time student.

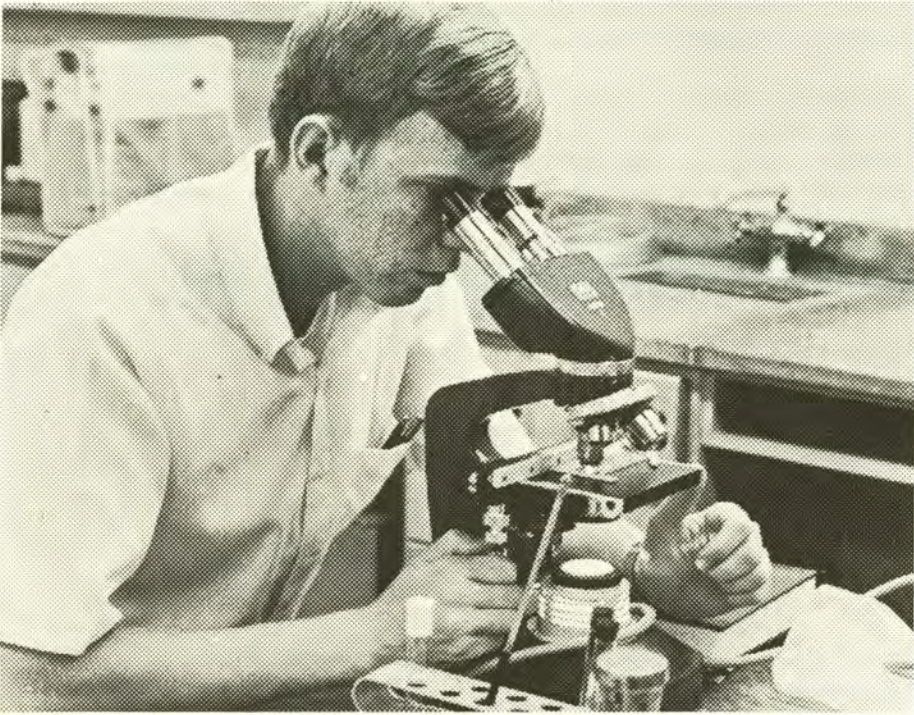
COURSES AND CREDITS

Courses numbered 500-599 are primarily for beginning graduate students and those numbered 600-699 are for graduate students only. A maximum

of 18 credits of dual level course work can be included in the students graduate program.

GRADES AND SCHOLARSHIP

Acceptable grades for students pursuing graduate study are A and B. A cumulative grade point average (GPA) of 3.0, based on a minimum of the first 12 credits, shall be considered a satisfactory performance. A student whose GPA falls below this value will normally be dropped from the graduate program.



ACADEMIC PROGRAMS

Each college requires work in the Environmental Studies Program in addition to its respective curricula.

ENVIRONMENTAL STUDIES PROGRAM

The Environmental Studies Program presents to each student an opportunity to gain an insight into an organized body of knowledge designed to enhance the student's ability to make intelligent decisions in a world of the future. This program provides the student with an acquaintance of many of the major areas of academic inquiry. It permits the student to make a more meaningful choice of a major and provides insights into areas from which he may select courses for elective credit.

In order that the student may have a greater range of course selection, as well as an opportunity to build a greater degree of flexibility into his academic program, the following Environmental Studies Program supersedes the program stated on Pages 64-66 of the 1969 Florida Technological University Bulletin.

ENVIRONMENTAL STUDIES (69)

BASIC PROGRAM (55)

Communications (3 hours required from Groups I, II, & III)	9
I. Composition (3)	
ENG 101 Composition I (3)	
II. Speech	
SPE 101 Fundamentals of Oral Communication (3)	
III. Composition, or Current Literature, or Computer Programming (3)	
COMP 101 Introduction to Computer Science (3)	
COMP 102 Computer Programming (3)	
COMP 103 Computer Fundamentals for Business Applications (3)	
ENG 102 Composition II (3)	
ENG 103 Current Literature (3)	
Humanities	8
HUM 201 Western Humanities Survey (4)	
And any course from the Humanities Mind and Art Series, HUM 300 to HUM 310 (4)	
Scientific Environment	16
I. Mathematical Science (8)	
Courses in both Mathematics and Statistics must be included. Courses in Computer Science may not be used to satisfy this requirement.	
II. Biological and/or Physical Science (8)	
All courses in Astronomy, Biology, Botany, Chemistry, Geology, Microbiology, Physics, and Zoology may be used in	

the Environmental Studies Program. ENGR 151 also may be included.

Social Environment

18

- I. Social Sciences
 - Economics
 - ECON 201 and 202 or 203 (3,3)
 - History
 - Any course in History
 - Political Science
 - Any course in Political Science
- II. Behavioral Science
 - Anthropology
 - SOC 310, 311 (3,3)
 - Psychology
 - PSY 201, 202 (3,3)
 - Sociology
 - SOC 201, 202 (3,3)
- III. Foreign Language
 - Nine hours in either French, German, Russian, or Spanish

Option A: Nine hours from each of Groups I and II, with at least two fields represented in each group.

Option B: A full year (i.e., nine hours) of one of the languages listed in Group III plus either (a) six hours from Group I and three hours from Group II or (b) three hours from Group I and six hours from Group II.

General Electives

4

This requirement may be satisfied by any course at the discretion of the student and his advisor. However, he is encouraged to consider courses in Art, Literature (with exception of ENG 103), Humanities (with exception of courses used to satisfy Humanities requirement of the Environmental Studies Program), Music, Philosophy, Physical Education, Religion, and Theatre.

ADVANCED PROGRAM (14) (Required of all students)

Business and Engineering Environment

(3 hours required from Groups I and II)

6

- I. Business (3) *
 - BADM 301 Business Concepts (3) or
 - BADM 302 Personal Investments (3)
 - ECON 307 Economic History of U.S. (3)
- II. Engineering (3)
 - ENGR 481 Man and Machine (3)
 - ENGR 482 Engineering and Technology in History (3)
 - ENGR 483 Technology and Social Change (3)
 - ENGR 484 Science in History (3)
 - ENGR 485 Topics in Urban Development (3)
 - ENGR 486 Science, Engineering, and Ethical Systems (3)
 - ENGR 487 Historical Architecture (3)
 - ENGR 488 Man and Environment (3)

*Bus Ad majors may take ECON 307, or substitute. See adviser.

Senior Seminars

8

Each student matriculating in one of the six colleges will take four of the six seminars, omitting the one offered by his college. Students in the General Studies program will take five seminars.

- I. Humanities and Arts in Human Affairs
HFA 490 Humanities and Arts in Human Affairs (2)
- II. Business in Human Affairs
BADM 490 Business in Human Affairs (2)
- III. Education in Human Affairs
EDTA 490 Education in Human Affairs (2)
- IV. Science in Human Affairs
SCI 490 Science in Human Affairs (2)
- V. Engineering in Human Affairs
ENGR 490 Engineering in Human Affairs (2)
- VI. Social Sciences in Human Affairs
SSC 490 Social Sciences in Human Affairs (2)

TOTAL**69**



MAJOR IN GENERAL STUDIES

PURPOSE

The General Studies curriculum is a university-wide general purpose program leading to a Bachelor's Degree in General Studies (BGS). The program is administered through the office of the Associate Dean for Academic Affairs and is designed for liberal education and academic flexibility. It recognizes that, apart from the professional curricula, there are many combinations of courses which can be structured into meaningful programs to meet the needs of individual students.

The General Studies program has two main purposes:

1. It accomodates students who desire a liberal, nonprofessional education encompassing several fields.
2. It provides a means for students to start a productive university education while delaying decision on professional curricula until the sophomore year.

Students who are undecided as to their major should pursue the General Studies program until they can select a specific major area.

Students fulfilling the requirements for the BGS degree must complete the Environmental Studies Program, five of the six ESP Senior Seminars, and a minimum of 22 credits in each of five course areas. The five subject areas must be distributed over at least four colleges. Courses used to fulfill the Environmental Studies Program may not be used to satisfy any of the five course area requirements. Of these credits, at least half from each college or area¹ must be in courses numbered 300 and above.

COURSE AREA GROUPINGS

BEHAVIORAL AND SOCIAL SCIENCES

Anthropology, Economics,² Geography (Social), Political Science, Psychology, and Sociology.

BIOLOGICAL SCIENCES

Biology, Botany, Microbiology, Zoology, and selected courses in the Allied Health Sciences.

¹In the mathematical and physical sciences areas, at least half of the courses must be at the 200 level or above.

²This course shown in two areas.

BUSINESS ADMINISTRATION

Accounting, Business Administration, Economics,¹ Finance, Management, and Marketing.

COMMUNICATIONS

Journalism, Radio-Television, Speech and general courses in Communications.

EDUCATION

Teaching Analysis, Human Development, Library Science and other related courses in Education.

ENGINEERING

Selected courses in Civil Engineering and Environmental Sciences, Electrical Engineering and Communication Sciences, Engineering Mechanics and Materials Sciences, Industrial Engineering and Management Systems Mechanical Engineering and Aerospace Sciences, Physics, and other related courses from the engineering core and interdisciplinary grouping. (ENGR 481-488.)

FINE ARTS

Art, Music, and Theatre.

HUMANITIES

English, Foreign Languages, History, Philosophy, Religion, and Humanities courses.

MATHEMATICAL SCIENCES

Computer Science, Mathematics, and Statistics.

PHYSICAL SCIENCES

Astronomy, Chemistry, Geography (Physical), Geology, Physics,¹ and general courses in the Earth and Space Sciences.



¹This course shown in two areas.

**COLLEGE OF BUSINESS
ADMINISTRATION**

ACCOUNTANCY

BUSINESS ADMINISTRATION

ECONOMICS

FINANCE

MANAGEMENT

MARKETING

PRE-LAW

MASTER OF BUSINESS ADMINISTRATION

Graduate Management Course Using Video Equipment



Undergraduate Course in Economics

COLLEGE OF BUSINESS ADMINISTRATION

The purpose of education may be described as the maximum development of one's potential for accomplishment as an individual and as a responsible member of a dynamic society. The goal of the College of Business Administration is an extension of this purpose into the field of business.

The degree Bachelor of Science in Business Administration with several majors is offered by the College of Business Administration.

Graduates of the College of Business Administration may pursue a wide variety of careers in business and industry, in education, and in government. The various programs of study offered by the College are designed to assist the student in obtaining a sound academic preparation for the career of his choice.

COURSE REQUIREMENTS FOR GRADUATION

AREAS	QUARTER HOURS
1. Environmental Studies Program	69
Basic (55)	
Advanced (14)*	
2. Business Core	51-54
3. Major Field of Concentration	24-35
Accountancy (35)	
Business Administration (26-28)	
Economics — General (26)	
Economics — Quantitative (25)	
Finance (29)	
Management (28)	
Marketing (33)	
Transportation (24)	
4. Electives (varies with major)	25-40
TOTAL QTR. HOURS REQUIRED	183

ENVIRONMENTAL STUDIES PROGRAM (69)

The student in the College of Business Administration is required to fulfill the general regulations for all undergraduate degree students listed on page 45 to satisfy the Environmental Studies Program and include MATH 115 or MATH 221 in the mathematical science sequence. In addition, a student majoring in Marketing or Management must include PSY 201, 202.

Each student must include nine hours of history, political science, and/or economic history in his academic program.

*College of Business Administration students may take ECON 307 or, with the approval of his adviser, any upper division course outside the College.

BUSINESS CORE (48-51)

The business core is designed to introduce the student to the foundation courses in each of the major areas of business administration. The business core provides a platform from which the student builds his major course of study.

BADM	101	Business	4
ACCY	111, 112, or 307	Principles of Accountancy	8/5
ECON	202, 203	Principles of Economics	9
ENG	301	Professional Report Writing	3
FIN	301	Finance	5
MGMT	301	Management	5
MKTG	301	Marketing	5
ECON	321, 322	Business and Economic Statistics w/lab	4
BADM	371	Business Law	3
ECON	401	Managerial Economics	3
BADM	495	Business Policies	5

MAJOR (24-35)

A student may major in any of the following areas of specialization. Specific major course requirements are listed under the name of the major.

Accountancy	Business Administration
Economics	Finance
Management	Marketing

ELECTIVE (25-40)

1. A student is expected to enroll in courses at a level commensurate with his class standing.
2. A minimum of 15 elective credit hours must be earned outside the College of Business Administration.
3. A minimum of 6 credit hours of upper level (300-400) courses must be included in the elective credits counted toward a degree.

TOTAL (183)**MAJOR COURSE REQUIREMENTS****ACCOUNTANCY**

Accountancy is usually selected as a major by the student who is preparing for private, governmental, or public accounting, or who wishes to use accountancy as general training for a career in business.

In private accounting, the accountant's employment is limited to a single organization. The size and nature of the organization determines the scope of the accounting activities but, broadly defined, the following duties are

illustrative — design and installation of accounting systems, preparation of financial statements and reports, cost accounting, internal auditing, interpretation and analysis of budgets, and preparation of tax returns.

Governmental accounting deals with accounting principles, standards, and procedures applicable to state and local governments and to institutions for the purpose of expressing an opinion as to the fairness of the information presented. The public accountant may be called upon to render services to clients which transcend the expression of an opinion on financial statements. These services include the areas of management consulting and tax service.

The student who wishes to sit for the Certified Public Accountant's Examination by selecting the one-year work-experience option should read Section 473.08, Florida Statutes, State Board of Accountancy.

Course requirements for a major in Accountancy are:

A. Required:

- ACCY 311 Intermediate Accounting (4)
- ACCY 312 Intermediate Accounting (4)
- ACCY 411 Advanced Accounting (3)
- ACCY 412 Advanced Accounting (3)
- ACCY 321 Cost Accounting (3)
- ACCY 433 Auditing (3)
- ACCY 341 Governmental Accounting (3)
- ACCY 451 Federal Income Tax Accounting (3)
- ACCY 461 Computer Applications to Accounting Problems (3)

B. Elective: (Two courses)

- ACCY 322 Cost Accounting (3)
- ACCY 434 Auditing II (3)
- ACCY 452 Federal Income Tax Accounting (3)
- ACCY 413 Advanced Accounting (3)

C. Not more than 36 hours of credit in Accountancy beyond the college business core requirement may be counted in the 183 quarter hours required for graduation.

BUSINESS ADMINISTRATION

The increased use of sophisticated tools of quantitative analysis in the business world requires additional emphasis in the quantitative area. The business administration option provides an opportunity for the quantitatively able student to utilize his ability in the solution of business and economic problems through the use of quantitative tools. A good foundation in mathematics and statistics is of particular value to the student selecting this major.

There is a wide range of opportunities in business and industry, government, research, and education awaiting the student completing his major in business administration.

Course requirements for a major in Business Administration are:

A. Required:

BADM	311	Mathematical Applications to Business, I	(3)
BADM	312	Mathematical Applications to Business, II	(3)
BADM	484	Operations Research	(3)
ECON	421	Economic Statistical Analysis	(4)

B. Elective: (Two courses from group 1 and group 2)

1.	ACCY	321	Cost Accounting	(3)
	BADM	372	Business Law	(3)
	BADM	444	International Business Operations	(3)
2.	ECON	371	Mathematical Economics	(3)
	ECON	451	Econometrics	(3)
	MKTG	344	Marketing Logistics	(3)
	MKTG	384	Marketing Research	(5)

- C. Not more than 32 hours of credit in Business Administration beyond the college business core requirements may be counted in the 183 quarter hours required for graduation.

ECONOMICS

The discipline of economics is defined in several ways. It is most frequently described as the study of how man uses limited resources to satisfy his wants. Within this framework, the economist is concerned with (1) the functioning of the economy as a whole and (2) the functioning of individual units within the economy, particularly the business firm and the consumer. Many important fields are covered in the study of economics, including economic theory, labor, international trade, economic history, agriculture, quantitative analysis, public utilities, economic systems, economic development, public finance, business and government, and urban economics.

One of the major goals of economics is the preparation of a student for intelligent citizenship. The economics courses required of all students in the College of Business Administration are designed to provide a sound grasp of tools of analysis and measurement, as well as the ability to apply systematic analysis to problems of business policy. A major in economics prepares the student for careers in a variety of areas, including business, industry, and government.

Although all of the economics courses are offered and administered by the College of Business Administration, a student majoring in economics may earn either a Bachelor of Science degree in Business Administration in the College of Business Administration or a Bachelor of Arts degree in the College of Humanities and Fine Arts. There are significant differences in these two degree programs. The Bachelor of Science in Business Administration degree student must complete the business core. The Bachelor of Arts degree requirements are listed in the College of Humanities and Fine Arts section of this catalog.

Major course requirements for the Bachelor of Science in Business Administration degree with a major in Economics are:

I. GENERAL ECONOMICS

A. Required:

ECON 301 Intermediate Price Theory (4)
ECON 311 Intermediate Money, Income and Employment Theory (4)

B. Elective: (Six courses in economics not used elsewhere)

C. Not more than 32 quarter hours of credit in Economics beyond the College of Business Administration's business core requirements may be counted in the 183 quarter hours required for graduation.

II. QUANTITATIVE ECONOMICS

A. Required:

ECON 301 Intermediate Price Theory (4)
ECON 311 Intermediate Money, Income and Employment Theory (4)
ECON 371 Mathematical Economics (3)
ECON 421 Economic Statistical Analysis (4)
ECON 451 Econometrics (3)

B. Elective: (Three courses in economics not used elsewhere)

C. Not more than 32 quarter hours of credit in Economics beyond the College of Business Administration business core requirements may be counted in the 183 quarter hours required for graduation.

FINANCE

The program in finance is designed to provide the student with a broad knowledge in the areas of business and corporation finance and investments. The program provides the student with the theoretical background and the tools of analysis required for making effective judgments in finance.

Business and corporation finance is concerned largely with the institutions and instruments through which short-term and long-term capital may be obtained and the management of funds in the individual firm.

The area of investments includes an analysis of the different types of outlets for investment funds, such as stocks and bonds, and an examination of the various factors involved in investment decisions and portfolio management.

The study of finance prepares the student for careers in business financial management and with financial institutions. Commercial banks, savings

and loan associations, insurance companies, and investment firms represent some of the financial institutions seeking the student who majors in finance.

Course requirements for a major in Finance are:

A. Required:

- FIN 321 Investments (4)
- FIN 331 Money and Banking (4)
- FIN 411 Financial Institutions (4)
- FIN 431 Financial Management (4)

B. Elective: (Two courses from group 1 and one course from group 2)

1. ECON 311 Intermediate Money, Income and Employment Theory (4)
 FIN 311 Risk and Insurance (4)
 FIN 421 Security Analysis (4)
 FIN 341 Real Estate (4)
2. BADM 484 Operations Research (3)
 ECON 341 International Economics (3)
 ECON 431 Public Finance (3)

C. Not more than 32 quarter hours of credit in Finance beyond the college business core requirement may be counted in the 183 quarter hours required for graduation.

MANAGEMENT

The study of management includes an investigation into the areas of organization theory, personnel management, and production management. An understanding of organizations and the process by which they develop and influence behavior are important to the study of management.

Organization theory is focused on the organization as a social system and the forces which affect this system, such as behavior of individuals in groups, economic conditions and technology. Personnel and industrial relations are concerned primarily with the effective utilization of human resources within the business organization.

The production manager is concerned with the efficient utilization of the organization's material resources. The design and improvement of productive capacity and the coordination of the production process with other system activities are primary concerns.

A student majoring in management may find a wide variety of career opportunities in business, industry, or government.

A. Required:

- PSY 314 Industrial Psychology (4)
- MGMT 324 Production Management (5)
- MGMT 344 Organization Theory (5)

MGMT	364 Personnel Management (5)
BADM	484 Operations Research (3)

B. Elective: (Two Courses)

ACCY	321 Cost Accounting (3)
ECON	331 Economics of Labor (3)
MGMT	347 Human Relations in Management (3)
MGMT	367 Industrial Relations (3)
COMP	487 Computer Processing of Business Data (3)

C. Not more than 32 quarter hours of credit in Management beyond the college business core requirement may be counted in the 183 quarter hours required for graduation.

MARKETING

Marketing encompasses those business activities directly related to the process of placing meaningful assortments of goods and services in the hands of the consumer. Advertising and sales management, product planning, physical distribution, product pricing, and the investigation of the marketing environment are important subject areas included in the study of marketing. A marketing student is concerned with the efficient performance of these marketing activities and the effective coordination of marketing activities with the other operations of the firm.

A student majoring in marketing may find career opportunities in the management and performance of marketing activities. These activities include buying, selling, distributing, pricing, new product planning, and advertising. Careers in marketing research are selected by students who are interested in the analysis and feasibility studies of various marketing strategies and policies. Opportunities are also available in education and government.

Course requirements for a major in Marketing are:

A. Required:

PSY	300 Applied Psychology (4) or
PSY	314 Industrial Psychology (4)
MKTG	364 Advertising Management (3)
MKTG	367 Sales Management (3)
MKTG	384 Marketing Research (5)
MKTG	495 Marketing Policies and Strategies (3)

B. Elective: (One course from each group)

1. MKTG 324 Marketing Environment (3)
MKTG 326 Consumer Market Behavior (3)
2. MKTG 334 Pricing Policies (3)
MKTG 344 Marketing Logistics (3)
3. BADM 444 International Business Operations (3)
MKTG 469 Channels of Distribution Management (3)

C. Not more than 32 quarter hours of credit in Marketing beyond the college business core requirement may be counted in the 183 quarter hours required for graduation.

MASTER OF BUSINESS ADMINISTRATION DEGREE

The College of Business Administration offers a curriculum leading to the Master of Business Administration degree. The program of study is primarily concerned with the advanced study of broad business concepts and relationships. The purposes are (a) to strengthen the analytical tools of the individual for use in research necessary to resolve business problems, (b) to develop depth of knowledge of the business functions, (c) to expose the student to decision-making concepts and practice, and (d) to encourage a logical approach to the resolution of business problems. The graduate program is conducted under the direction of a faculty committee on graduate study.

Graduate courses are available in the late afternoon and evening for the convenience of individuals who are actively engaged in business.



ADMISSION REQUIREMENTS

Admission is open to the student with a baccalaureate degree from a recognized college or university with an overall 2.8 grade point average. No previous academic training in business is required, and the M.B.A. program is open to graduates in business, science, liberal arts, engineering, education, and other fields. In evaluating a student's application for admission, primary emphasis will be given to his undergraduate record and the Admission Test for Graduate Study in Business (ATGSB). The applicant's intellectual development during the course of his previous academic career, his extracurricular activities, employment experience, and other evidence of motivation for graduate study in business will also be considered.

PURPOSE

No action will be taken on an application before the Admission Test for Graduate Study in Business score report, a transcript showing proof of attainment of the Bachelor's degree, and transcripts of all other colleges attended have been submitted to the Registrar, Florida Technological University. The applicant must arrange for transcripts to be submitted by the proper officials of the institutions which he attended. Transcripts in the possession of an applicant will not be accepted. It is the applicant's responsibility to make arrangements to take the ATGSB and to direct the Educational Testing Service to mail the ATGSB score report to the Registrar and to the College of Business Administration at Florida Technological University. The ATGSB is administered at locations throughout the country and in foreign test centers in February, April, July, August and November. Applications and information about the tests may be obtained by addressing the Educational Testing Service, Princeton, New Jersey 08540. Completed applications for the test must be returned to the Educational Testing Service at least three weeks in advance of each scheduled test date.

A personal interview in connection with the application for admission is desirable. Personal interviews can be arranged through the Dean's office.

Enrollment in graduate business courses is limited to students who have been accepted in the Master of Business Administration program as a regular, provisional, or special student. Students who apply too late to take the ATGSB will be permitted to register for prerequisite courses only. (An exception can be made for a student ranking in the upper 10% of his undergraduate class.) The University must have on file an application prior to registration for prerequisite courses.

PROGRAM OF STUDY

PREREQUISITES FOR GRADUATE PROGRAM

The following prerequisites must be completed before a student may enroll in graduate courses: ¹

ACCY 111, 112 or ACCY 307 Basic or Accounting Concepts
 BADM 371 Business Law
 ECON 201, 202, 203 Principles of Economics
 ECON 321, 322 Bus. and Econ. Statistics²
 FIN 301 Finance
 MGMT 301 Management
 MKTG 301 Marketing

Students completing their last preparatory course(s) may also register for graduate courses in the same quarter if they have been accepted into the graduate program.

COURSE REQUIREMENTS

In addition to the prerequisites, a minimum of forty-five quarter hours of graduate study are required for the Master of Business Administration degree.

GRADUATE COURSES

SUBJECT			QUARTER HOURS
ACCY	601	Managerial Accounting	3
BADM	601	Quantitative Analysis for Business Decisions	3
BADM	621	Business Policy and Responsibility	3
BADM	695	Business Research Methods	3
ECON	601	Economics of the Firm	3
ECON	611	Aggregate Economics — Income, Employment, and Growth	3
ECON	621	Statistics for Business and Economic Analysis	3
FIN	601	Capital Budgeting and Financial Planning	3
FIN	611	Working Capital and Financial Problems	3
MGMT	601	Management Process	3
MGMT	611	Organizational Behavior	3
MKTG	601	Marketing Policy	3
TOTAL CORE REQUIREMENTS			36
Electives*			9
TOTAL			45

*Each student will complete at least nine hours of approved electives from 600 level courses. Students may make selections from any 600 level offerings in Economics or Business Administration or from approved graduate courses in other colleges which may be open to them.

¹Prerequisites may be satisfied through credit by examination or through completion of similar courses within the past five years at a recognized college or university.

²Calculus may be substituted for Statistics 201, a prerequisite of ECON 321, 322.

RESEARCH PAPERS

No thesis is required for the M.B.A. degree. However, each student is required to submit a research paper after the completion of BADM 695, Business Research Methods. The paper would be a critical and analytical review of the existing literature on a given subject, or the statement, exposition, and resolution of a hypothesis in an area of Business Administration. Style instructions may be obtained from the Dean's office. It is the student's responsibility to communicate with his adviser for the assignment of a research paper advisory committee and other details of his graduate program.

RESIDENCE REQUIREMENTS

The Master of Business Administration degree may be earned by employed students who attend evening classes. A part-time student normally will be limited to six hours of credit per quarter, whether preparatory or graduate courses.

Students who need most of the preparatory courses will probably need the equivalent of two full years of full-time study to complete the requirements for the M.B.A. degree. The approximate time required to complete the requirements for the degree will be determined on an individual basis.

TRANSFER CREDIT

A maximum of nine quarter hours of graduate credits beyond the preparatory requirements may be accepted in transfer from another institution. If taken within the last five years, the student should request the transfer of credits promptly after being admitted to the M.B.A. program and prior to registration as this information will be considered in his course planning.

SCHOLASTIC REQUIREMENTS

A minimum grade of "C" is required in all prerequisite work. An overall "B" average is required in all graduate work; no more than nine quarter hours of "C" grade credit can be included in a graduate program.

GENERAL INFORMATION

Additional information pertaining to the M.B.A. program is available in the graduate section of this bulletin. (See pages 56-59).

MAJOR FOR PRE-LAW STUDENTS

Schools of Law admit graduates of accredited colleges, but most do not prescribe a standard program for the major in the undergraduate college.

On the other hand, they suggest that applicants present a major in one of the following subject areas supported by electives from these same fields: accounting, economics, English, finance, history, literature, political science, sociology, and speech. Students who expect to enter a school of law should plan their program with the aid of the pre-law adviser.



**COLLEGE OF
EDUCATION**

ELEMENTARY

SECONDARY

BIOLOGY

BUSINESS EDUCATION

CHEMISTRY

ENGLISH LANGUAGE ARTS

FOREIGN LANGUAGE

MATHEMATICS

PHYSICS

SOCIAL SCIENCES

SPEECH

COMPREHENSIVE (1-12)

LIBRARY AND AUDIOVISUAL SERVICE

MUSIC EDUCATION

PHYSICAL EDUCATION

VISUAL ARTS

MASTER OF EDUCATION



COLLEGE OF EDUCATION

The College of Education is organized as a professional college within the University. Each student who is planning a career in teaching in the elementary or secondary schools should enroll in this College.

The academic program is primarily concerned with three broad areas: Environmental Studies, Specialized Preparation and Professional Preparation. All of these areas are interrelated and interdependent.

The Environmental Studies requirements are designed to provide a broad foundation for each individual. These courses are offered by each of the colleges.

In general, specialized preparation in subject matter areas for secondary education majors is offered by the University's other colleges, while specialized elementary education content courses are offered by the College of Education. All programs are developed in cooperation with the other colleges within the University.

The professional sequence is the responsibility of the College of Education and is designed to:

- A. Give insights into the processes of school curriculum and organization.
- B. Present an opportunity for the student to understand how learning takes place, as well as furnish him with methods and procedures needed for successful teaching.
- C. Develop an understanding of the society in which the school functions.
- D. Build an awareness in the individual of his relationship with students and the community.
- E. Provide significant prestudent teaching experiences and a culminating student-teaching experience near the end of his program.
- F. Stimulate each individual toward the realization of the challenges and responsibilities in the field of education and begin the development of a basic philosophy of education.

Considerable emphasis is given to providing all education majors with an opportunity to have cooperatively planned learning experiences in a laboratory setting. The laboratory experiences are specifically designed to blend realistic practical experience with theoretical knowledge. In most instances elementary and secondary schools in Central Florida serve as educational laboratories for the students of the College of Education.

The College of Education plans cooperatively with Student Affairs in the development of an effective intramural program. It also provides the physical education courses that may be applied in the Environmental Studies program.

Program design will continue to change as evaluation and research determine the advisability of change in reference to the student's personal and academic needs.

Programs are offered leading to the Bachelor of Arts degree and the Master of Education degree in Education.

BACHELOR OF ARTS DEGREE PROGRAM

The Career Teacher Programs are designed to lead to the Bachelor of Arts degree. Students are encouraged to enroll in the College of Education as early as the freshman year. Junior transfer students will enter Phase I of the professional education sequence during the first quarter in which they enroll.

A minimum of 183 quarter hours is required for graduation. Requirements, however, vary according to the selected teaching major as follows:

AREAS	QUARTER HOURS
1. Environmental Studies Program	69
Basic (55)*	
Advanced (14)	
2. Academic Specialization	41-63
3. Professional Preparation	38-42
Phase I. Teaching Analysis and Human Development	
Phase II. Developmental — Elementary Developmental — Secondary	
Phase III. Teaching Strategies Student Teaching	
4. Electives (20-34)	(varies with major)

*Student must complete a minimum of nine (9) quarter hours of English composition, rhetoric or grammar.

CERTIFICATION FOR TEACHING

UNDERGRADUATE CERTIFICATION

All College of Education curricula are designed to fulfill the State of Florida certification requirements. Upon application to the State Department of Education a graduate may be issued a Rank III Florida Teaching Certificate.

UNDERGRADUATE CAREER TEACHER PROGRAM

The Career Teacher Program consists of three distinct Phases:

PHASE I — TEACHING ANALYSIS

This phase is required of all education majors and designed to acquaint the student with basic teaching procedures, pre-instructional planning, phases of performance evaluation, and the developmental-behavioral characteristics of children. Various aspects of the teaching profession are analyzed. Experiences will provide the student a basis for deciding whether or not to pursue teaching as a career. Any university student in good standing who qualifies for sophomore courses may enroll in Phase I.

PHASE II — DEVELOPMENTAL

Developmental activities are structured to provide the prospective teacher opportunities to develop specific teaching skills and to expand his teaching field knowledge. Included are analysis of evaluation practices, school curricula, learning theory, special instructional techniques, and variables which affect classroom environment. Laboratory experiences in Phase II are jointly planned by public school personnel and university faculty. These student-teaching experiences will occur in Teacher Education Centers which are selected public elementary or secondary schools. To be admitted to Phase II a student must have an overall 2.0 academic average, have successfully completed Phase I requirements, and must demonstrate competency in written and oral communication skills.

PHASE III — APPLICATION

In Phase III the student applies the fundamentals of teaching and academic knowledge attained in Phases I and II. Under the supervision of a selected teacher, the student is responsible for developing and executing plans. A full quarter is devoted to student teaching. Concurrent enrollment in the seminar, Teaching Strategies, is required. To be admitted to Phase III, a student must have satisfied the requirements for Phases I and II; have a 2.2 average in his area of academic specialization; a 2.2 average in professional education; a 2.0 overall average; be recommended by the Phase II Teaching Team; and be accepted by the office of the Professional Laboratory Program. An application for Phase III, Student Teaching and Teaching Strategies, must be submitted during the first two weeks of the quarter prior to the student teaching quarter.

ELEMENTARY EDUCATION

The Elementary Education Programs are planned for students interested in the development and education of children twelve years of age and

younger. Students majoring in elementary education are certified to teach grades one through six upon graduation and receipt of a state teacher's certificate. Areas of study required are: (1) Environmental Studies (69 quarter hours); (2) Academic Specialization (41 quarter hours); (3) Professional Preparation (38 quarter hours); (4) Related Field of Academic Concentration (12-30 quarter hours); and (5) Electives 23 quarter hours).

REQUIRED ACADEMIC SPECIALIZATION COURSES		QUARTER HOURS
EDEL 301	Teaching Mathematics in the Elementary School	3
EDEL 302	Mathematics Programs in the Elementary School	3
EDEL 306	Music in the Elementary School	3
EDEL 307	Literature for Children	3
EDEL 312	Reading in the Elementary School	3
EDEL 315	Teaching Science in the Elementary School	3
EDEL 317	Teaching Social Sciences in the Elementary School	3
EDEL 405	Language Arts in the Elementary School	5
EDEL 406	Art in the Elementary School	3
EDEL 407	Classroom Diagnosis and Treatment of Reading Difficulties	3
EDEL 408	Science Programs in the Elementary School	3
EDEL 409	Social Science Programs in the Elementary School	3
EDEL 415	Teaching Elementary School Health and Physical Education	3
TOTAL		41

REQUIRED PROFESSIONAL PREPARATION COURSES		QUARTER HOURS
Phase I — Analysis		
EDTA 206	Human Development	3
EDTA 307	Teaching Analysis	5
Phase II — Developmental		
EDEL 311	Basic Foundations of Reading	3
EDPL 320, 321	Student Teaching	6
EDTA 305	Principles of Evaluation	3
EDTA 306	Learning Theory	3
Phase III — Application		
EDEL 316	Elementary School Curriculum	3
EDPL 421	Student Teaching	9
EDPL 408	Teaching Strategies	3
TOTAL		38

RELATED FIELD OF ACADEMIC CONCENTRATION

A related field of academic concentration consisting of 12 to 30 quarter hours is required in one of the following areas: art, communication, early childhood education, English, French, Spanish, humanities, library science, mathematics, music, physical education, sciences, or social sciences.

EARLY CHILDHOOD EDUCATION

(Nursery and Kindergarten)

In addition to certification in grades one through six, requirements may be met for certification in early childhood education. Requirements are:

QUARTER HOURS

EDEL 401 Programs in Early Childhood Education	3
EDEL 402 Developmental Processes in Early Childhood	3
EDEL 403 Language and Cognition of Young Children	3
EDEL 404 Organization of Instruction in Nursery — Kindergarten Education	3
TOTAL	12

PROFESSIONAL LABORATORY EXPERIENCE

Practical laboratory experiences in Teacher Education Centers will be scheduled for elementary education majors during two quarters of the junior year (Phase II). Daily participation at a Center is required for approximately one-half day of a school day; with a prescribed sequence of courses scheduled concurrently for the other one-half day.

Practical experience also occurs in the senior year. The student is enrolled full time for one quarter in a public elementary school under the direction of a selected teacher.

SECONDARY EDUCATION

The Secondary Education Programs are designed for students interested in the development and education of adolescents. Students majoring in secondary education are certified to teach an academic subject(s) in grades seven through twelve upon graduation and receipt of a state teacher's certificate. Areas of study required are: (1) Environmental Studies (69 quarter hours); (2) Professional Preparation (39-42 quarter hours); (3) Academic Specialization (51-63 quarter hours); and (4) Electives which vary according to major.

REQUIRED PROFESSIONAL PREPARATION COURSES QUARTER HOURS

Phase I — Analysis

EDTA 206 Human Development	3
EDTA 307 Teaching Analysis	5

Phase II — Developmental

EDSE 303 School Programs*	3
or	
EDSE 305 Secondary School Curriculum	3
EDSE 306-309, 405-409 Instructional Analysis	4-7
EDTA 305 Principles of Evaluation	3
EDTA 306 Learning Theory	3
EDPL 330 Student Teaching	3

*For K-12 certification only.

Phase III — Application

EDPL 430 Student Teaching	9
EDPL 408 Teaching Strategies	3
EDSE 304 Instructional Techniques	3
TOTAL	39-42

PROFESSIONAL LABORATORY EXPERIENCE

Majors in Secondary Education will be provided one-half day of practical laboratory experiences in Teacher Education Centers during one quarter of the junior year. A prescribed sequence of courses will be scheduled concurrently.

Practical experience also occurs in the senior year. The student is enrolled full time for one quarter in a public junior or senior high school under the direction of a selected teacher.

ACADEMIC SPECIALIZATIONS

Academic specializations are offered in biology, business education, chemistry, English, language arts, foreign languages, mathematics, physics, social sciences and speech.

In addition to completing the requirements in Environmental Studies, Professional Preparation, and selected electives, one of the following areas of academic specialization must be completed to satisfy requirements for graduation and certification.

BIOLOGY SPECIALIZATION

REQUIRED COURSES		(56 QUARTER HOURS)	
BIOL	100	General Biology	4
BIOL	350	Principles of Ecology	4
BIOL	360	Genetics	4
BIOL	491 or		
EDSE	491	Contemporary Biology	3
BOT	100	General Botany	4
CHEM	111, 112, 113	General Chemistry (4,3,3)	10
CHEM	114, 115	General Chemistry Laboratory (1,1)	2
MICR	200	General Microbiology	4
ZOOL	100	General Zoology	4
ZOOL	234	Human Anatomy	5
CLASSIFICATION (one course)			4
BOT	345	Systematics of Flowering Plants (4)	
ZOOL	340	Vertebrate Zoology (4)	
ZOOL	345	General Entomology (4)	

**GENERAL BIOLOGY ELECTIVES
SUGGESTED COURSES**

8

BIOL	460	Organic Evolution (3)
BOT	270	Economic Botany (3)
MICR	220	Sanitary Science & Public Health (3)
ZOOL	240	Invertebrate Zoology (5)
ZOOL	447	Ornithology (4)
ELECTIVES		

27

Certification in General Science may also be attained by completing PHYS 103, Astronomy or GEOL 100, 101, Physical Geology, in addition to the requirements in biology specialization.

BUSINESS EDUCATION SPECIALIZATION

Comprehensive Curriculum

REQUIRED COURSES		(50 QUARTER HOURS)	
ACCY	111, 112	Basic Concepts (4,4)	8
BADM	371	Business Law	3
¹ ECON	203	Principles of Economics	3
² EDBE	101	Introductory Typewriting (3)	3
² EDBE	102, 103	Communications Production I, II (3,3)	3-6
² EDBE	201, 202, 203	Principles of Shorthand I, II, III (3,3,3)	0-9
EDBE	301	Shorthand Dictation	3
EDBE	302	Shorthand Transcription	3
EDBE	305	Office Technology	3
EDBE	405	Principles of Business — Vocational Education	3
EDBE	406	Office Systems and Procedures	3
ENG	301	Professional Report Writing	3
ELECTIVES			22

Basic Business and Accounting Curriculum³

REQUIRED COURSES		(53 QUARTER HOURS)	
ACCY	111, 112	Basic Concepts (4,4)	8
ACCY	311, 312	Intermediate Accounting (4,4)	8
BADM	371	Business Law	3
⁴ ECON	203	Principles of Economics	3
ECON	411	Comparative Economic Systems	3

¹ECON 201, 202, Principals of Economics are prerequisites.

²May be exempted, but Business Administration courses must be selected as replacements for courses exempted.

³Excludes courses in and related to shorthand instruction.

⁴ECON 201, 202, Principles of Economics are prerequisites.

¹ EDBE	101	Introductory Typewriting (3)	3
¹ EDBE	102, 103	Communications Production I, II (3,3)	3-6
EDBE	305	Office Technology	3
EDBE	405	Principles of Business — Vocational Education	3
ENG	301	Professional Report Writing	3
MGMT	301	Management	5
MKTG	301	Marketing	5
ELECTIVES			19

CHEMISTRY SPECIALIZATION

CHEMISTRY REQUIREMENTS		(59 QUARTER HOURS)	
CHEM	121, 122, 123	Organic Chemistry (4,3,3)	10
CHEM	124	Organic Laboratory Techniques	2
CHEM	161, 162, 163	Chemical Principles (3,3,3)	9
CHEM	351, 352	Analytical Laboratory Techniques (3,3)	6
CHEM	491 or		
EDSE	492	Contemporary Chemistry	3
² CHEM	300-400	Electives	9
MATHEMATICS REQUIREMENTS			
MATH	110, 111	Precalculus Mathematics (4,4)	8
MATH	211	Analytic Geometry (3)	
MATH	221, 222, 223	Calculus (4,4,4)	12
ELECTIVES			25

Certification in Mathematics may also be completed by taking a total of 32 quarter hours in Mathematics including the requirements for Chemistry.

ENGLISH LANGUAGE ARTS SPECIALIZATION

REQUIRED COURSES		(61 QUARTER HOURS)	
Composition			
ENG	101, 102, 103	Composition (3,3,3)	9
ENG	300	Expository Writing	3
³ ENG	497	Composition Seminar	3
Literature			
ENG	210	Principles of Literature	3
ENG	211, 212, 213, 314	Survey of English Literature (3,3,3,3)	12
ENG	311, 312, 313	Survey of American Literature (3,3,3)	9
EDSE	441	Literature for Adolescents	3
History and Development of Language			
ENG	371	Principles of Linguistics	3
ENG	471	Modern English Grammar	3
ENG	472	History of the English Language	3

¹ May be exempted, but Business Administration courses must be selected as replacements.

² The Physical Chemistry or Biochemistry sequence is recommended for chemistry electives.

³ Students will be assigned to the English freshman composition staff for one quarter during the senior year for practical laboratory experiences.

Reading			
EDSE	415	Reading in the Secondary School	3
Speech			
SPE	101	Fundamentals of Oral Communication	3
SPE	463	Studies in Listening	4
ELECTIVES			23

Certification in Journalism may be completed by taking COM 100 — Basic Communications and 9 quarter hours in Journalism including the requirements for English.

Certification in Speech may be completed by taking COM 100 — Basic Communications (3), THA 180 — Study of Drama and Theater or THA 230 — Interpretation I (3), SPE 261 — English Phonetics and American Dialects (3), and six elective quarter hours in Speech including the requirements for English.

FOREIGN LANGUAGE SPECIALIZATION — FRENCH

¹ BASIC COURSES			(58 QUARTER HOURS)
FRE	101, 102, 103	Elementary French Language and Civilization (3,3,3)	9
FRE	201, 202, 203	Intermediate French Language and Civilization (3,3,3)	9
REQUIRED COURSES			
FRE	301	French Composition	4
FRE	303	French Conversation	4
FRE	311, 312, 313	Survey of French Literature (3,3,3)	9
FRE	401	French Phonetics and Diction	2
FRE	498	Undergraduate Seminar	3
FRE	300, 400	French Electives	18
ELECTIVES			26

Certification in a second language may be completed by taking 27 quarter hours in that language including the requirements for French.

FOREIGN LANGUAGE SPECIALIZATION — SPANISH

² BASIC COURSES			(58 QUARTER HOURS)
SPA	101, 102, 103	Elementary Spanish Language and Civilization (3,3,3)	9
SPA	201, 202, 203	Intermediate Spanish Language and Civilization (3,3,3)	9
REQUIRED COURSES			
SPA	301	Spanish Composition	4
SPA	303	Spanish Conversation	4
SPA	311, 312, 313	Survey of Spanish Literature (3,3,3)	9

¹May be exempted.

²May be exempted. See Student Placement, page 115.

SPA	401	Spanish Phonetics and Diction	2
SPA	498	Undergraduate Seminar	3
SPA	300, 400	Spanish Electives	18
ELECTIVES			26

Certification in a second language may also be completed by taking 27 quarter hours in that language including the requirements for Spanish.

MATHEMATICS SPECIALIZATION

REQUIRED COURSES			(58 QUARTER HOURS)
MATH	110	Precalculus Mathematics	4
MATH	111	Precalculus Mathematics	4
MATH	115	Finite Mathematics	5
MATH	211	Analytic Geometry	3
MATH	221, 222, 223	Calculus (4,4,4)	12
MATH	315	Introduction to Number Theory	3
MATH	318	Linear Algebra	3
MATH	351, 352	Foundations of Geometry (3,3)	6
MATH	411	Algebraic Structures	3
MATH	491		
	or		
EDSE	493	Contemporary Mathematics	3
STAT	301	Fundamentals of Probability & Statistics	3
COMP	102	Computer Programming	3
MATH			
	or		
STAT		Electives	6
ELECTIVES			24

PHYSICS SPECIALIZATION

PHYSICS REQUIREMENTS			(58 QUARTER HOURS)
PHYS	211, 212, 213	General Physics (4,3,3)	10
PHYS	282, 283	Physics Laboratory (1,1)	2
PHYS	227, 228	Classical Mechanics (3,3)	6
PHYS	287, 288	Physical Measurements (3,3)	6
PHYS	347, 348	Concepts in Modern Physics (3,3)	6
PHYS	357, 358	Wave Motion and Optics (3,3)	6
PHYS	491 or		
EDSE	494	Contemporary Physics	3

MATHEMATICS REQUIREMENTS

¹ MATH	110, 111	Precalculus Mathematics	8
MATH	211	Analytic Geometry (3)	
MATH	221, 222, 223	Calculus (4,4,4)	12
ELECTIVES			25

Certification in Mathematics may also be completed by taking a total of 24 quarter hours in Mathematics including the requirements for Physics.

SOCIAL SCIENCES SPECIALIZATION

REQUIRED COURSES			(63 QUARTER HOURS)
Core			
ECON	201	Principles of Economics	3
HIST	201, 202, 203	Western Culture and Civilization (3,3,3)	9

¹May be exempted.

HIST	311, 312, 313	American History (4,4,4)	12
PCL	201	American National Government	4
PCL	301	American State and Local Government	4
PCL	341	Comparative Government	4
SOC	201, 202	General Sociology (3,3)	6
SOC	416	Human Ecology	3

Discipline 9

Student selects 9 quarter hours upper level work from one discipline specialization which may include Economics, History, Political Science or Sociology.

Concept 12

Student selects 12 quarter hours of course work to develop a specialization concept. Suggested topics are: American Studies; World Cultures; Human Ecology; Urban Studies; Science and Culture; and World Realities. Course work must be approved by student adviser.

ELECTIVES 24

SPEECH SPECIALIZATION

REQUIRED COURSES		(50 QUARTER HOURS)	
COM	100	Basic Communications	3
SPE	101	Fundamentals of Oral Communication	3
SPE	261	English Phonetics and American Dialects	3
SPE	262	Psychology of Oral Communication	3
SPE	360	Persuasion: Argumentation	4
SPE	361	Persuasion: Motivation	4
SPE	362	Platform Speaking	4
SPE	363	Discussion	4
SPE	370	Directing Extracurricular Activities	3
SPE	463	Studies in Listening	4
SPE	469	Language Disorders of Children	3

DISCIPLINE SPECIALIZATION (select one) (12 credits)

Drama

THA	220, 221, 222	Theatre Practice	3
THA	230	Interpretation	3
THA	380	Directing	3
THA	422	High School Play Directing	3

Journalism

JRN	322	Information Processing	3
JRN	420	News Writing	3

and six (6) credits from JRN 321, JRN 421-425

ELECTIVES 28

COMPREHENSIVE (1-12)

LIBRARY AND AUDIOVISUAL SERVICE SPECIALIZATION ¹

REQUIRED COURSES		(36 QUARTER HOURS)	
EDEL	307	Literature for Children	3
ENG	465	Literature for Adolescents	3

¹Teacher education majors (elementary or secondary) may add Library and Audiovisual Services certification to the Rank III certificate by successful completion of the courses prescribed in this area.

EDLS	301	Library Materials	3
EDLS	321	Library Organization	3
EDLS	322	Library Administration	3
EDLS	334	Selection and Acquisition of Library Materials	4
EDLS	384	History of Books and Libraries	3
EDLS	424	School Library Administration	3
EDLS	431	Cataloging and Classification I	4
EDLS	444	Reference Materials and Services	3
EDLS	451	Introduction to Educational Media	4
EDLS	432	Cataloging and Classification II	4
or			
EDEL	407	Classroom Diagnosis and Treatment of Reading Difficulties	3

MUSIC EDUCATION SPECIALIZATION

A program in Music Education is currently being developed and will be available in the 1970-71 Fall Quarter. An outline of program requirements will be available from the Department of Secondary Education or the Department of Music.

PHYSICAL EDUCATION

The Physical Education Program offers a comprehensive curriculum designed to certify a student to teach as a physical education specialist in grades one through twelve. Areas of study required are: (1) Environmental Studies, 69 quarter hours; (2) General Professional Preparation, 39 quarter hours; (3) area of specialization, 52 quarter hours; and (4) Electives, 24 quarter hours.

PHYSICAL EDUCATION SPECIALIZATION (52 QUARTER HOURS)

ZOOL	234	Human Anatomy	5
EDPE	305	Rehabilitation Training Techniques	3
EDPE	306	Administration and Coaching	3
EDPE	307	School and Community Recreation	3
EDPE	308	Human Performance Learning	5
EDPE	309	Kinesiology	5
EDPE	321	Exercise Physiology — Cardiovascular	5
EDPE	322	Exercise Physiology — Cardiorespiratory	5
EDPE	324	Instructional Analysis in Tennis	2
EDPE	325	Instructional Analysis in Aquatics	2
EDPE	326	Instructional Analysis in Gymnastics and Tumbling	2
EDPE	327	Instructional Analysis in Golf	2
EDPE	328	Instructional Analysis in Wrestling (M)	2
EDPE	329	Choreography of Contemporary Dance (W)	2
EDPE	330	Rhythms, Notation, Meter and Form	2
EDPE	405	Organization and Administration of Secondary School Physical Education	3
EDPE	406	Organization and Administration of Elementary School Physical Education	3

VISUAL ARTS SPECIALIZATION

REQUIRED COURSES

(58 QUARTER HOURS)

Production

ART	201, 202, 203	Design Fundamentals (3,3,3)	9
ART	211	Drawing Fundamentals	3
ART	302	Graphic Design	3
ART	311	Intermediate Drawing	3
ART	351	Painting	3
ART	371	Sculpture	3
ART	381	Ceramics	3

Criticism

ART	231	Visual Arts Overview	3
ART	433	Theory and Criticism of the Visual Arts	3
HUM	421	Purposes of Art	4

Curriculum

EDVA	431	Two-Dimensional Instructional Materials	3
EDVA	432	Three-Dimensional Instructional Materials	3
EDVA	433	Graphic Instructional Materials	3

Discipline Specialization

(12 Quarter Hours)

Twelve credits are selected from Art or a related area. Specialization in Architecture, Art History, Design, Graphics, Humanities, Painting, Photography or Sculpture may be selected.

ELECTIVES

15

EDVA 434 Found Arts and EDVA 491 Contemporary Visual Arts Education are recommended electives

Required Professional Preparation Courses:

Physical Education Major students will be required to successfully complete the Required Professional Courses (Phases I, II and III) outlined on the preceding pages. Physical Education Major students in Phase II will be provided a teaching-coaching experience in a Teacher Education Center during one quarter of their junior year; the courses listed in Phase II—Developmental, will be scheduled concurrently. An additional laboratory experience occurs in the senior year (Phase III). The student is enrolled, full time, for one quarter as a student teacher in an accredited elementary or secondary school under the direction of a selected supervising teacher.

Health Education

In addition to physical education certification in grades one through twelve, students may be certified in Health Education.

Certification requirements are:

(17-18 Quarter Hours)

EDPE	407	Family Living Concepts	5
EDPE	408	Contemporary Health Hazard	5
MICR	200	General Microbiology	3
MICR	201	General Microbiology Laboratory	1

One of the Following:

CEES	417	Environmental Health	4
MICR	220	Sanitary Sciences and Public Health	3

POST-BACCALAUREATE CERTIFICATION

Individuals who have previously earned a bachelor's degree from a standard institution may qualify for a Florida teaching certificate by fulfilling state requirements in Professional Preparation and Specialization. A standard institution is defined and certification requirements are outlined in *Florida Requirements for Teacher Certification* adopted by the State Board of Education.

Specialization Requirements may be met if the applicant has a college major listed in the certification regulations; otherwise, certification requirements listed in Sections 7-35 (*Florida Requirements for Teacher Certification*) must be completed.

Professional Preparation requirements include a combination of professional education and practical experience courses. The practical experience specifications may be met in a combination of several ways and each is outlined in Section 6—(2)—1, 2, 3 of the Requirements. Professional preparation includes course work in: (1) Foundations of Education; (2) General Methods, Administration, Supervision and Curriculum; and (3) Special Methods. Courses designed to fulfill State Department of Education specifications are as follows:

			QUARTER HOURS
1. Foundations of Education			
EDTA	405	Teaching Analysis	4
EDTA	406	Human Development	4
EDTA	407	Learning Theory	4
2. General Methods, Administration, Supervision and Curriculum			
EDEL	455	Elementary School Curriculum	4
EDEL	409	Teaching Strategies	4
EDSE	475	Secondary School Curriculum	4
3. Special Methods			
EDEL	312	Reading in the Elementary School	3
EDSE	478	Instructional Analysis in Business	4
EDSE	479	Instructional Analysis in English	4
EDSE	485	Instructional Analysis in Foreign Language	4
EDSE	486	Instructional Analysis in Mathematics	4
EDSE	487	Instructional Analysis in Physical Education	4
EDSE	488	Instructional Analysis in Science	4
EDSE	489	Instructional Analysis in Social Science	4
4. Practical Experience			
EDPL	465	Teaching Practicum	5
EDPL	466	Teaching Practicum	5

MASTER OF EDUCATION DEGREE

The College of Education offers graduate work leading to the Master of Education degree. The programs are designed primarily to improve teaching competencies in several selected areas. In addition, they meet the Florida Rank II Certification Teaching Specialization requirements. Each is designed to develop a high level of teaching proficiency for those persons who have daily contact with pupils in the classroom. The purposes are to (a) expand the teacher's background in social factors, human development factors, and learning factors, all of which form the rationale for American education in the total school curriculum; (b) improve the teacher's proficiency in curriculum planning and instructional techniques; and (c) extend the teacher's knowledge in his area of specialization. *At this time, no programs will be offered for certification in specialized areas such as guidance and counseling or administration and supervision.*

ADMISSION REQUIREMENTS

To meet basic requirements for admission to the Master of Education degree program a student must have:

1. A bachelor's degree.
2. The basic course requirements for a regular Rank III Florida Teaching Certificate.
3. Test score results submitted from the aptitude sections of the Graduate Record Examination (GRE), National Teachers Examination (NTE) or Miller Analogies.

Categories of admission are as follows:

1. **Regular** - In addition to the above basic requirements, a student must have maintained an undergraduate grade point average of 2.8 or above.
2. **Provisional** - In addition to the above basic requirements, a student must have maintained an undergraduate grade point average of 2.3 to 2.7.
3. **Special** - A student is admitted in this category to take graduate courses without being accepted to the Master of Education degree program. Included are students who are not seeking a Master's degree, those desiring transfer credit to another institution, and those students whose undergraduate grade point average is less than 2.3.

A student with less than 2.3 grade point average will meet the basic requirements of (3) above. Considering areas of weakness or deficiencies, a

minimum of fifteen (15) graduate hours of course work will be prescribed by his adviser. If the student successfully completes this program, he can be admitted to the Master of Education degree program. A maximum of nine (9) graduate hours earned as a special student may be transferred to a Master of Education degree program on the recommendation of the student's graduate adviser and the approval of the Dean of the College of Education.

PLANNED PROGRAM

Each graduate student is assigned a graduate adviser from the area which offers the program of his selected specialization. Degree programs must be planned by the student and his adviser (major professor) prior to enrollment in a second quarter of graduate study. A student wishing to take credit from another institution or from Continuing Education enrolls in courses at his own risk prior to having an approved program on file with the Dean of the College of Education.

RESIDENCE, CONTINUING EDUCATION AND TRANSFER OF GRADUATE CREDIT

At least 27 quarter hours of graduate credit must be earned in residence at Florida Technological University. Of the minimum 45 quarter hours required for a planned degree program, 18 may be taken through continuing education. Ordinarily, no more than 9 quarter hours of "B" or better work may be transferred from another institution. A combination of transfer and continuing education credit cannot exceed 18 quarter hours. Any exceptions must be recommended by the Dean of the College of Education and approved by the Graduate Council.

ADMISSION TO CANDIDACY

A student may become a candidate for the Master of Education Degree by completing 25 quarter hours of graduate work in a planned program with a 3.0 (B) or higher grade point average and by submitting acceptable scores from the aptitude tests of the Graduate Record Examination. Applications for Admission to Candidacy are available in the office of the Dean of the College of Education and must be submitted during the quarter the student is completing the 25th credit hour of his program.

DEGREE REQUIREMENTS

The planned program requires a minimum of 45 quarter hours of graduate course work credit. Course work beyond the 45 hours may be prescribed by the student's graduate adviser where prerequisites are necessary, and/or course deficiencies are apparent. A "B" (3.0) average must be maintained in all graduate courses. Not more than 9 hours of "C" may be counted toward the degree.

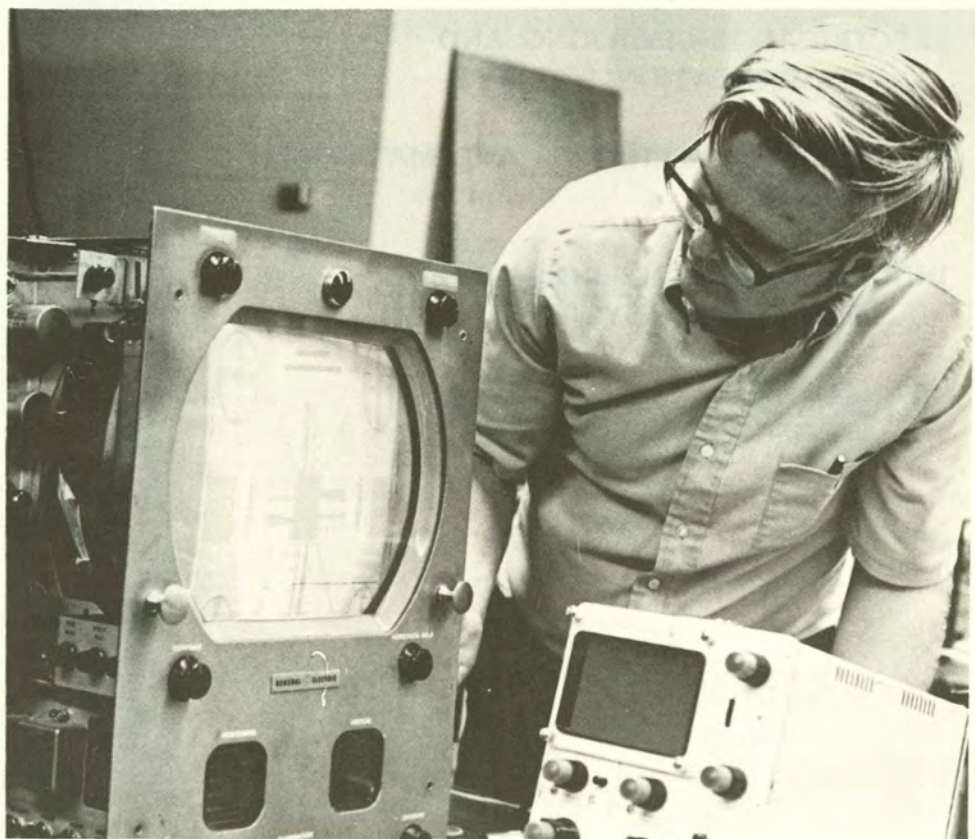
GRADUATE STUDENT LOAD - MAXIMUM

A graduate student who is enrolled in 15 quarter hours of graduate level course work is considered to be carrying a maximum graduate academic load. For abbreviated terms, the maximum academic load will be less.

RESEARCH REPORT

After completing Research Design and Techniques in Education (EDTA 604), a student will design and implement a classroom study project or other type research paper. The project must be planned with and approved by the student's graduate adviser. Graduate credit for the project will be granted through EDTA 695, Research Report. Registration for credit in EDTA 695 should be delayed until the approved project is near completion. The finished report must be submitted to the Dean of the College of Education before the student's expected graduation date.





**COLLEGE OF
ENGINEERING**

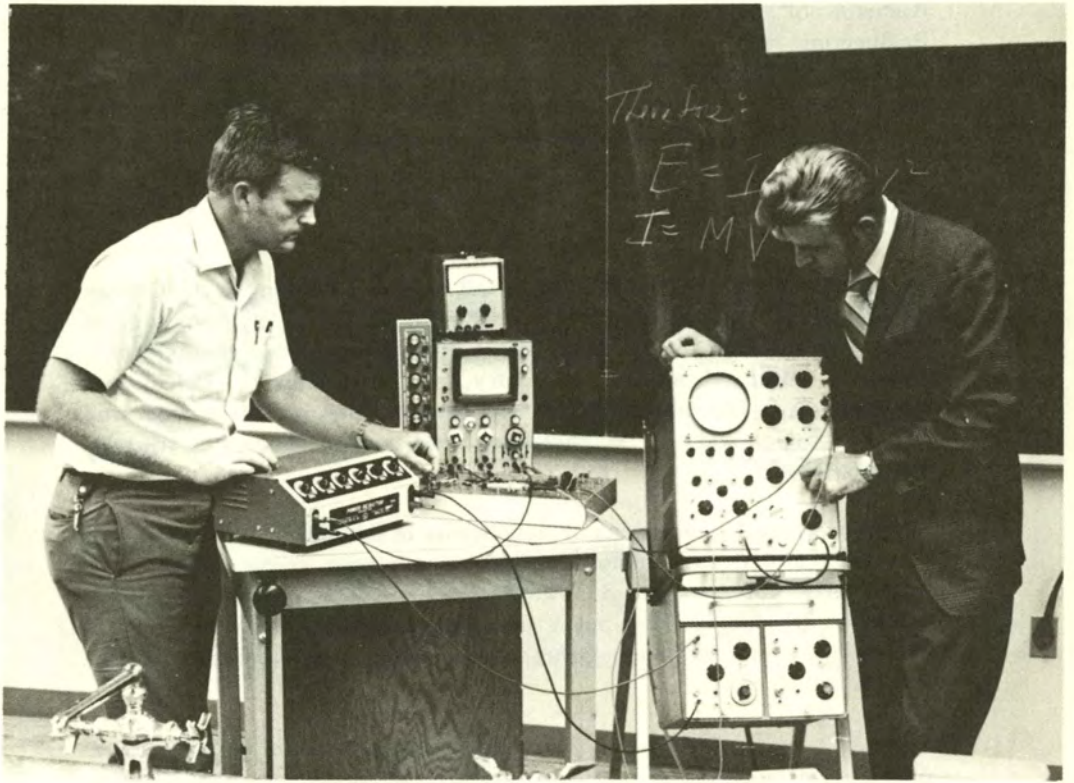
**CIVIL ENGINEERING AND ENVIRONMENTAL
SCIENCES**

**ELECTRICAL ENGINEERING AND
COMMUNICATION SCIENCES**

**ENGINEERING MECHANICS AND MATERIALS
SCIENCES**

**INDUSTRIAL ENGINEERING AND
MANAGEMENT SYSTEMS**

**MECHANICAL ENGINEERING AND
AEROSPACE SCIENCES**



COLLEGE OF ENGINEERING

The Engineering curriculum at Florida Technological University is directed toward professional objectives. These objectives are best met by completing the bachelor's degree program followed by professional education at the graduate level.

The satisfactory completion of a curriculum of a minimum of 192 quarter hours, including environmental studies courses, an engineering core curriculum, and both required and elective courses of study in a selected area of concentration of the student's choice, leads to the degree of Bachelor of Science in Engineering. Graduates of the College of Engineering may pursue a wide variety of careers in private practice, industry, education, and government. The programs of study offered by the College are designed to assist the student in the attainment of his professional career objectives through sound academic preparation.

ADMISSION

Students who wish to be admitted to full freshman standing in the College should present certain secondary school units in addition to the minimum University requirements. A total of $3\frac{1}{2}$ units is required in mathematics, including advanced algebra, geometry, and trigonometry. Calculus is recommended. The laboratory sciences chosen must include at least one unit in physics and one in chemistry. One unit of biology is strongly recommended.

Students who have omissions or deficiencies in subject matter preparation may be required to complete additional university credit course work which may not be applied toward an engineering degree. The most common deficiencies that must be removed before beginning regular engineering course work are algebra, trigonometry, general physics, English and general chemistry.

Subject to the general grade and residence requirements of the University, provisional credit will be granted for transferred course work equivalent to that required in Florida Technological University's engineering program. These provisional credits will become final only after the student has demonstrated his ability to do satisfactory work at the University. Transfer credits in pre-engineering from a junior college will be used to satisfy freshman and sophomore level requirements only. The status of a student and the specific credits acceptable toward his degree will be determined by the Dean of the College.

Students who are well prepared usually will be able to complete the program of study leading to the degree of Bachelor of Science in Engineering in four years. In cases of inadequate secondary school preparation or other extenuating circumstances, the undergraduate program may be extended beyond the normal four-year period.

GENERAL INFORMATION

Prior to enrolling in courses at the 300 level, each engineering student must: (1) receive approval from the office of the Dean of Engineering, and (2) secure from his adviser an approved course of study for his remaining work. Generally, students with a 2.0 grade point average (C average), or higher will receive approval.

Counseling is provided in order that the student may be aided in making his choice of major. Required and elective courses for each area are listed later in this Bulletin and changes or substitutions may be made only with the approval of the Dean.

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, including additional course work, consistent with the needs of the student. The granting of a degree may be delayed until the work is satisfactorily completed.

BACHELOR OF SCIENCE IN ENGINEERING DEGREE PROGRAM

Engineering is one of the most important evolutionary forces in civilization today. The professional engineer should assume a leading role not only in the conceptual and planning stages but also in the design, manufacturing, construction, operation, and management phases of various engineering facilities and programs. At the same time, the professional engineer should understand that engineering innovation is a means of solving problems in our society and accept a large measure of social responsibility for significant engineering developments.

The professional engineer is the key individual in a team of technical specialists which includes engineering design specialists, engineering operations and management specialists, and engineering technicians. It is the purpose of Florida Technological University's engineering program to provide the broad university level educational opportunities requisite for preparing qualified individuals to make effective contributions through careers in engineering and applied science in our technologically oriented society.

The principal areas of concentration in the engineering curriculum are devoted to the basic sciences, mathematics and the fundamentals of engineering problems. These courses are not training courses for any of the mechanical or manipulative skills, but rather are planned to provide preparation for development, planning, design, research, graduate work; and with certain electives, for operation, production, testing, maintenance

and management. For assistance and counsel in planning a program, each student will be assigned an adviser from the instructional staff in his chosen area of interest.

The degree requirements consist of:

	QUARTER HOURS
1. Environmental Studies Program	69
Basic (55)	
Advanced (14)	
2. Engineering Core	97
3. Technical Electives or Area of Concentration Courses	26
TOTAL QTR. HOURS REQUIRED	192

Technical electives within a chosen specialization are selected with the approval of the student's faculty adviser and may be made from 300 level courses or above in engineering, mathematics, the sciences, business administration or a foreign language.

ENGINEERING CORE REQUIREMENTS¹

The engineering core consists of basic engineering sciences subject matter and is common to all areas of concentration. Because this requirement is a substantial part of the Bachelor's degree program, it gives the student time to become adjusted and to choose, if he wishes, a field of specialization for which he is best suited, or to complete the degree program with a selection of diversified subjects.

SUBJECTS			CREDITS
COMP	102	Computer Programming	3
ENGR	101	Engineering Graphics	3
ENGR	103	Creative Design	3
ENGR	111	Engineering Concepts	4
ENGR	151, 152	Chemical Foundations of Engineering	6
MATH	211	Analytic Geometry	3
MATH	221,222,223	Calculus (4,4,4)	12
ENGR	201	Engineering Design Case Studies	1
ENGR	211	Engineering Analysis — Statics	4
ENGR	221	Electrical Science	4
MATH	321	Intermediate Calculus	4
ENGR	311	Engineering Analysis — Dynamics	4
ENGR	312	Mechanics of Materials	5
ENGR	321	Principles of Electrical Engineering	4
ENGR	322	Electrical Networks	4
ENGR	323	Electronic Engineering	4
ENGR	331	Thermodynamics	4
ENGR	332	Fluid Mechanics	4
ENGR	341	Engineering Economic Analysis	3

¹Includes scientific requirements of the Environmental Studies Program.

ENGR	342	Systems Analysis	3
ENGR	351	Structure and Properties of Materials	3
ENGR	352	Materials of Engineering	3
ENGR	361	Man and His Environment	3
ENGR	371	Probability and Statistics for Engineers	3
MATH	331	Differential Equations	4
PHYS	344	Modern Physics for Engineers	3
PHYS	354	Optics and Wave Motion for Engineers	3
ENGR	431	Transport Processes	3
ENGR	441	Technical Communications	3
ENGR	442	Operations Research	3
ENGR	443	Engineering Administration	3

TYPICAL BSE PROGRAM

		First Year	F	W	S
COMP	102 Computer Programming				3
ENG	101 Composition I		3		
ENGR	101, 103 Engineering Graphics; Creative Design		3	3	
ENGR	111 Engineering Concepts				4
ENGR	151, 152 Chemical Foundations of Engineering		3	3	
MATH	211, 221, 222 Analytic Geometry and Calculus		3	4	4
Social Environment Courses			3	3	3
SPE	101 Fundamentals of Oral Communication			3	
ENGR	201 Engineering Design Case Studies				1
			15	16	15

		Second Year	F	W	S
ENGR	211,311,312 Engineering Analysis — Statics; Dynamics; Mechanics of Materials		4	4	5
ENGR	221 Electrical Science			4	
ENGR	321 Principles of Electrical Engineering				4
ENGR	341 Engineering Economic Analysis		3		
ENGR	361 Man and His Environment			3	
ENGR	371 Probability and Statistics for Engineers				3
MATH	223, 321, 331 Calculus; Intermediate Calculus; and Differential Equations		4	4	4
Social Environment Courses to include ECON 201			6	3	
			17	18	16

		Third Year	F	W	S
ENGR	322, 323 Electrical Networks; Electronic Engineering		4	4	
ENGR	331,332,431 Thermodynamics; Fluid Mechanics; Transport Processes		4	4	3
ENGR	342,441 Systems Analysis; Technical Communications		3		3
PHYS	354 Optics and Wave Motion for Engineers				3
ENGR	351,352 Structure & Properties of Materials; Materials of Engineering		3	3	
Area of Concentration Electives					6
Humanities			4	4	
			18	15	15

		Fourth Year	F	W	S
ENGR	442 Operations Research		3		
ENGR	443 Engineering Administration			3	
PHYS	344 Modern Physics for Engineers		3		
	Area of Concentration Electives		5	6	9
	Environmental Studies — Advanced Subjects		3	3	
	Senior Seminar		2	2	4
	Environmental Studies — Elective			2	2
			16	16	15

(Transferred to College of Natural Sciences January 1, 1971)

BACHELOR OF SCIENCE IN PHYSICS DEGREE PROGRAM

The curriculum in physics provides an understanding of the basic principles of classical and modern physics. Emphasis will be on the understanding of fundamental concepts through quantitative and analytical reasoning. The program of study leading to the Bachelor of Science degree in Physics enables students to acquire proficiency in theoretical physics; it also exposes them to modern laboratory experimentation, equipment, and techniques. Students completing the undergraduate program in physics will find many opportunities for employment in government, industry, and education or they may continue their training at the graduate level.

In addition to providing a major in physics, the Department of Physics offers courses for: (1) prospective teachers of physics in secondary schools, (2) students who require a physics background as preparation for work in other fields, and (3) students who desire a general cultural education in selected fields of physics.

The degree requirements consist of:

	QUARTER HOURS
1. Environmental Studies Program	69
2. Physics Core	73
3. Restricted Electives	27
4. Electives	23
TOTAL QTR. HOURS REQUIRED	192

PHYSICS CORE REQUIREMENTS¹

The physics core consists of basic physics, chemistry, mathematics and statistics courses requisite to advanced study in physics. Because this requirement is a substantial part of the Bachelor's degree program, it affords the student an opportunity to become well acquainted with the natural sciences and to better choose suitable electives to meet his special interests.

¹Includes scientific requirement of the Environmental Studies Program.

SUBJECTS			CREDITS
PHYS	211,212,213	General Physics	10
PHYS	282,283	General Physics Lab.	2
CHEM		General Chem, Physical or Organic	12
MATH	211	Analytic Geometry	3
MATH	221,222,223	Calculus	12
MATH	321	Intermediate Calculus	4
MATH	331	Differential Equations	4
MATH	317 or 341	Matrices or Vector Analysis	3
PHYS	321,322,323	Mechanics	9
PHYS	331,332,333	Electricity & Magnetism	9
PHYS	341,342,343	Modern Physics	9
PHYS	380's	Laboratory	9
		Statistics	3

TYPICAL BS PHYSICS PROGRAM

First Year		F	W	S
Environmental Studies — Communications ¹		3	3	3
MATH	211,221,222	3	4	4
CHEMISTRY		4	4	4
PHYS	211,212,213 General Physics	4	3	3
PHYS	282,283 General Physics Laboratory		1	1
Electives ²		3	3	
		17	18	15

Second Year		F	W	S
Environmental Studies — Humanities		4	4	
Environmental Studies — Social Environment ³		3	3	3
MATH	223,321,331 Calculus, Differential Equations	4	4	4
PHYS	321,322,323 Mechanics	3	3	3
Restricted Electives ⁴		3	3	3
MATH	317 or 341 Matrices or Vector Analysis			3
		17	17	16

Third Year		F	W	S
Environmental Studies — Statistics		3		
Environmental Studies — Advanced Subjects			3	3
Social Environment ³		3	3	3
PHYS	331,332,333 Electricity & Magnetism	3	3	3
PHYS	341,342,343 Modern Physics	3	3	3
Physics Laboratory		3	3	3
		15	15	15

¹COMP 102 or equivalent is recommended. Problems requiring the use of a computer are assigned in upper division courses.

²A year of Biological Science is strongly recommended.

³Option B is strongly recommended for students expecting to enter graduate school. Such a student should seriously consider electing an additional 9 hours of the language he has chosen (Russian, German, or French).

⁴Physics majors are required to take 27 quarter hours of electives in Physics or Mathematics at the 300 level or higher. All electives must be approved by the student's adviser.

	Fourth Year	F	W	S
Environmental Studies — Elective		4		
Electives ¹		3	5	9
Senior Seminar		2	4	2
Restricted Electives ²		6	6	6
		15	15	17

ACADEMIC AREAS

The College of Engineering is giving primary emphasis to the following academic areas and subdisciplines:

CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES

Sanitary and Environmental Engineering, Soil Mechanics and Engineering Geology, Structural Engineering, Transportation Engineering, Urban Systems Engineering, and Water Resources Engineering.

ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES

Analog and Digital Computer Systems, Electrical Networks and Electronics, Electromagnetic Fields, Electromechanics and Controls, Communication and Information Theory, and Solid State Systems and Devices.

ENGINEERING MECHANICS AND MATERIALS SCIENCES

Chemical and Physical Foundations of Materials, Composite Materials, Engineering Mechanics, Materials Engineering, Metallurgy, Micromechanics, and Structure and Properties of Engineering Materials.

INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS

Computer Systems Applications, Engineering Administration, Operations Research, Human Engineering, Systems Analysis and Simulation, Production Design and Quality Control, Engineering Reliability, Industrial Economics and Dynamics, and Project Engineering.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

Aerospace Sciences, Flight Vehicle Structures, Measurement Systems Engineering, Mechanical Systems Design and Control, Energy Conversion and Power Systems, and Thermal Sciences.

Course work from these areas may be used to satisfy the area of concentration or restricted elective requirements of the degree programs in the College with the approval of a faculty adviser and the Dean.

Several interdisciplinary programs are available to selected students who desire to prepare for some very specialized professional objective.

¹A year of Biological Science is strongly recommended.

Interested students should consult the Dean for the appointment of a faculty adviser knowledgeable in the special interdisciplinary area. Programs presently available include:

Biomedical Engineering
Engineering Chemistry
Engineering Design
Engineering Operations
Systems Engineering



ART
ENGLISH
FOREIGN LANGUAGES
 FRENCH
 GERMAN
 ITALIAN
 RUSSIAN
 SPANISH
HISTORY
HUMANITIES
MUSIC
PRE-LAW
THEATRE

COLLEGE OF HUMANITIES AND FINE

ARTS



COLLEGE OF HUMANITIES AND FINE ARTS

The College of Humanities and Fine Arts endeavors to fulfill with the other five colleges of the University the general aims of Florida Technological University. This College has the responsibility of preparing specialists in the principal disciplines of the humanities and the fine arts. The following major study programs are presently offered: art, English, foreign languages (French, Spanish), history, humanities, music, and theatre. Besides these majors, courses are offered in German, Italian, philosophy, religion, and Russian.

In addition to preparing specialists in the various disciplines of the College, the College of Humanities and Fine Arts cooperates with the other five colleges of the University in the Environmental Studies Program and in offering electives suitable to all students.

A student enrolled in the College of Humanities and Fine Arts must fulfill all of the University requirements and the requirements set by the department of his major.

To be certified for graduation, a student must achieve a "C" (2.0 grade point average) in courses of his major field.

If a student does not demonstrate acceptable skill in written or spoken English, he may be referred by an instructor to the Dean. Additional course work or an individual program of study may be assigned and must be satisfactorily completed before graduation.

MAJOR IN ART

The curriculum in art provides thorough grounding in visual expression and an opportunity for specialized professional preparation in art history and in the studio areas of design, sculpture, photography, printmaking, drawing and painting. The student's program should be established in consultation with an adviser from the area of concentration.

For a major in art with art history concentration, a minimum of 45 quarter hours in art courses is required. These courses should include 30 quarter hours in art history courses, 9 quarter hours of design courses, and 6 quarter hours of approved cognate courses. A satisfactory grade in a comprehensive art history examination in the senior year and reading knowledge of one foreign language are required.

A major in art with studio concentration requires a minimum of 60 quarter hours in art courses or approved cognates, of which 15 must be taken in an area of specialization and 12 in art history. During the first two years students should complete 27 quarter hours in art courses, including the following:

- ART 201, 202, 203 Design Fundamentals I, II, III (3,3,3)
- ART 211, 212 Drawing Fundamentals I, II (3,3)

- ART 221, 222, 223 History of Art I, II, III (3,3,3)
 ART 231 Visual Arts Overview (3)

A senior exhibition acceptable to the art faculty is required.

The university reserves the right to hold for exhibition purposes work done in classes.

The table below illustrates the requirements for a major in art with a studio concentration:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	60
Art (48)	
Allied Courses (12)	
Electives	54
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

The table below illustrates the requirements for a major in art with an art history concentration:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	45
Art (39)	
Allied Courses (6)	
Electives	69
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR IN ENGLISH

The major in English with a concentration in literature consists of a minimum of 48 quarter hours, including the following required courses: ENG 210, 211, 212, 213; 311, 312; 313, or 314; 471; plus 9 hours of either 421, 422, 423; 424, 425, 426; 427, 428, 429; or 451, 452, 453; 6 quarter hours from the following courses: 430, 431, 432, 433, or 434; and 9 hours to be selected in consultation with the student's adviser.

The major in English with a concentration in writing consists of a minimum of 48 quarter hours, including the following: 18 hours selected from ENG 210, 211, 212, 213, 311, 312, 313, 314; ENG 471 and 472; 6 hours selected from 400-level literature courses; ENG 302; 9 hours selected from ENG 303, 304, 401, 402, 403, 404; and 6 hours selected in consultation with the student's adviser from writing courses in English or Communications. All majors in writing must demonstrate acceptable skill in typing by the end of the sophomore year.

Students interested in secondary school teaching may prefer to elect the combined English-Education major. They are advised to achieve the broadest possible base in literature through taking the full range of survey courses in English and American literature, together with extensive training in writing and in the structure of the language.

Library science majors should also undertake to achieve a broad base through survey courses and those specialized English courses that will contribute to their development as librarians.

Students majoring in English must show proficiency in one modern foreign language by taking two years of one language in the Department of Foreign Languages, by passing a proficiency examination offered by that department, or by presenting four years of high school credit in one language.

The table below illustrates the requirements for a major in English:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	66
English (48)	
Modern Language (18)	
Electives	48
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR IN FOREIGN LANGUAGES

Language studies in the College of Humanities and Fine Arts provide instruction in French, German, Italian, Russian, and Spanish, with majors in French and Spanish. These programs are designed to meet the needs of students who desire competency in a language and expanded understanding of foreign culture and literature. Students enrolled in 100, 200, and certain 300-level courses are required to attend the language laboratory for at least one hour per week.

MAJOR REQUIREMENTS:

A student wishing to major in a foreign language must meet all the requirements for graduation as set forth by the University, the College of Humanities and Fine Arts, and the Department of Foreign Languages. The foreign language major must complete 45 quarter hours in the chosen language beyond the 100 and 200 level. Among these 45 quarter hours the student must take courses numbered 301, 303, 311, 312, 313, and 401. (Course letter prefix is determined by the language.)

A native speaker must substitute a literature course for the advanced conversation course (303). Moreover, in cases where the native speaker has received advanced education abroad, he will not be permitted to take the advanced composition course (301) for the fulfillment of his major requirements but must substitute another language course chosen with his adviser.

COMBINED MAJORS:

For a major in two foreign languages, a student must take the courses numbered 301, 303, 311, 312, 313, and 401 in both languages plus an additional nineteen credits in his first language and an additional ten credits in his second language.

A native speaker must substitute a literature course for the advanced conversation course (303). Moreover, in cases where the native speaker has received advanced education abroad he will not be permitted to take the advanced composition course (301) for the fulfillment of his major requirements but must substitute another language course chosen with his adviser.

PLACEMENT OF STUDENTS IN LANGUAGE CLASSES:

Normal placement is as follows: Four years of one high school language would place the student in the first quarter of the third year; three years, in the second quarter of the second year; two years, in the first quarter of the second year; one year, in the second quarter of the first year.

If a student feels that his high school preparation was inadequate, he may be allowed to drop back one quarter with the permission of a member of the Foreign Language Department. If a student has studied a language in high school for two years or less, five or more years prior to the time of enrollment in a language course, he may be allowed to disregard his high school language training and begin anew.

The table below illustrates the requirements for a major in foreign languages:

AREAS	QUARTER HOURS
A. Single Major	
Environmental Studies	69
Basic (55)	
Advanced (14)	
Major Area Credits	45
Electives	69
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183
B. Combined Majors	
Environmental Studies	69
Basic (55)	
Advanced (14)	
Major Area Credits	67
First Language (38)	
Second Language (29)	
Electives	47
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

Whether the student chooses to major in one or two foreign languages, or plans a foreign language-education major, he and his adviser should organize his elective courses in the areas of literature, (foreign or otherwise) and related disciplines (such as art, history, humanities, music, philosophy).

MAJOR IN HISTORY

Students majoring in history must complete 48 quarter hours in history courses. The required courses are:

HIST 201, 202, 203 Western Culture and Civilization (4,4,4)

HIST 311, 312, 313 American History (4,4,4)

An additional eight quarter hours credit in junior or senior level courses in American or Latin American history; eight quarter hours credit in junior or senior level courses in European history, plus eight additional hours in junior or senior level history courses.

History majors are expected to have a reading knowledge of a foreign language. This requirement may be met by demonstrating proficiency in

an examination administered by the Foreign Language Department or by completing the appropriate courses.

The table below illustrates the requirements for a major in History :

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	48
History	
Electives	66
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR IN HUMANITIES

Since humanities provides an interdisciplinary approach to several areas of study, the major may be very broadly based, or it may be concentrated to some extent in one of these areas. In each case, however, the following apply:

- A. The major requires 48 quarter hours, four of which may be used to satisfy the humanities requirement in Environmental Studies.
 - B. Two years of a foreign language (or equivalent proficiency) are required.
 - C. Students should make use of their general electives to gain a balanced background in supporting areas: music, literature, history, philosophy, religion, and theatre.
 - D. Each student's program is, to a large extent, individual and should be discussed with a humanities adviser. Exceptions to any part of the program must have the recommendation of the adviser and approval of the Department Chairman.
- I. If one seeks the most broadly based major, with the simple aim of getting a sound liberal arts education or the more specific aim of teaching humanities, he should be guided by the following program:

HUM 300-310 (Mind-and-Art Series)	24
HUM 311-371	12
HUM 413-475	12
	48

II. A major in Humanities with a concentration in fine arts includes the following:

HUM 301-310 (Mind-and-Art Series)	24
HUM 355 and 356	8
PHI 341	4
ART 223	3
ART 201, 202, and 211 or nine qtr. hrs. in applied music	9
TOTAL	48

III. A major in Humanities with a concentration in intellectual history includes the following:

HUM 300-310 (Mind-and-Art Series)	16
HUM 311-318	8
HUM 498	4
HIST 480	4
Humanities or Philosophy electives (400 level)	16
TOTAL	48

IV. A major in Humanities with a concentration in philosophy is available through the following program. Ordinarily a student completing this program would be able to continue his studies in philosophy at the graduate level.

HUM 301, 305, 308, and 310 (Mind-and-Art Series)	16
PHI 205, 221, 331, and 498	16
PHI 312 or 314	4
Humanities or Philosophy electives (upper level)	12
TOTAL	48

The table below illustrates the requirements for a major in Humanities:

Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	53
Specific requirements (48) 4 qtr. hrs. inc. in ESP	
Foreign Language (18) 9 qtr. hrs. inc. in ESP	
Electives	61
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR IN MUSIC

The degree of Bachelor of Arts with a major in music is designed for the study of music in a liberal arts curriculum, with a concentration in applied instruments, voice, music theory, composition, history and literature, and in the professional area of performance. (Depending on the student's background, it may be necessary to accumulate more or less than the required number of hours in music.) The minimum requirements for this

degree are 183 quarter hours. The degree normally involves 96 hours in music from the following courses:

6 quarter hours of applied music during each of the four years

- MUS 101, 102, 103 Music Theory (3,3,3)
- MUS 201, 202, 203 Music Theory (3,3,3)
- MUS 301, 302, 303 Counterpoint (3,3,3)
- MUS 320, 321, 322 Orchestration (3,3,3)
- MUS 350 Composition (2-5)
- MUS 401, 402, 403 Form and Analysis (3,3,3)
- MUS 104, 105, 106 Music Literature (2,2,2)
- MUS 218, 219, 220 Piano Literature (2,2,2)
- MUS 221, 222, 223 Song Literature (2,2,2)
- MUS 340, 341, 342 Music History (3,3,3)
- MUS 450, 451, 452 Music of the Twentieth Century (3,3,3)
- MUS 304 Madrigal Singers (1)
- MUS 307 Concert Choir (1)
- MUS 308 Band (1)
- MUS 309 Orchestra (1)
- MUS 310 Chamber Music (1)
- MUS 351, 352 Conducting (2)
- MUS 496 Special Topics (2-5)
- MUS 497 Undergraduate Seminar (2-5)
- MUS 498 Independent Study (2-5)

All students seeking this degree are expected to perform a faculty approved recital in their major applied area (instrument or voice). This recital is normally presented in the senior year.

Each student must pass a piano proficiency examination. This examination must be attempted by the end of the sophomore year. If the student is unable to pass the examination, he must then study piano each quarter until he has met this requirement.

Ensemble experience and recital attendance are required in each quarter of the music major curriculum.

A foreign language should be taken by all voice students and by students who plan to attend graduate school.

The table below illustrates the requirements for a major in Music:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	96
Music (60)	
Applied Music and Ensemble (36)	
Electives	18
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR FOR PRE-LAW STUDENTS

Schools of Law admit graduates of accredited colleges, but most do not prescribe a standard program for the major in the undergraduate college. On the other hand, they suggest that applicants present a major in one of the following subject areas supported by electives from these same fields: accounting, economics, English, finance, history, literature, political science, sociology, and speech. Students who expect to enter a school of law should plan their program with the aid of the pre-law adviser.

MAJOR IN THEATRE

The Department of Theatre offers the student an opportunity to concentrate in the area of theatre either as preparation for graduate or professional study or as a course of study in the liberal arts.

The major in Theatre consists of a minimum of 55 quarter hours.

The following courses are required:

- THA 180 Study of Theatre and Drama (3)
- THA 220, 221, 222 Basic Theatre Practice (1,1,1)
- THA 310 History of Motion Pictures (3)
- THA 320, 321, 322 Theatre Practice II (1,1,1)
- THA 424 Principles of Motion Picture Art (3)
- THA 434 Modern Motion Picture Techniques (3)
- THA 380 and THA 480 Directing I and II (3,3) or
- THA 381 and THA 382 Scene Design and Stage Lighting (3,3)

Sixteen quarter hours must be elected from the following courses:

- THA 283, 284, 285 Acting (3-9)
- THA 421 Dramatic Theory (3)
- THA 423 Contemporary Theatre and Drama (3)

- THA 425 Dramatic Criticism (3)
- THA 486, 487 American Theatre (3,3)
- THA 483 Advanced Scene Design (3)
- THA 497 Undergraduate Seminar (2-5)
- THA 498 Independent Study (2-5)

The student majoring in theatre should be aware of the foreign language requirements of most graduate schools if he is contemplating graduate studies.

The student majoring in theatre should plan to take courses in related fields, among them radio-television, communication, art, music and English. These courses are chosen by the student in consultation with his adviser.

The table below illustrates the requirements for a major in theatre:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	
Theatre	55
Electives	59
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183



COLLEGE OF NATURAL SCIENCES

INHALATION THERAPY
MEDICAL RECORDS SCIENCE
MEDICAL TECHNOLOGY
BIOLOGICAL SCIENCE
 BIOLOGY
 BOTANY
 FRESH WATER ECOLOGY
 MICROBIOLOGY
 ZOOLOGY
CHEMISTRY
COMPUTER SCIENCE
MATHEMATICS
STATISTICS
PHYSICS
PRENATAL
PREMEDICAL
PREVETERINARY



COLLEGE OF NATURAL SCIENCES

It is the purpose of the College of Natural Sciences to assist all of its students to develop their individual capabilities to the fullest. The College is concerned not only with the intellectual development of its students, but also with their proper physical, emotional, social, and spiritual growth. To this end, the College will provide a broad liberal education through the Environmental Studies Program as well as concentrated study in specialized fields.

Specific objectives of the College of Natural Sciences are:

- A. To see that the student obtains a broad liberal education which will:
 1. Develop in him a sense of personal and social responsibility;
 2. Aid him in developing those qualities of mind and character necessary to intellectual advancement and to productive membership in society;
 3. Give him an awareness of the more important achievements of mankind;
 4. Arouse his intellectual interests;
 5. Give him an increased appreciation of the values expressed in morality, religion, the sciences, and the fine arts;
 6. Bring about a progressive strengthening and refining of the powers of reasoning and judgment; and
 7. Stimulate him to continue to seek knowledge throughout his adult life.

- B. To provide the student, through its programs of concentrated study, with the opportunity to achieve competence in a scientific or technical profession of his choosing.

- C. To help develop the student's character and provide him with the motivation to use his knowledge wisely.

In order to achieve the above objectives, the College of Natural Sciences will:

- A. Participate in the Environmental Studies Program to provide all students in the University with the opportunity to obtain some fundamental understanding in the sciences so that they may deal with the complexities of modern life;

- B. Provide undergraduate and graduate instruction in the various subject matter fields which constitute the biological, mathematical, physical, and health related sciences;

- C. Encourage and support research in all subject matter fields which are included in the College of Natural Sciences; and

- D. Provide training in preparation for later admission to a professional school of dentistry, medicine, nursing, or veterinary medicine.

The College of Natural Sciences will cooperate with the Colleges of Business Administration, Humanities and Fine Arts, and Social Sciences by making available to their students general and specialized courses in the mathematical and natural sciences; with the College of Engineering by providing instruction in those basic fields that constitute the scientific framework upon which its professional programs are built; and with the College of Education in the preparation of elementary and secondary school teachers by providing extensive and intensive training in the biological, mathematical, and physical sciences.

MAJOR STUDY PROGRAMS AND GENERAL REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

Each degree program in the College of Natural Sciences must contain:

- (1) at least 183 credits including the Environmental Studies Program, requirements of the major department, and electives;
- (2) at least 72 credits from courses numbered 300 or above;
- (3) at least one year of mathematics, one year of biological sciences, and one year of a physical science.

Students must maintain a cumulative grade point average of "C" or better in all courses attempted. All degree programs must be approved by the major department and by the Dean of the College of Natural Sciences.

At the present time, degree programs are available in the following areas: Biological Science (with options in Biology, Botany, Fresh Water Ecology, Microbiology, and Zoology), Chemistry, Computer Science, Inhalation Therapy, Mathematics, Medical Records Science, Medical Technology, Physics, Statistics. Preprofessional programs are also available to prepare students for further study in schools of dentistry, medicine, nursing, veterinary medicine, and other areas. These programs are administered directly through the Dean's office by a preprofessional coordinator with the help of a committee appointed by the Dean.

PROGRAM PLANNING

Although suggested curricula are available in most areas, each student will plan his program in consultation with a faculty adviser appointed by the chairman of the major department or by the Dean of the College of Natural Sciences.

DEPARTMENT OF ALLIED HEALTH SCIENCES

The Department of Allied Health Sciences offers majors in inhalation therapy, medical records science, and medical technology.

Graduates in the allied health sciences are prepared for positions in medical and hospital laboratories, clinics, Public Health Service Laboratories, and in various local, state, and federal organizations.

The demand for personnel trained in the allied health sciences and the ancillary medical services is rapidly increasing with the development of more sophisticated and extensive medical care. The number of hospitals, clinical laboratories, etc., employing modern techniques and the latest advances in medicine and related areas is now greater than ever, thus the critical need for students trained in the allied health professions. The programs in the allied health sciences allow for the selection of a major in inhalation therapy — the study of the use of gases as therapeutic agents, or medical records science — the study of the preparation and keeping of all forms of medical records, or medical technology — the study of the operation and management of the medical laboratory.

The prospective student should note that the first two years in the allied health sciences constitute a basic core requirement for all majors. Admission to study in this department does not constitute admission to the clinical year(s). Admission to the clinical year(s) is dependent upon the student's performance prior to this stage in his education and the availability of openings in the clinical facility. Separate application must be made for admission to the clinical portions of the program at least six months, but not more than one year, prior to the time the student expects to be admitted.

Required courses in these programs are identified by course number in the curricula shown on the following pages.

ALLIED HEALTH SCIENCES CORE CURRICULUM

	First Year	F	W	S
Allied Health Sciences Orientation (AHS 100)			1	
Biological Sciences (BIOL 100; ZOO 100)		4		4
Chemistry (CHEM 111, 112, 113)		4	3	3
(CHEM 114, 115)			1	1
Communications (ENG 101; SPE 101; COMP 101)		3	3	3
Mathematics ¹		4	4	4
Social Environment		3	3	3
	TOTAL	18	15	18
	Second Year			
Biological Sciences (ZOO 234, MICR 200)		5		4
Humanities (HUM 201, HUM elective)			4	4
Physics (PHYS 107, 108, 281)		4	3	4
(PHYS 189)			1	
Social Environment ²			3	6
Statistics (STAT 201)			4	
Engineering Environment			3	
General Electives (Environmental Studies)		4		
Electives		4		
	TOTAL	17	18	18

The curricula for the third and fourth years in the three majors, inhalation therapy, medical records science, and medical technology, are listed below. The third and fourth years include both clinical and academic course work in all majors. (NOTE: In medical technology an alternative procedure is available. Students desiring to take their clinical training entirely during the fourth year, following completion of an approved three year academic program, may obtain a Bachelor of Science degree after the satisfactory conclusion of one year of study (not less than 36 quarter credit hours) with a grade point average of "C" or better at a hospital having a medical technology program approved by Florida Technological University, the American Society of Clinical Pathologists, and the Council on Medical Education and Hospitals of the American Medical Association. Approved hospitals in the Orlando area are: Florida Sanitarium and Hospital, Orange Memorial Hospital, and Winter Park Memorial Hospital. Upon completion of the hospital program, the student shall request the hospital school director to forward to the Dean of the College of Natural Sciences at Florida Technological University a transcript of credits and a recommendation that the degree be conferred. Prospective students should contact the department for additional information on this alternative procedure.)

¹To be selected in consultation with the student's adviser.

²Students planning to elect the major in Medical Records Science should take ECON 201, 202, and 203 in this category; students electing the 3 + 1 program in Medical Technology should substitute CHEM 351, 352 for six hours of Social Environment and the Social Environment requirement must be completed during the third year.

INHALATION THERAPY

	Third Year	F	W	S
Biological Sciences (MICR 300)		4		
(MICR 320)				4
Business Environment		3		
Inhalation Therapy (INHT 350, 360, 380)		3	3	3
(INHT 351, 361, 381)		1	1	1
Inhalation Therapy (INHT 370, 390)			3	3
(INHT 371, 391)			1	1
Inhalation Therapy (INHT 355)				3
Senior Seminar			2	
Electives		4	3	
	TOTAL	15	13	15
	Fourth Year	F	W	S
Allied Health Sciences (AHS 320, 321)		3	3	
Inhalation Therapy (INHT 450, 460, 470)		3	3	3
(INHT 451, 461, 471)		1	1	1
Inhalation Therapy (INHT 455, 456, 480)		3	3	3
(INHT 481)				1
Inhalation Therapy (INHT 490)				3
(INHT 491)				1
Senior Seminar		2	2	2
Electives		3	2	
	TOTAL	15	14	14
TOTAL QTR. HOURS REQUIRED				190

MEDICAL RECORDS SCIENCE

	Third Year	F	W	S
Allied Health Sciences (AHS 320, 321)		3	3	
Allied Health Sciences (AHS 340, 341)			3	3
Allied Health Sciences (AHS 350)		3		
Management (MGMT 301, 344, 364)		5	5	5
Medical Records Science (MRSC 310, 300)		3		3
Medical Records Science (MRSC 320, 321)			3	3
Senior Seminar				2
Electives			2	
		14	16	16
	Fourth Year	F	W	S
Allied Health Sciences (AHS 375)			3	
Business Environment				3
Medical Records Science (MRSC 301, 302, 303)		4	4	4
Medical Records Science (MRSC 370, 371, 372)		2	2	2
Medical Records Science (MRSC 375)		3		
Senior Seminar		2	2	2
Electives		2	2	3
	TOTAL	13	13	14
TOTAL QTR. HOURS REQUIRED				190

MEDICAL TECHNOLOGY

Program 1. Four years at Florida Technological University in which clinical training starts in the third year at a cooperating hospital.

Third Year		F	W	S
Biological Sciences (MICR 300, 320, 210)		4	4	2
(ZOOL 370)				5
(BIOL 330, 331)		3	2	
Business Environment		3		
Chemistry (CHEM 351, 352)			3	3
Clinical Microscopy (MEDT 375)				3
Senior Seminar		2	2	2
Electives		2	3	
	TOTAL	14	14	15
Fourth Year		F	W	S
Chemistry (CHEM 355)		3		
(CHEM 444, 445)		2	2	
Blood Banking (MEDT 385)				3
Clinical Microbiology (MEDT 360, 361)			2	2
Clinical Biochemistry (MEDT 362, 363)			2	2
Clinical Hematology (MEDT 386, 387)			2	2
Clinical Use of Isotopes (MEDT 388)			2	
Medical Legal Jurisprudence (AHS 350)		3		
Senior Seminar		2		
Electives		4	4	6
	TOTAL	14	14	15
TOTAL QTR. HOURS REQUIRED				190

MEDICAL TECHNOLOGY

Program 2. Three years at Florida Technological University plus one year at an approved hospital.

Third Year		F	W	S
Biological Sciences (MICR 300, 320, 210)		4	4	2
(ZOOL 370)				5
(BIOL 330, 331)		3	2	
Business Environment				3
Chemistry (CHEM 355)		3		
(CHEM 444, 445)		2	2	
Social Environment			3	3
Senior Seminar		2	2	4
Electives		3	3	
	TOTAL	17	16	17

Fourth Year

Approved Hospital Program of 36 quarter credit hours. See page

TOTAL QTR. HOURS REQUIRED **190**

There are in excess of 60 recognized areas of specialization in the allied health professions. Students interested in any of these areas, other than those we now offer, may complete the first two years of our program as the preclinical portion of their education. Those students desiring to

pursue their pre-clinical training at Florida Technological University should consult with their adviser prior to beginning the program.

DEPARTMENT OF BIOLOGICAL SCIENCES

The Department of Biological Sciences offers a major in biological science with options in biology, botany, fresh water ecology, microbiology, and zoology.

BIOLOGICAL SCIENCE: BIOLOGY, BOTANY, FRESH WATER ECOLOGY, MICROBIOLOGY, AND ZOOLOGY OPTIONS

In an age when new discoveries are reported daily on both celestial and molecular levels, the study of living organisms has gained new importance among the sciences. Students in the life sciences find themselves increasingly in demand in teaching and many phases of research and, as a result, are well grounded in the chemistry, physics, and mathematics required of most advanced degrees. The program in biological science allows for the selection of an option in biology for those students seeking a broad and varied background; or botany, the study of plants; or fresh water ecology, the study of the environment of inland waters; or microbiology, the study of bacteria, yeasts, molds, and algae; or zoology, the study of animals. Through the judicious selection of electives in consultation with a faculty adviser, a specialty field, such as physiology, may be emphasized in one or more of the options outlined above.

BIOLOGICAL SCIENCES CORE CURRICULUM

First Year ¹	F	W	S
Biological Sciences (BIOL 100; ZOOLOG 100; BOT 100)	4	4	4
Chemistry (CHEM 121, 122, 123)	4	3	3
(CHEM 124)		2	
Communications (ENG 101, 102; SPE 101)	3	3	3
Mathematics ²	4	4	4
TOTAL	15	16	14
Second Year ¹	F	W	S
Biological Sciences (MICR 200; BIOL 350, 332)	4	4	5
Chemistry (CHEM 161, 162, 163)	3	3	3
Computer Science (COMP 102)	3		
Humanities (HUM 201, HUM elective)	4	4	
Physics (PHYS 107, 108, 281)	4	3	4
(PHYS 189)		1	
Statistics (STAT 201)			4
TOTAL	18	15	16

¹Required of all students majoring in any Biological Science curriculum.

²To be selected in consultation with the student's adviser from courses numbered MATH 110 or higher.

BIOLOGY OPTION¹

	Third Year	F	W	S
Biological Sciences (BOT elect.; BIOL 360; ZOOL elect.)		4	4	4
Business Environment		3		
Chemistry (CHEM 351, 352)			3	3
Professional Report Writing (ENG 301)				3
Engineering Environment				3
Senior Seminar		2		
Social Environment (Option A or B)		3	6	
General Electives (Environmental Studies)		4		
Electives			3	3
	TOTAL	16	16	16
	Fourth Year	F	W	S
Biological Sciences (MICR 300; Biol 420, 460)		4	4	3
(Electives numbered 300 or above from BIOL, BOT, MICR, or ZOOL)		6	3	3
Chemistry (CHEM 441, 442)		3	3	
Senior Seminar		2	2	2
Electives		3	3	7
	TOTAL	18	15	15
TOTAL QTR. HOURS REQUIRED				190

BOTANY OPTION¹

	Third Year	F	W	S
Biological Sciences (BOT 320, 321, 345)		4	4	4
Business Environment		3		
Chemistry (CHEM 351, 352)			3	3
Professional Report Writing (ENG 301)		3		
Engineering Environment				3
Senior Seminar				2
Social Environment (Option A or B)		3	6	
General Electives (Environmental Studies)				4
Electives		3	3	
	TOTAL	16	16	16
	Fourth Year	F	W	S
Biological Sciences (BIOL 360, 460)		4	3	
Senior Seminar		2	2	2
Biological Sciences Electives		8	9	9
Electives		3	3	3
	TOTAL	17	17	14
TOTAL QTR. HOURS REQUIRED				190

¹Students expecting to enter graduate school should seriously consider taking at least three quarters of a foreign language. In addition, students planning on graduate study in molecular-physiological areas of biology should take additional courses in statistics and biochemistry.

MICROBIOLOGY OPTION¹

Third Year		F	W	S
Biological Sciences (MICR 300, 350, 320)		4	4	4
(BIOL 360)		4		
Business Environment		3		
Chemistry (CHEM 441, 442)		3	3	
(CHEM 351, 352)			3	3
Senior Seminar				2
Social Environment (Option A or B)		3	6	
General Electives (Environmental Studies)				4
Electives				4
TOTAL		17	16	17
Fourth Year		F	W	S
Biological Sciences (BIOL 330, 331, MICR 430)		3	2	4
(BIOL 460)		3		
Professional Report Writing (ENG 301)			3	
Engineering Environment				3
Senior Seminar		2	2	2
Electives		7	9	6
TOTAL		15	16	15
TOTAL QTR. HOURS REQUIRED				190

FRESH WATER ECOLOGY OPTION¹

Third Year		F	W	S
Biological Sciences (BIOL 351, 450, 451)		4	3	4
(BOT 320, 321, 340)		4	4	4
Chemistry (CHEM 351, 352)			3	3
Business Environment		3		
Senior Seminar			2	
Social Environment (Option)		3	3	3
Professional Report Writing (ENG 301)		3		
General Electives (Environmental Studies)				4
TOTAL		17	15	18
Fourth Year		F	W	S
Biological Sciences (BIOL 452, 360; ZOOL 450)		3	4	4
(ZOOL 340, 445)		4	4	
Chemistry (CHEM 441)		3		
Senior Seminar		2	2	2
Electives*		6	6	3
Engineering Environment				3
TOTAL		18	16	12
TOTAL QTR. HOURS REQUIRED				190

*It is recommended that the student consider taking ENGR 361 as one of these electives.

¹Students expecting to enter graduate school should seriously consider taking at least three quarters of a foreign language. In addition, students planning on graduate study in molecular-physiological areas of biology should take additional courses in statistics and biochemistry.

ZOOLOGY OPTION¹

	Third Year	F	W	S
Biological Sciences (ZOOL 240, 220, 221) (BIOL 360)		5	4	4
Business Environment		3	4	
Chemistry (CHEM 351, 352)			3	3
Engineering Environment				3
Senior Seminar				2
Social Environment (Option B — Group I or II) (Option B — Group I)		3	3	
(Option B — Group II)			3	
General Electives (Environmental Studies) Electives		3		4
	TOTAL	14	17	16
	Fourth Year	F	W	S
Biological Sciences (ZOOL 320, 330, 340) (BIOL 460)		5	5	4
Professional Report Writing (ENG 301)			3	
Senior Seminar		2	2	2
Biological Sciences Electives Electives		4		7
	TOTAL	17	16	16
TOTAL QTR. HOURS REQUIRED				190

DEPARTMENT OF CHEMISTRY

The chemistry curriculum provides the student with an opportunity to develop his ability to think creatively in a dynamic field of human endeavor. Because chemists contribute to a broad spectrum of man's efforts to understand and control his physical environment, the student of chemistry has considerable latitude in his choice of career. He may elect to probe into the nature of the bonding forces that hold molecules together or to seek answers to biological phenomena. A chemist's colleagues might be physicists, physiologists, or psychologists. Some of the appeal, therefore, of chemistry is its position as a bridge to other fields of knowledge. As a result, the curriculum has been made sufficiently flexible to permit the student to prepare himself for one or more of the many career possibilities that arise from the unique position that chemistry occupies in the sciences.

A student will, upon graduation, find opportunities for employment in industry, government service, and education. Positions may entail basic research or applied research, product development or control, sales, management, or teaching.

A chemistry graduate, should he choose to do so, will be in a position to continue his training at the graduate level and to qualify for a more demanding position in the profession.

¹Students expecting to enter graduate school should seriously consider taking at least three quarters of a foreign language. In addition, students planning on graduate study in molecular-physiological areas of biology should take additional courses in statistics and biochemistry.

Required courses leading to the Bachelor of Science degree in chemistry are identified by course number in the following curriculum.

CHEMISTRY CURRICULUM

First Year	F	W	S
Biological Sciences (BIOL 100) (Electives) ¹	4		4
Chemistry (CHEM 100) (CHEM 121, 122, 123) (CHEM 124, 125)	1 4 2	3 2	3 2
Communications (ENG 101, SPE 101, COMP 102)	3	3	3
Mathematics (MATH 211, 221, 222)	3	4	4
TOTAL	15	16	16
Second Year	F	W	S
Chemistry (CHEM 261, 262, 263) (CHEM 351, 352)	3	3 3	3 3
Mathematics (MATH 223, 321)	4	4	
Statistics (STAT 301)			4
Physics (PHYS 211, 212, 213) (PHYS 282, 283)	4	3 1	3 1
Social Environment (Option A or B) ²	3	3	3
General Electives (Environmental Studies)	4		
TOTAL	18	17	17
Third Year	F	W	S
Business Environment			3
Chemistry (CHEM 361, 362, 399) (CHEM 364, 365) (CHEM 451, 452)	3 2	3 2	1 3
Humanities (HUM 201, HUM elective)	4	4	
Physics (PHYS 381)	3		
Social Environment (Option A or B) ²	3	4	3
Electives			5
TOTAL	15	16	15
Fourth Year	F	W	S
Chemistry (CHEM 499) (CHEM electives) ³	3 3	3 3	3 3
Engineering Environment	3		
Professional Report Writing (ENG 301)			3
Senior Seminars	2	4	2
Electives	5	6	4
TOTAL	16	16	15

TOTAL QTR. HOURS REQUIRED

192

¹Students may defer taking the 8 hours of electives in the biological sciences until a later year. If they do so, it is recommended that some of the Social Environment requirements be taken in the first year.

²Use of Social Environment — Option B and an additional 9 quarter hours of electives will allow for 18 quarter hours of German which is strongly recommended for those intending to pursue graduate studies.

³The 9 quarter hours of chemistry electives may be taken in either the junior or senior year.

DEPARTMENT OF MATHEMATICAL SCIENCES

Understanding and development in modern science is dependent upon a knowledge of the characteristics of mathematical models. This principle has been apparent for many years in the physical sciences and engineering. In recent years it has become increasingly clear in the biological, behavioral and social sciences, as well as in business and education. In addition, statistics and computer science have become important specialty areas in the mathematical sciences.

Courses in the mathematical sciences at Florida Technological University are designed to serve four kinds of students: (1) those who want to become professional mathematicians, statisticians or computer scientists; (2) those who need to use mathematics, statistics and computer science as tools in their specialty areas; (3) those who intend to teach mathematical sciences in secondary schools, colleges and universities; (4) those who desire to increase their understanding of these important disciplines.

Students graduating in the mathematical sciences will find opportunities for employment in industry, government and education. Demand for capabilities in these areas is great. Graduates will also be prepared to continue their studies at the graduate level.

Required courses leading to a Bachelor of Science degree in mathematics, statistics or computer science are identified by course number in the following curricula.

COMPUTER SCIENCE CURRICULUM

	First Year	F	W	S
Biological Sciences		4	4	4
Communications (ENG 101, SPE 101, COMP 102)		3	3	3
Mathematics (MATH 221, 222, 223)		4	4	4
(MATH 211, 198)		3	3	
Social Environment			3	
Elective				3
	TOTAL	14	17	14

	Second Year	F	W	S
Physical Sciences		4	4	4
Computer Science (COMP 205, 206)		3	3	
Humanities (HUM 201, HUM elective)		4		4
Social Environment			3	
Mathematics (MATH 321)		4		
Statistics (STAT 301)				4
Mathematical Sciences Electives ¹			6	3
	TOTAL	15	16	15

¹Mathematical Sciences Electives must include COMP 207, MATH 314, MATH 317.

Third Year		F	W	S
Business Environment		3		
Computer Science ¹		3	3	3
Social Environment		3	3	3
Statistics (STAT 341, 342, 343)		3	3	3
Senior Seminar				2
Mathematical Sciences Electives ²		3	3	3
General Elective (Environmental Studies)			4	
	TOTAL	15	16	14
Fourth Year		F	W	S
Computer Science ¹		6	6	6
Engineering Environment			3	
Senior Seminars		2	2	2
Social Environment		3		
Electives		4	5	8
	TOTAL	15	16	16
TOTAL QTR. HOURS REQUIRED				183

MATHEMATICS CURRICULUM

First Year		F	W	S
Biological Sciences		4	4	4
Communications (ENG 101, SPE 101, COMP 102)		3	3	3
Mathematics (MATH 221, 222, 223)		4	4	4
(MATH 211, 198)		3	3	
Social Environment			3	
Elective				3
	TOTAL	14	17	14
Second Year		F	W	S
Physical Sciences		4	4	4
Computer Science (COMP 205, 206)		3	3	
Humanities (HUM 201, HUM elective)		4		4
Social Environment			3	
Mathematics (MATH 321)		4		
Statistics (STAT 301)				4
Mathematical Sciences Electives ³			6	2
	TOTAL	15	16	14

¹Computer Science majors must take 27 hours of Computer Science numbered 300 or above; at least 12 hours of these must be numbered 400 or above.

²Mathematical Science electives must include COMP 207, MATH 314, MATH 317.

³Mathematical Sciences Electives must include at least six hours from each of the following areas:

- (1) Linear Algebra (MATH 318, 319)
- (2) Topology and Geometry (MATH 351, 352, 461, 462)
- (3) Applied Mathematics (MATH 331, 341, 425, 431, 434, 435, 436, 437, 438)

Third Year		F	W	S
Business Environment		3		
Social Environment		3	3	3
Mathematics (MATH 411, 412, 413)		3	3	3
(MATH 421, 422, 423)		3	3	3
Senior Seminars				4
Statistics (STAT 341, 342, 343)		3	3	3
General Elective (Environmental Studies)			4	
	TOTAL	15	16	16

Fourth Year		F	W	S
Engineering Environment			3	
Senior Seminars		4		
Social Environment		3		
Mathematical Sciences Electives ¹		6	6	6
Electives		3	6	9
	TOTAL	16	15	15

TOTAL QTR. HOURS REQUIRED				183
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STATISTICS CURRICULUM

First Year		F	W	S
Biological Sciences		4	4	4
Communications (ENG 101, SPE 101, COMP 102)		3	3	3
Mathematics (MATH 221, 222, 223)		4	4	4
(MATH 211, 198)		3	3	
Social Environment			3	
Elective				3
	TOTAL	14	17	14

Second Year		F	W	S
Physical Sciences		4	4	4
Computer Science (COMP 205, 206)		3	3	
Humanities (HUM 201, HUM elective)		4		4
Social Environment			3	
Mathematics (MATH 321)		4		
Statistics (STAT 301)				4
Mathematical Sciences Electives			6	3
	TOTAL	15	16	15

¹Mathematical Sciences Electives must include at least six hours from each of the following areas:

- (1) Linear Algebra (MATH 318, 319)
- (2) Topology and Geometry (MATH 351, 352, 461, 462)
- (3) Applied Mathematics (MATH 331, 341, 425, 431, 434, 435, 436, 437, 438)

Third Year		F	W	S
Business Environment		3		
Social Environment		3	3	3
Statistics (STAT 341, 342, 343)		3	3	3
(STAT 401, 402, 332)		4	4	3
Senior Seminar				2
Mathematical Sciences Electives		3	3	3
General Elective (Environmental Studies)			4	
	TOTAL	16	17	14
Fourth Year		F	W	S
Computer Science (COMP 481, 482)		3	3	
Engineering Environment			3	
Senior Seminars		2	2	2
Social Environment		3		
Statistics Electives ¹		3	3	3
Electives		4	3	11
	TOTAL	15	14	16

TOTAL QTR. HOURS REQUIRED 183

PHYSICS (See pages 106-108)

PREPROFESSIONAL PROGRAMS

PREMEDICAL, PREDENTAL, AND PREVETERINARY PROGRAM

Although many professional schools accept students who have satisfactorily completed three years of college, a large number of medical schools also require completion of the baccalaureate degree. This curriculum through the junior year satisfies the requirements for admission to all dental schools and to most medical schools as listed in the current editions of Medical School Admission Requirements in the USA and Canada published by the Association of American Medical Colleges, and Admission Requirements of American Dental Schools published by the American Association of Dental Schools. In addition, it provides the prerequisites for electing major work in biology and/or chemistry during the senior year, thereby meeting admission requirements of those professional schools requiring the bachelor's degree. Students who complete the junior year at Florida Technological University may obtain a Bachelor of Science degree after successfully completing the first year of study (not less than 41 quarter credit hours) with a grade point average of "C" or better at an approved professional school. Following completion of the first year of professional study, the student shall request the dean of the professional school to forward to the Dean of the College of Natural Sciences at Florida Technological University a transcript of credits and a recommendation that the degree be conferred.

Required courses in this program are identified by course number in the curriculum shown below.

¹Must be at the 300 or 400 level.

PREMEDICAL, PREDENTAL, AND PREVETERINARY CURRICULUM

First Year	F	W	S
Biological Sciences (BIOL 100; ZOOL 100, BOT 100)	4	4	4
Chemistry (CHEM 121, 122, 123) (CHEM 124)	4	3	3
Communications (ENG 101, 102, 103)	3	3	3
Computer Science (COMP 101 or COMP 102)			3
Mathematics (MATH 211, 221, 222) ¹	3	4	4
TOTAL	14	16	17

Second Year	F	W	S
Biological Sciences (MICR 200; ZOOL 220, 221)	4	4	4
Chemistry (CHEM 261, 262, 263)	3	3	3
Humanities (HUM 201, HUM elective)		4	4
Mathematics (MATH 223)	4		
Physics (PHYS 211, 212, 213) (PHYS 282, 283)	4	3	3
Social Environment (Option B — Group I or II) (Option B — Group I)	3		
TOTAL	18	15	18

Third Year	F	W	S
Biological Sciences (ZOOL 320; BIOL 360, 420)	5	4	4
Business Environment			3
Chemistry (CHEM 361, 362) (CHEM 351, 352)	3	3	3
Foreign Language ²	3	3	3
Senior Seminar			2
Social Environment (Option B - Group II)	3		
Statistics (STAT 201)	4		
Communications (SPE 101)			3
General Electives (Environmental Studies)		4	
TOTAL	18	17	18

Fourth Year

Students who remain in residence for a fourth year to obtain a B.S. degree must complete the requirements of the degree program of their choice including Environmental Studies requirements.

OTHER PREPROFESSIONAL PROGRAMS

Training is available to students in numerous other preprofessional areas such as pharmacy, optometry, nursing, etc. Requirements of professional schools offering degrees and/or clinical training in these fields, although similar, vary a great deal. Students desiring to take preprofessional work in any of these areas should consult with the preprofessional coordinator prior to beginning their programs.

¹Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 221.

²Proficiency in Russian, German, French, Spanish or another foreign language approved by the student's adviser can be demonstrated by examination or by successful completion of 9 credits of the language. Students planning to enter a professional school requiring two years of a language should take an additional 3 quarters of the language.

COLLEGE OF SOCIAL SCIENCES

COMMUNICATION

SPEECH

RADIO-TELEVISION

JOURNALISM

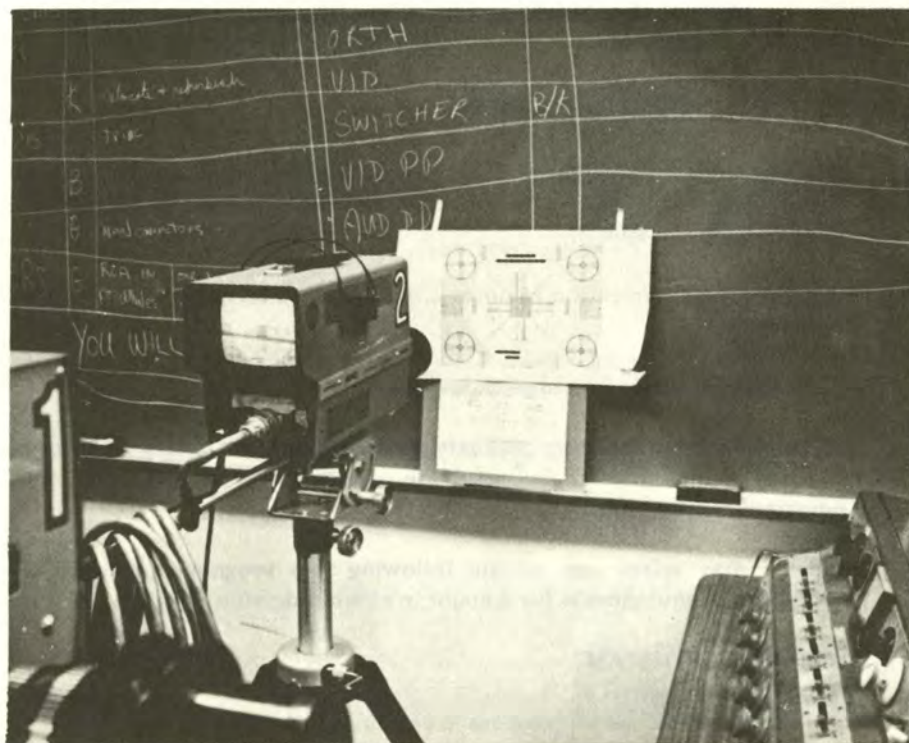
ECONOMICS

POLITICAL SCIENCE

PRE-LAW

PSYCHOLOGY

SOCIOLOGY



COLLEGE OF SOCIAL SCIENCES

In keeping with the aims of Florida Technological University, the College of Social Sciences provides a curricula designed: (1) to develop competence in specialized professional disciplines through academic and practical preparation; (2) to provide increased awareness of the development, purposes, and functioning of the social sciences in the world that surrounds us. The College awards the baccalaureate degree in the following areas: Communication (Journalism, Radio-Television, Speech), Economics, Political Science, Psychology, and Sociology.

In addition to providing specialized training, the College of Social Sciences functions in a service capacity by making available a selection of courses designed to complement the offerings of the other five colleges of the University.

A student enrolled in the College must fulfill all University degree requirements including the Environmental Studies Program, as well as the particular requirements set forth by the department for each area of specialization. To be certified for graduation, a student must achieve a "C" grade point average (2.0) in the courses of his major.

A student whose written or oral communication in any course is deemed unsatisfactory may be referred to the Dean by the instructor. Additional course work or an individual study program may be assigned consistent with the needs of the student and must be completed before the degree is granted.

MAJOR IN COMMUNICATION

The Department of Communication affords the student an opportunity to concentrate in the areas of communication with emphasis in journalism, radio-television, or speech.

A major in communication requires a minimum of 54 hours including the following course:

COM 100 Basic Communication (3)

Any student contemplating graduate studies should be aware of foreign language requirements in graduate schools when planning his undergraduate program.

Students may select one of the following two programs of study to complete the requirements for a major in communication:

EMPHASIS PROGRAM:

In the student's overall program in communication, 30-37 quarter hours must be elected in an area of emphasis, whether journalism,

radio-television, or speech. In addition, 14-21 quarter hours must be elected within two additional areas in the communication department other than the field selected for emphasis. The following are required courses based upon the emphasis chosen:

Journalism:

- JRN 319 News Writing (4)
- JRN 321 Copy Editing (4)
- JRN 330 History of Journalism (3)
- COM 411 Legal Responsibilities of the Mass Media (4)
- JRN 431 International Communication and the Foreign Press (4)
- JRN 434 Principles of Advertising (4)

In addition, PSY 308, SOC 325, SOC 331, and SOC 335 are strongly recommended for students planning a career in news reporting.

Radio-Television:

- RTV 140 Radio-Television I (4)
- RTV 240 Audio Production I (3)
- RTV 260 Audio Production I Laboratory (1)
- RTV 241 TV Production I (3)
- RTV 261 TV Production I Laboratory (1)

Speech:

- SPE 261 English Phonetics and American Dialects (3)
- SPE 360 Argumentation (4)
- SPE 363 Discussion (4)
- SPE 463 Listening (4)

Students interested in secondary school teaching should refer to the Speech-Education Program contained within the College of Education for program information.

GENERAL PROGRAM:

In the student's overall program in communication, 44 quarter hours are divided proportionally between journalism, radio-television, and speech. In addition, a minimum of 7 quarter hours must be selected from any area within the department. The following are the required courses in each area:

Journalism:

- JRN 319 News Writing (4)
- JRN 330 History of Journalism (3)
- COM 411 Legal Responsibilities of the Mass Media (4)
- JRN 431 International Communication and the Foreign Press (4)

Radio-Television:

- RTV 140 Radio-Television I (4)
- RTV 344 Broadcast Continuity/Programming I (4)
- RTV 346 Radio, Television, and Society (3)
- RTV 452 Broadcast Criticism (3)

Speech:

- SPE 261 English Phonetics and American Dialects (3)
- SPE 360 Argumentation (4)

SPE 363 Discussion (4)

SPE 463 Listening (4)

For course descriptions refer to specific areas: Communication, Journalism, Radio/Television, and Speech.

The table below illustrates the requirements for a major in Communication:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	54
Electives	60
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR IN ECONOMICS

Students majoring in economics in the College of Social Sciences must take ACCY 307, ECON 201, 202, 203, and 321, ENG 301, and 35 hours beyond the Environmental Studies requirements, from the behavioral sciences, mathematics, and the social sciences. The Bachelor of Arts program is designed to permit greater flexibility in course selection to the economics major not planning a career in business.

Although all of the economics courses are offered and administered by the College of Business Administration, they are available to students majoring in economics in either the College of Business Administration or the College of Social Sciences.

Students may select one of the following two programs of study to complete major course requirements for the Bachelor of Arts degree in Economics:

1. GENERAL ECONOMICS

A. Required:

- | | | |
|------|-----|--|
| ECON | 301 | Intermediate Price Theory (4) |
| ECON | 311 | Intermediate Money, Income and Employment Theory (4) |

B. Elective: (Six courses in economics not used elsewhere.)

2. QUANTITATIVE ECONOMICS

A. Required:

- | | | |
|------|-----|-------------------------------|
| ECON | 301 | Intermediate Price Theory (4) |
|------|-----|-------------------------------|

ECON	311	Intermediate Money, Income and Employment Theory (4)
ECON	371	Mathematical Economics (3)
ECON	421	Economic Statistical Analysis (5)
ECON	451	Econometrics (3)

B. Elective: (Three courses in economics not used elsewhere.)

The table below illustrates the requirements for a major in Economics:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	81-86
Electives	28-33
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

JOURNALISM

(See Communication)

MAJOR IN POLITICAL SCIENCE

The discipline of political science deals with the elements of man's political behavior: politics, the study of the diverse institutions, procedures and practices relating to political decision-making; and government, the study of the processes by which political decisions are made operational. Political science is thus interdisciplinary in its interest and yet segmentally focused into major areas of concern.

The major in political science consists of a minimum of 48 quarter hours, including the following courses:

- PCL 201 American National Government (4)
- PCL 203 Principles of Political Science (4)

A student must also include a minimum of five courses at the 400 level. A portion of the student's remaining elective hours should be taken in such related fields as anthropology, computer science, economics, geography, history, management, mathematics, philosophy, psychology, sociology, or statistics according to the interests of the student and with the concurrence of his adviser.

Although there are no formal language requirements for a political science major, it is strongly recommended that majors planning to continue their

education at the graduate level or pursue a career in international fields acquire a working knowledge of a foreign language.

Prerequisites for political science majors for all courses numbered 300 or above are PCL 201 and PCL 203. For non-majors there are no prerequisites except permission of the instructor.

The table below illustrates the requirements for a major in Political Science:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	48
Political Science (48)	
Electives	66
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

MAJOR FOR PRE-LAW STUDENTS

Schools of Law admit graduates of accredited colleges, but most do not prescribe a standard program for the major in the undergraduate college. On the other hand, they suggest that applicants present a major in one of the following subject areas supported by electives from these same fields: accounting, economics, English, finance, history, literature, political science, sociology, and speech. Students who expect to enter a school of law should plan their program with the aid of the pre-law adviser.

MAJOR IN PSYCHOLOGY

The major in psychology consists of 44 quarter hours, including the following courses:

- PSY 201, 202 General Psychology (3,3)
- PSY 301 Basic Learning Processes (4)
- PSY 303 Physiological Psychology (4)
- PSY 309 Personality Theory (4)
- PSY 311 Methods of Psychological Research (3)

The remaining 23 quarter hours of psychology may be taken according to the interests of the student and with the agreement of his adviser.

Required courses from allied areas:

- COMP 101 Introduction to Computer Science (3) or
- COMP 102 Computer Programming (3)

MATH 221 Calculus (5) or
 BIOL 360 Genetics (4)
 STAT 201 Principles of Statistics (4)
 STAT 401 Statistical Methods (4)

Students expecting to enter graduate school should seriously consider electing at least one year of a foreign language.

The table below illustrates the requirements for a major in Psychology:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	
Major Area Credits	59
Psychology (44)	
Allied Courses (15)	
Electives	55
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

RADIO-TELEVISION

(See Communication)

MAJOR IN SOCIOLOGY

The major in sociology consists of 48 quarter hours, including the following courses:

SOC 201, 202 General Sociology (3,3)
 SOC 304 The Development of Social Thought (3)
 SOC 310 Introductory Anthropology (3)
 SOC 331 Social Problems (3)
 SOC 495 Undergraduate Research Methods (2-5)
 STAT 201 Principals of Statistics (4)

Total: 21-24 Quarter Hours

The remaining quarter hours may be taken in other sociology courses, according to the interest of the student and with the concurrence of his adviser. In addition to STAT 201, the following courses can be used to fulfill the sociology major requirements: PSY 308, SPE 460 and SPE 462.

Students enrolled in the anthropology concentration must take the following courses as part of the required 48 hours:

SOC 310, 311 Introductory Anthropology (3,3)

- SOC 314 Cultural Anthropology (3)
- SOC 315 Physical Anthropology (3)
- SOC 316 Comparative Social Organization (3)
- SOC 402 Method and Theory in Anthropology (3)
- Total: 18 Quarter Hours

Students enrolled in the social welfare concentration must take the following courses with specific welfare content as part of the required 48 hours:

- SOC 340 Social Welfare: A Social Institution (5)
- SOC 341 Social Work: Principles and Methods (3)
- SOC 342 Government and Social Welfare (3)
- SOC 343 The Community and Social Welfare (3)
- SOC 412 Field Experience and Seminar (5)
- SOC 498 Independent Study (2-5)
- Total: 21-24 Quarter Hours

Students enrolled in the law enforcement concentration must take the following courses. The sociology courses listed below will be counted toward the 48 required quarter hours in sociology and the other courses will be taken as electives:

- ENG 301 Professional Report Writing (3)
- PSY 310 Abnormal Psychology (4)
- SOC 345 Juvenile Delinquency (5)
- SOC 346 Criminology (5)
- SOC 348 Sociology of Alcoholism (3)
- SOC 350 Sociology and the Supreme Court:
A Focus for Social Change (3)
- SOC 352 Intergroup Conflict and Prejudice (3)
- SOC 407 The Family (5)
- SOC 496 Special Topics (emphasis on corrections) (5)
- SOC 498 Independent Study (emphasis on specified
correctional projects) (5)
- Total: 41 Quarter Hours

Students majoring in sociology need a proficiency in at least one modern foreign language and the cultural traditions of the people who speak it. A minimum of the first 9 quarter hours of one foreign language or its equivalent is required. However, these hours do not count in fulfilling the sociology course requirements.

The table below illustrates the requirements for a major in sociology:

AREAS	QUARTER HOURS
Environmental Studies Program	69
Basic (55)	
Advanced (14)	

Major Area Credits	48
Sociology (48)	
Electives	66
Primarily to be selected from upper level courses outside the Department, with the approval of the student's adviser.	
TOTAL QTR. HOURS REQUIRED	183

SPEECH

(See Communication)



CONTINUING EDUCATION

Responsive to the continuing education needs of its "community", Florida Technological University serves Brevard, Volusia, Lake, Seminole, Osceola and Orange Counties by offering two distinct types of courses and programs, credit and noncredit. Off-campus Continuing Education Centers are located in Cocoa and Daytona Beach, with full-time resident professors and staffs in each.

OFF-CAMPUS CREDIT COURSES

These courses are offered for individuals who are not within reasonable commuting distance of the University. Most of the students taking credit courses are employed full time with business, industry, government and the teaching profession. Off-campus credit courses are generally taught by the University's regular faculty. In certain instances, highly qualified persons from other educational institutions, as well as from business and industry, provide the instruction. Courses and/or programs are offered by outside requests primarily, although some are scheduled as needs are identified by the University.

NONCREDIT COURSES

The University is offering a limited number of conferences, institutes, seminars, workshops and short courses which do not carry University credit. These programs, which can be scheduled both on and off the main campus, are developed to meet the educational needs of business, professional, government, service, civic and other groups. Lecturers and discussion leaders come from the faculties of FTU and other educational institutions in addition to highly qualified individuals in various professional areas.

FURTHER INFORMATION

Further information about Florida Technological University's Continuing Education programs may be obtained from the Dean of Continuing Education, Florida Technological University, Post Office Box 25000, Orlando, Florida 32816. The Continuing Education Office is located in Room 326 in the new Administration Building.



COOPERATIVE EDUCATION PROGRAM

Florida Technological University operates a Cooperative Education Program for those students who wish to combine their campus education with actual work experience.

In many cases, students who participate in this program will be able to observe direct relationships between their program of study and their employment. As a result of their work experience, the classroom activities of the students will tend to become more meaningful. The employment will also provide a source of income which may help the student defray his college expenses.

The Cooperative Education Program will be based on a format under which the student alternates between quarters of study on campus and quarters of employment, usually off campus. The student generally will be assigned to a work team and placed in employment related to his academic field of study.

To enter and remain in the program, the student must have a "C" or better average. Interested students should go to Room 326 of the Administration Building for an application and further information.



Disney World Photo.

CR: Corequisite. The course listed and the corequisite should be taken concurrently.

COURSE DESCRIPTIONS

PR: Prerequisite. A course required before taking the listed course.

ACCOUNTANCY

- ACCY 111 Basic Concepts** **Qtr. Hrs. - 4**
 Accounting as a device for measurement and control of business activity. An introduction to the basic concepts and principles; the analysis and recording of transactions; preparation of financial statements; accounting systems and procedures.
- ACCY 112 Basic Concepts** **Qtr. Hrs. - 4**
 PR: ACCY 111. A continuation of ACCY 111. Accounting for partnerships and corporations; managerial techniques such as cost control and budgeting.
- ACCY 307 Accounting Concepts** **Qtr. Hrs. - 5**
 PR: Junior standing. An accelerated course in accounting concepts for the student desiring an understanding of accounting theory and practice. Credit may not be earned in both ACCY 307 and the ACCY 111, 112 sequence.
- ACCY 308 Accounting for Engineers** **Qtr. Hrs. - 5**
 PR: Junior standing. Industrial accounting, estimated costs, budget procedures and records useful to the engineer. Use of accounting and cost control as tools. Enrollment restricted to engineering students.
- ACCY 311 Intermediate Accounting** **Qtr. Hrs. - 4**
 PR: ACCY 112. Accounting theory and practice in relation to professional preparation, analysis and interpretation of financial statements and other accounting and financial data. An in-depth study of assets, liabilities, and stockholders' equity. Income determination; tax implications; funds flow; mathematical principles and application; professional pronouncements.
- ACCY 312 Intermediate Accounting** **Qtr. Hrs. - 4**
 PR: ACCY 311. A continuation of ACCY 311.
- ACCY 321 Cost Accounting** **Qtr. Hrs. - 3**
 PR: ACCY 112 or 307. The elements of cost recording. The basic cost concept. The importance of cost determination and recording.
- ACCY 322 Cost Accounting** **Qtr. Hrs. - 3**
 PR: ACCY 321. The development of cost accounting. Its purposes and its shortcomings. Coordination of cost accounting with general accounting records. Methods of cost analysis and cost application.
- ACCY 341 Governmental Accounting** **Qtr. Hrs. - 3**
 PR: ACCY 411. Budget, accounting and reporting problems of state and national governments. Design and installation of appropriate accounting systems. Improvement of methods and procedures for public bodies.

- ACCY 411 Advanced Accounting** **Qtr. Hrs. - 3**
PR: ACCY 312. Complex cases in partnership formation, operation, expansion, and liquidation. Installment sales; consignments; home and branch relationships; mathematics of compound interest.
- ACCY 412 Advanced Accounting** **Qtr. Hrs. - 3**
PR: ACCY 411 or consent of instructor. Business combinations; acquisition of subsidiaries; investment carried at equity and cost methods. Advanced problems of consolidated statement preparation. Foreign branches.
- ACCY 413 Advanced Accounting** **Qtr. Hrs. - 3**
PR: ACCY 412 or consent of instructor. Cases of enterprises in distress; estates and trusts. Also a study of controversial areas of accounting, with particular reference to current literature and theory. Seminar approach.
- ACCY 433 Auditing** **Qtr. Hrs. - 3**
PR: ACCY 312. The audit concept. Understanding evidence as applied to the audit. Fundamental techniques, practices and procedures.
- ACCY 434 Auditing II** **Qtr. Hrs. - 3**
PR: ACCY 433. A continuation of ACCY 331. A further examination of current auditing practices and procedures, including statistical sampling. Preparation of audit reports.
- ACCY 451 Federal Income Tax Accounting** **Qtr. Hrs. - 3**
PR: ACCY 312. History, theory and basic concept of federal income taxation principles.
- ACCY 452 Federal Income Tax Accounting** **Qtr. Hrs. - 3**
PR: ACCY 451. Corporation tax returns. Study of accounting methods acceptable for tax purposes. Study of federal income tax procedures and appeals methods.
- ACCY 461 Computer Applications to Accounting Problems** **Qtr. Hrs. - 3**
PR: ACCY 411. The purpose of the computer in financial management. Its use as part of the accounting process. Place of the computer in present day accounting, budgeting and auditing matters.
- ACCY 499 Undergraduate Research** **Qtr. Hrs. - 2-5**
PR: Consent of instructor. May be repeated for credit.
- ACCY 601 Managerial Accounting** **Qtr. Hrs. - 3**
(Not open for accounting majors.) Accounting as an information and measurement system for internal planning and control; concepts and analytical techniques for accumulating costs of products and services.

ALLIED HEALTH SCIENCES

- AHS 100 Allied Health Sciences Orientation** **Qtr. Hrs. - 1**
A survey of the allied health sciences; opportunities and scope of the field.

- AHS 320, 321 Hospital Organization and Management** Qtr. Hrs. - 3,3
 PR: MGMT 301. Organization patterns in hospitals, clinics, and community health agencies, medical staff organization; principles and practices of management.
- AHS 340, 341 Introduction to Disease** Qtr. Hrs. - 3,3
 Nature and cause of disease, treatment, and management of patients in major clinical areas of medicine.
- AHS 350 Medical Legal Jurisprudence** Qtr. Hrs. - 3
 Principles of law as applied to the health field with special reference to health practices.
- AHS 375 Recent Advances in Medicine** Qtr. Hrs. - 3
 A review of new discoveries and treatments in the medical field.
- AHS 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- AHS 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- AHS 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- AHS 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

ART

- ART 201 Design Fundamentals I** Qtr. Hrs. - 3
 Materials, processes, form. Application to product design, communication design, environmental design, and the visual arts. Stresses the value of planning and design in the development of a more humane civilization. Emphasis on two-dimensional design problems.
- ART 202 Design Fundamentals II** Qtr. Hrs. - 3
 Continuation of ART 201. Emphasis on color theory.
- ART 203 Design Fundamentals III** Qtr. Hrs. - 3
 Continuation of ART 202. Emphasis on three-dimensional design problems.
- ART 211 Drawing Fundamentals I** Qtr. Hrs. - 3
 Drawing as a means of formal organization. Introduction to problems in drawing methods and media. Emphasis on descriptive techniques.
- ART 212 Drawing Fundamentals II** Qtr. Hrs. - 3
 Continuation of ART 211. Emphasis on traditions of spatial organization.

- ART 221 The History of Art I** **Qtr. Hrs. - 3**
Painting, sculpture, and architecture from the Prehistoric Era through the Medieval Period.
- ART 222 The History of Art II** **Qtr. Hrs. - 3**
Painting, sculpture, and architecture from the Renaissance to the 19th Century.
- ART 223 The History of Art III** **Qtr. Hrs. - 3**
Painting, sculpture and architecture of the 19th and 20th Centuries.
- ART 231 Visual Arts Overview** **Qtr. Hrs. - 3**
An introduction to the visual design professions with emphasis on the study of the social, environmental, economic and cultural factors influencing the design disciplines and production in the fine arts.
- ART 301 Lettering** **Qtr. Hrs. - 3**
PR: Six quarter hours of Design Fundamentals or consent of the instructor. Principles of design and use of letter forms. Study of historic designs and styles. Development of skills and execution.
- ART 302 Graphic Design** **Qtr. Hrs. - 3**
PR: Six quarter hours of Design Fundamentals or consent of the instructor. Recommended: ART 301. Fundamental principles of visual communication and of design in printed commercial material.
- ART 305 Three-Dimensional Design** **Qtr. Hrs. - 3**
PR: ART 203 or consent of the instructor. Intermediate problems in three-dimensional materials, processes, form.
- ART 307 Design II** **Qtr. Hrs. - 3**
PR: Nine quarter hours in Design Fundamentals or consent of instructor.
- ART 308 Jewelry Design** **Qtr. Hrs. - 3**
PR: Consent of the instructor.
- ART 311 Intermediate Drawing** **Qtr. Hrs. - 3**
PR: Six quarter hours of Drawing Fundamentals or consent of the instructor. Intermediate problems in drawing. Emphasis on the human form.
- ART 321 Arts of Pre-Literate Societies** **Qtr. Hrs. - 3**
The visual arts in recent and contemporary primitive societies with emphasis on the cultures of Africa and Oceania.
- ART 322 Asian Art** **Qtr. Hrs. - 3**
An introduction to the history of visual arts of China, Japan, India and other Eastern cultures.
- ART 324 History of Photography** **Qtr. Hrs. - 3**
The development of still photography in terms of its historical, aesthetic, and social impact on Western Culture from 1839 to the present.

- ART 341 Photography** Qtr. Hrs. - 3
Consideration of basic technical and aesthetic factors in using still photography as a vehicle for visual, artistic expression.
- ART 351 Painting** Qtr. Hrs. - 3
PR: Three quarter hours in Design Fundamentals and three quarter hours in Drawing Fundamentals or consent of the instructor.
- ART 361 Printmaking** Qtr. Hrs. - 3
PR: Three quarter hours of Drawing Fundamentals or consent of the instructor. Basic procedure and processes in printmaking. Formal and expressive characteristics of the print media.
- ART 371 Sculpture** Qtr. Hrs. - 3
PR: Six quarter hours in Design Fundamentals, to include three quarter hours in three-dimensional work, or consent of the instructor.
- ART 381 Ceramics** Qtr. Hrs. - 3
PR: ART 203 or consent of the instructor. Basic concepts of ceramic design, experience in processes of forming, decorating, glazing, and firing pottery.
- ART 391 Experiments in Art and Technology** Qtr. Hrs. - 3
PR: Consent of the instructor.
- ART 402 Advanced Graphic Design** Qtr. Hrs. - 3
PR: ART 301 and ART 302. May be repeated for credit.
- ART 405 Advanced Three-Dimensional Design** Qtr. Hrs. - 3
PR: ART 305. May be repeated for credit. Advanced problems in three-dimensional materials, processes, form.
- ART 408 Advanced Jewelry Design** Qtr. Hrs. - 3
PR: ART 308. May be repeated for credit.
- ART 411 Advanced Drawing** Qtr. Hrs. - 3
PR: ART 311. May be repeated for credit.
- ART 433 Theory and Criticism of the Visual Arts** Qtr. Hrs. - 3
Criteria of criticism; analysis of works of art; elements of psychology and sociology of art; semantics of critical terminology; relation of aesthetic meaning to reality and truth; emphasis on developments in the arts of the 20th Century.
- ART 434 Art and Technology** Qtr. Hrs. - 3
The impact of technological developments in the visual arts of the 20th Century.
- ART 441 Advanced Photography** Qtr. Hrs. - 3
PR: ART 341. May be repeated for credit.

ART 451 Advanced Painting	Qtr. Hrs. - 3
PR: ART 351. May be repeated for credit.	
ART 461 Advanced Printmaking	Qtr. Hrs. - 3
PR: ART 361. May be repeated for credit.	
ART 471 Advanced Sculpture	Qtr. Hrs. - 3
PR: ART 371. May be repeated for credit.	
ART 481 Advanced Ceramics	Qtr. Hrs. - 3
PR: ART 381. May be repeated for credit.	
ART 491 Advanced Experiments in Art and Technology	Qtr. Hrs. - 3
PR: ART 391. May be repeated for credit.	
ART 493 Senior Studio and Exhibition	Qtr. Hrs. - 3
PR: Senior standing and consent of the studio areas faculty. Required of all art majors with a studio concentration.	
ART 496 Special Topics	Qtr. Hrs. - 2-5
PR: Consent of the instructor. May be repeated for credit.	
ART 497 Undergraduate Seminar	Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.	
ART 498 Independent Study	Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.	
ART 499 Undergraduate Research	Qtr. Hrs. - 2-5
PR: Consent of the instructor. May be repeated for credit.	

BIOLOGY

BIOL 100 General Biology I	Qtr. Hrs. - 4
Basic principles emphasizing the unifying concepts of biology and their relationships to diversity in living organisms. Laboratory illustrates basic principles in biology.	
BIOL 105 General Biology II	Qtr. Hrs. - 4
PR: BIOL 100. An integrated approach to the Botanical and Zoological Sciences; the effect of society on the environment and its biological implications. Laboratory illustrates basic principles that are significant in today's environment. This course is for non-majors and is suitable, with BIOL 100, for meeting Environmental Studies Program requirements.	
BIOL 330 Immunology	Qtr. Hrs. - 3
PR: MICR 300. Basic principles of the immune reaction; antigens, antibody formation, hypersensitivity and autoimmunity.	

- BIOL 331 Serology** Qtr. Hrs. - 2
 PR: BIOL 330. Laboratory exercises in the production of antibodies, agglutination and precipitin reactions; quantitative techniques and isohemoagglutination.
- BIOL 332 Cell Physiology** Qtr. Hrs. - 5
 PR: 11 hours in biological sciences and CHEM 123. Basic physiological processes, cellular organization, exchange of materials, conversion of energy, irritability and contractibility.
- BIOL 350, 351 Principles of Ecology** Qtr. Hrs. - 4,4
 PR: 12 hours in biological sciences. A sequence of courses covering basic ecological processes. Weekend field trips are required.
- BIOL 360 Genetics** Qtr. Hrs. - 4
 PR: BIOL 100. Basic principles of heredity as applied to plants and animals. Laboratory will emphasize work with *Drosophila*.
- BIOL 420 Cytology** Qtr. Hrs. - 4
 PR: 11 hours in biological sciences and CHEM 123. Structure of vegetative and reproductive cells; cytoplasmic differentiation; mitosis, meiosis, chromosomal aberrations.
- BIOL 450, 451, 452 Limnology** Qtr. Hrs. - 3,4,3
 PR: BIOL 351 or consent of instructor. A sequence of courses on the ecology of freshwater environments, including the interactions of biological, chemical and physical factors.
- BIOL 460 Organic Evolution** Qtr. Hrs. - 3
 PR: 11 hours in biological sciences including BIOL 360. An outline of evolutionary principles, natural selection, and phylogeny; origin of variation and origin of species.
- BIOL 470 History of Biology** Qtr. Hrs. - 3
 PR: Junior standing. People and events from Aristotelian times to the present; development of the science of biology.
- BIOL 491 Contemporary Biology** Qtr. Hrs. - 3
 PR: Consent of instructor. Concepts, experiments, problems and advanced topics included in courses such as BSCS biology and other modern approaches to secondary school biology. For prospective teachers of biology. (Same as EDSE 491).
- BIOL 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- BIOL 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- BIOL 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

BIOL 499 Undergraduate Research

Qtr. Hrs. - 2-5

PR: Consent of instructor. May be repeated for credit.

BOTANY**BOT 100 General Botany**

Qtr. Hrs. - 4

PR: BIOL 100. Introduction to botany; plant structure and function, including a survey of the plant kingdom giving special emphasis to forms important to man. Laboratory exercises illustrate basic principles in botany.

BOT 270 Economic Botany

Qtr. Hrs. - 3

PR: BOT 100. Provides a broad understanding of the various plant groups and their economic importance to man; designed primarily for non-majors.

BOT 272 Plants and the Urban Environment

Qtr. Hrs. - 3

The selection, placement, propagation, and care of ornamental plants in residential, commercial, and industrial areas. Not recommended for botany majors.

BOT 310 Botanical Histology and Microtechnique

Qtr. Hrs. - 4

PR: BOT 100. Morphogenesis and structure of flowering plants, with instruction on laboratory microtechnique.

BOT 320, 321 Comparative Morphology of Plants

Qtr. Hrs. - 4,4

PR: BOT 100. A sequential survey of the algae, fungi, bryophytes, ferns, fern allies, gymnosperms and flowering plants, with emphasis on evolutionary relationships, structure and function.

BOT 330 Plant Physiology

Qtr. Hrs. - 5

PR: BIOL 332 and MICR 200. Chemical and physical activities of plants; absorption, transpiration, mineral nutrition, photosynthesis and growth.

BOT 340 Phycology

Qtr. Hrs. - 4

PR: BOT 321 or consent of instructor. A lecture-laboratory course to survey the diversity and classification of marine, terrestrial and freshwater algae.

BOT 341 Mycology

Qtr. Hrs. - 4

PR: BOT 321, MICR 200; or consent of instructor. A lecture-laboratory course to cover the major groups of fungi, treating their morphology and classification and emphasizing those of special importance to man.

BOT 345, 346 Systematics of Flowering Plants

Qtr. Hrs. - 4,4

PR: BOT 100. A sequential biosystematic study of the angiosperms and special topics.

BOT 442 Bryology

Qtr. Hrs. - 4

PR: BOT 321 or consent of instructor. A lecture-laboratory survey course on the diversity and classification of mosses, liverworts and hornworts with special emphasis on those found in Florida.

- BOT 453 Plant Geography** Qtr. Hrs. - 3
PR: BIOL 351 and BOT 346. The major climax formations of the world and their representative plant taxa; the distribution of plants in time.
- BOT 470 Plant Pathology** Qtr. Hrs. - 4
PR: BOT 341 and MICR 200. A survey of the microorganisms causing plant diseases, emphasizing fungi, especially those forms which are important in Florida.
- BOT 472 Botanical Nomenclature** Qtr. Hrs. - 2
PR: BOT 346. The development of the International Code of Botanical Nomenclature and its application to special problems.
- BOT 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- BOT 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- BOT 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- BOT 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

BUSINESS ADMINISTRATION

- BADM 101 Business** Qtr. Hrs. - 4
Survey of managerial divisions of finance, production, personnel, and marketing in business. Business terminology and overall structure of business in its environment. Historical and economic perspectives are considered. This course open only to students at freshman or sophomore level.
- BADM 301 Business Concepts** Qtr. Hrs. - 3
PR: Junior standing. The role of business and the environment in which it operates are considered. The responses business makes to freedom, ownership, the market economy and government are discussed. This course satisfies the Advanced Environmental Studies requirement for business.
- BADM 302 Personal Investments** Qtr. Hrs. - 3
PR: Junior standing. Management of personal finance; life insurance and home ownership as investments; owning a business as an investment; income protection; investable funds; vehicles for investment; financial institutions; aids to investment; investment companies. Cannot be used for credit for BSBA degree.
- BADM 311, 312 Mathematical Applications to Business** Qtr. Hrs. - 3,3
PR: MATH 115 or 221. A study of a wide range of quantitative decision procedures as applied to problems in business administration.

- BADM 371 Business Law** **Qtr. Hrs. - 3**
PR: Junior standing. The presentation of law as an expanding social and political institution in the environment of the business enterprise. Consideration given to the development and sources of law, the judicial system, torts, crimes, and contracts.
- BADM 372 Business Law** **Qtr. Hrs. - 3**
PR: BADM 371. Recognized commercial organizations including agencies, partnerships, corporations. An examination of each and their functions in the business world.
- BADM 373 Business Law** **Qtr. Hrs. - 3**
PR: BADM 371, BADM 372 desirable. A study of the legal concepts underlying the transfer and sale of goods and commercial paper, including an examination of the law of sales, commercial paper and secured transactions and their interaction with the commercial environment.
- BADM 444 International Business Operation** **Qtr. Hrs. - 3**
PR: Senior standing or consent of instructor. An integration of economics and the functional areas of business focused upon the problems of managing international business operations. Economic, legal, functional and administrative problems are studied through cases and literature emphasizing financial and marketing problems.
- BADM 474 Business Law, Interests in Property and Liability** **Qtr. Hrs. - 3**
PR: BADM 371 or consent of instructor. Includes bailments, real and personal property, and security interests therein, insurance, suretyship and guaranty.
- BADM 484 Operations Research** **Qtr. Hrs. - 3**
PR: ECON 321. Methods and models of operations research applied to specific business problems. Develops use of mathematical techniques and demonstrates its use in modern decision theory.
- BADM 490 Senior Seminar: Business in Human Affairs** **Qtr. Hrs. - 2**
Business issues and problems as they relate to human affairs. This course, primarily intended for the senior student, is offered as one of the Advanced Environmental Studies seminars. Not open to the student majoring in the College of Business Administration.
- BADM 495 Business Policies** **Qtr. Hrs. - 5**
PR: Senior standing and completion of all other business core course requirements, or consent of instructor. A study of problems confronting businessmen. The student will be expected to utilize the subject matter contained in the business core courses and his major in the analysis of business problems.
- BADM 601 Quantitative Analysis for Business Decisions** **Qtr. Hrs. - 3**
PR: Graduate standing. Quantitative techniques useful for the solution of business problems.

- CHEM 125 Organic Laboratory Techniques** Qtr. Hrs. - 2
PR: CHEM 122 and CHEM 124. A lecture-laboratory course for the development of laboratory skills through class-developed experiments. An open-ended approach is used.
- CHEM 161, 162, 163 Chemical Principles** Qtr. Hrs. - 3,3,3
An introductory study emphasizing the physical basis of chemistry and oriented toward the non-chemistry major. Stoichiometry, the periodic table, equilibrium, thermodynamics, kinetics, and atomic and molecular structure will be covered. Some descriptive inorganic chemistry will be included.
- CHEM 261, 262, 263 Chemistry Fundamentals** Qtr. Hrs. - 3,3,3
CR: MATH 223. A course in the theory of chemical reactions. Atomic structure and chemical bonding theory, chemical periodicity, stoichiometry, equilibria, thermodynamics, and kinetics will be included.
- ✓ **CHEM 351, 352 Analytical Laboratory Techniques** Qtr. Hrs. - 3,3
PR: CHEM 161 or CHEM 261, and CHEM 123; or CHEM 113. A lecture-laboratory course providing a working knowledge of analytical laboratory techniques. Classical and instrumental methods are examined with emphasis on selection of the preferred analytical method, performing the analysis, and interpreting the data obtained.
- CHEM 355 Chemical Instrumentation for the Medical Laboratory** Qtr. Hrs. - 3
PR: CHEM 113 and CHEM 352; or consent of instructor. A lecture-laboratory course designed to develop a working knowledge of the analytical instrumental techniques in the modern medical laboratory.
- CHEM 361, 362 Chemistry Fundamentals** Qtr. Hrs. - 3,3
PR: CHEM 263. Continuation of CHEM 261, 262, 263.
- CHEM 364, 365 Physical Chemistry Measurements Laboratory** Qtr. Hrs. - 2,2
PR: CHEM 263 or CHEM 367. A laboratory course stressing the development of laboratory skills for precise chemical measurements such as molecular weight, density, atomic and molecular absorption, and electrical and magnetic properties.
- CHEM 367, 368, 369 Physical Chemistry** Qtr. Hrs. - 3,3,3
PR: CHEM 163, PHYS 108 or PHYS 212, and MATH 222. A lecture course in physical chemistry for transfer students majoring in chemistry and interested non-majors. Atomic and molecular structure, thermodynamics, kinetics, and chemical bonding will be included. CHEM 367, 368 will cover basic concepts. CHEM 369 will be a more detailed study of selected topics.

- CHEM 399 Introduction to Research** Qtr. Hrs. - 1
PR: Consent of instructor. A discussion course required of all chemistry majors in order to introduce them to the science and art of research as practiced in chemistry. Topics will be presented by staff and visiting scientists relative to their personal research efforts.
- CHEM 421, 422 Advanced Organic Chemistry** Qtr. Hrs. - 3,3
PR: CHEM 123, and CHEM 362 or CHEM 369. A consideration of organic reaction mechanisms in the light of bonding theories, thermodynamics, and kinetics.
- CHEM 431 Inorganic Chemistry** Qtr. Hrs. - 3
PR: CHEM 362 or CHEM 369. A discussion of descriptive inorganic chemistry based on various bonding theories, thermodynamics, and kinetics.
- CHEM 441, 442, 443 Biochemistry** Qtr. Hrs. - 3,3,3
PR: CHEM 123, and CHEM 163 or CHEM 362. A consideration of the general properties of proteins, carbohydrates, and nucleic acids. Enzymes and their effect on biochemical systems will be discussed. Intermediary metabolism will be a central theme throughout the course.
- CHEM 444, 445 Biochemical Methods** Qtr. Hrs. - 2,2
PR: CHEM 113 or CHEM 441, and CHEM 352. A laboratory course stressing the application of the chemical arts to the separation, identification, and quantitation of materials of biological significance.
- CHEM 451, 452 Analytical Laboratory Techniques** Qtr. Hrs. - 3,3
PR: CHEM 352; and CR: CHEM 362 or CHEM 368. A lecture-laboratory course designed to establish an understanding of modern methods of chemical analysis. Students will be encouraged to propose qualitative and quantitative methods of analysis for various inorganic and organic materials. Specific instrumental techniques will also be covered.
- CHEM 461 Selected Topics in Physical Chemistry** Qtr. Hrs. - 3
PR: MATH 321, and CHEM 362 or CHEM 369. A rigorous mathematical treatment of chemical thermodynamics, kinetics, and quantum mechanics.
- CHEM 471 Introduction to Nuclear Chemistry** Qtr. Hrs. - 3
PR: CHEM 362 or CHEM 369. Discussion of fundamental particles, nuclear reactions, radioactivity, radiation chemistry, and isotope chemistry.
- CHEM 474 Radiochemical Techniques** Qtr. Hrs. - 3
PR: CHEM 351. A lecture-laboratory course stressing radiochemical handling techniques, radiation safety, and the detection and measurement of nuclear radiation.
- CHEM 491 Contemporary Chemistry** Qtr. Hrs. - 3
PR: Consent of instructor. Concepts, experiments, problems, and advanced topics included in courses such as CHEM Study and other

modern approaches to secondary school chemistry. For prospective teachers of chemistry. (Same as EDSE 492).

- CHEM 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- CHEM 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- CHEM 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- CHEM 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

CIVIL ENGINEERING & ENVIRONMENTAL SCIENCES

- CEES 221 Surveying** Qtr. Hrs. - 3
CR: MATH 221. Theory and field practice in engineering, geological and land surveys. Two lectures, three hours laboratory.
- CEES 321 Engineering Geology** Qtr. Hrs. - 3
PR: ENGR 152 or equivalent. Physical geology with special emphasis on structural geology, ground water, soil genesis, and relation of geology to problems in soil mechanics. Two lectures, three hours laboratory.
- CEES 351 Structural Mechanics** Qtr. Hrs. - 4
PR: ENGR 312. Deflections of statically determinate structures by direct and energy methods. Introduction to matrix algebra. Influence coefficients and diagrams. Analysis of statically indeterminate structures by methods of consistent displacements, slope-deflection, and moment distribution.
- CEES 361 Transportation Engineering** Qtr. Hrs. - 3
PR: ENGR 342. Elementary investigation of all forms of transport — highway, rail, water, air. Systems approach to planning, design, construction, operation, and administration of transportation networks.
- CEES 371 Urban Planning** Qtr. Hrs. - 3
PR: ENGR 342 and 371. History and principles of planning; contemporary urban problems; current urban planning techniques.
- CEES 411 Environmental Engineering** Qtr. Hrs. - 4
PR: ENGR 361. Man's environment, water resources, hydrologic cycle, chemistry of natural water, quality requirements and water treatment, water distribution systems.
- CEES 412 Environmental Engineering** Qtr. Hrs. - 4
PR: CEES 361. Drainage systems, collection and transmission of wastewater, the carbon cycle and biochemistry of wastes, principles of wastewater treatment and disposal.

- CEES 414 Sanitary Systems Design** **Qtr. Hrs. - 3**
PR: CEES 411 or 412. Planning capacity and design of water distribution and domestic and storm drainage systems.
- CEES 415 Atmospheric Pollution** **Qtr. Hrs. - 3**
PR: CEES 411. Atmospheric composition and dynamics; origins and chemistry of contamination and biological significance; engineering methods of measurement and control.
- CEES 416 Epidemiology and Public Health Engineering** **Qtr. Hrs. - 4**
PR: Approval of instructor. Selected topics in occurrence and transmission of diseases, mathematical theory of epidemics, sanitation, and public health engineering and administration.
- CEES 417 Environmental Health** **Qtr. Hrs. - 4**
PR: Approval of instructor. Selected topics in industrial hygiene, occupational and radiological health hazards, effects of pollution on the natural environment, pollution control concepts, and regulatory agencies.
- CEES 431 Soil Mechanics** **Qtr. Hrs. - 3**
PR: CEES 321 and ENGR 312. Index properties and engineering characteristics of soils. Compaction, shear, compressibility, and permeability. Two lectures, three hours laboratory.
- CEES 433 Site Foundation Engineering** **Qtr. Hrs. - 3**
PR: CEES 431. Geological investigations for engineering purposes, case histories, interpretation of geologic maps, major aspects of geologic structure, weathering, river mechanics, glacial deposits, eolian deposits in the site location for an engineering structure.
- CEES 441 Computer Applications in Structural Analysis** **Qtr. Hrs. - 3**
PR: COMP 102, CEES 351, or MEAS 424. The use of digital computers in solving structural analysis problems. Matrix methods, finite element, structural techniques, and vibration and buckling analysis using the digital computer. Case studies.
- CEES 443 Continuum Mechanics** **Qtr. Hrs. - 3**
PR: ENGR 312; CR: ENGR 472. Cartesian tensors. Stress and deformation in a continuum. Physical laws — Eulerian form; applications to solids and fluids.
- CEES 451 Structural Design** **Qtr. Hrs. - 3**
PR: CEES 351. Design of steel and reinforced concrete structural members. Two lectures, three hours laboratory.
- CEES 461 Transportation Engineering** **Qtr. Hrs. - 3**
PR: CEES 361. Advanced topics in transportation system analysis.

- CEES 462 Traffic Engineering** Qtr. Hrs. - 3
 PR: CEES 361. Study of operator and vehicle characteristics, street capacity, signals, signs and markings, etc. All phases of traffic engineering as applied to urban areas.
- CEES 471 Urban Planning** Qtr. Hrs. - 3
 PR: CEES 371. Municipal organization and administration, public health, public utilities, services, zoning, replanning, critical studies.
- CEES 481, 482 Water Resources Engineering** Qtr. Hrs. - 3,3
 PR: ENGR 332 and 361. Engineering systems for development, utilization and control of water resources. Physical hydrology, economic analysis, case studies.
- CEES 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- CEES 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- CEES 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- CEES 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

COMMUNICATION

- COM 100 Basic Communication** Qtr. Hrs. - 3
 Survey of basic factors affecting human interaction through communication; theories and models of communication; contributions of behavioral sciences and related arts; mass media in society.
- COM 300 Communication Theory as Related to the Mass Media** Qtr. Hrs. - 3
 Comparative study of views and theories of communication through the printed and spoken media; theories of perception and communication; information and recall involving printed media, public platform and electronic media.
- COM 301 Communication as a Behavioral Science** Qtr. Hrs. - 3
 Basic principles of the behavioral science approach to the study of contemporary communication.
- COM 310 History of the Motion Picture** Qtr. Hrs. - 3
 Development of the film industry, its social and economic impact. Same as THA 310.
- COM 311 Business and Professional Communication** Qtr. Hrs. - 3
 Investigation of the basic principles of communication as applied to business with emphasis on the written and oral communicative acts.

- COM 400 Opinion and the Mass Media** Qtr. Hrs. - 4
The role of the mass media in influencing public opinion. Theory and nature of publicity and propaganda and other specialized usage of media to gain rapport with and reaction from selected groups.
- COM 401 Communicative Process in Government** Qtr. Hrs. - 3
Creation of public opinion on issues, candidates, governmental policies in the struggle for power; use of communication in democratic processes.
- COM 410 Social Responsibilities of the Mass Media** Qtr. Hrs. - 4
Relationships between the mass media and society; examination of social and ethical responsibilities of the media.
- COM 411 Legal Responsibilities of the Mass Media** Qtr. Hrs. - 4
Legal rights and restrictions, including Constitutional guarantees; libel, invasion of privacy, and contempt of court.
- COM 420 Practicum in Communication** Qtr. Hrs. - 1
PR: Consent of instructor. May be repeated three times for credit.
- COM 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- COM 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- COM 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- COM 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

COMPUTER SCIENCE

- COMP 101 Introduction to Computer Science** Qtr. Hrs. - 3
History of computers; description of a typical computer; computer elements and symbology; number systems; basic arithmetic operations; computer control and data flow; peripheral components; memory devices; problem-solving using a programming language; case study of a non-trivial application of computers; economic, political, sociological, and other implications of computers, computer science, and computer technology.
- COMP 102 Computer Programming** Qtr. Hrs. - 3
PR: MATH 110 or the equivalent. Problem definitions, algorithms, flow charts, digital computer programming using a higher level language (FORTRAN).
- COMP 103 Computer Fundamentals for Business Applications** Qtr. Hrs. - 3
History of computers; processing information; manual information processing systems; introduction to electronic computer systems; storage of information; solving problems; preparation of common business reports.

- COMP 205 Algorithmic Processes I** Qtr. Hrs. - 3
PR: COMP 102. Algorithms and computers, flow chart language, branching and subscripted variables, looping, approximations; selected projects using a suitable procedure-oriented language.
- COMP 206 Algorithmic Processes II** Qtr. Hrs. - 3
PR: COMP 205. Functions and procedures, numerical applications.
- COMP 207 Algorithmic Processes III** Qtr. Hrs. - 3
CR: COMP 206. Trees, compiling, text-editing, other non-numerical applications.
- COMP 305 Assembly Language Programming Laboratory** Qtr. Hrs. - 3
PR: 9 hours of COMP. Computer structure and machine language; addressing techniques; digital representation of data; symbolic coding and assembly systems; selected programming techniques.
- COMP 306 Computers and Programming** Qtr. Hrs. - 3
PR: COMP 305. Macros, program segmentation and linkage, systems and utility programs.
- COMP 331 Introduction to Combinatorics and Graph Theory** Qtr. Hrs. - 4
PR: 9 hours of COMP. Recursion, permutations, combinations, generating functions, inclusion and exclusion, elements of the theory of directed and undirected graphs. Applications to computer science.
- COMP 387 Computer Programming with Business Applications** Qtr. Hrs. - 3
PR: COMP 101 or COMP 102 or COMP 103. A study of computer languages of particular use in business and applications to business activities.
- COMP 401, 402 System Design** Qtr. Hrs. - 3,3
PR: COMP 305, MATH 314. Processor characteristics; peripheral equipment characteristics; information representation; introduction to data communications.
- COMP 405, 406 Data Structures** Qtr. Hrs. - 3,3
PR: COMP 305, 331. Basic concepts of data; linear lists, strings, arrays, and orthogonal lists; ordering or sorting techniques; recursion; string and list processing languages.
- COMP 408, 409 Programming Languages** Qtr. Hrs. - 3,3
PR: 9 hours of COMP. Formal definition of programming languages; global properties of algorithmic languages; list processing, string manipulation, data description, and simulation languages.
- COMP 411, 412 Operating Systems** Qtr. Hrs. - 3,3
PR: COMP 306; CR: COMP 405. Task scheduling; file management; file security; multiprogramming; communication between system components, system logs, and accounting and status reporting.

- COMP 421, 422 Compiler Structure** Qtr. Hrs. - 3,3
 PR: COMP 409; CR: COMP 405. A review of the major problem-oriented languages; syntax analysis; bootstrapping techniques and metacompilers; languages for compiler writing storage allocation and mapping; dynamic allocation; scanners; symbol tables; code emitters; one-pass and multi-pass systems; code optimization.
- COMP 461, 462, 463 Numerical Analysis** Qtr. Hrs. - 3,3,3
 PR: COMP 206, MATH 321; CR: MATH 317 or MATH 318. Numerical solution of algebraic and transcendental equations, systems of equations, ordinary and partial differential equations, and integral equations; interpolation; finite differences; eigen-value problems; relaxation techniques; approximations and error analysis.
- COMP 471, 472, 473 Mathematical Programming** Qtr. Hrs. - 3,3,3
 PR: COMP 206, COMP 331, MATH 317 or MATH 318, and MATH 321; or consent of instructor. Linear, nonlinear, and dynamic programming; applications in business, science and engineering.
- COMP 481, 482, 483 Computer Processing of Statistical Data** Qtr. Hrs. - 3,3,3
 PR: MATH 321, STAT 402, and COMP 102, or consent of the instructor. The use of high-speed electronic computers in statistical analysis; approximation methods; error analysis; Monte Carlo calculations; simulation; combination problems; matrix calculations; least squares analysis; multiple regression; stepwise regression; nonlinear estimation; characteristic value problems; principal component analysis, factor analysis; analysis of variance and covariance computations.
- COMP 487, 488, 489 Computer Processing of Business Data** Qtr. Hrs. - 3,3,3
 PR: Junior standing and COMP 101 or COMP 102 or COMP 103. The use of high-speed electronic computers for business data processing; applications in accounting, payroll inventory control, and production control; file organization, development, and control; on-line systems and controls.
- COMP 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- COMP 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- COMP 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- COMP 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

COOPERATIVE EDUCATION

COED 100 Cooperative Education, Freshman Year	Qtr. Hrs. - 0*
COED 200 Cooperative Education, Sophomore Year	Qtr. Hrs. - 0*
COED 300 Cooperative Education, Junior Year	Qtr. Hrs. - 0*
COED 400 Cooperative Education, Senior Year	Qtr. Hrs. - 0*



ECONOMICS

ECON 201 Economics and Man	Qtr. Hrs. - 3
An introductory course specifically designed to provide both the business and nonbusiness student with a terminal course in the fundamentals of economics, including economic methodology, microeconomics, and macroeconomics.	
ECON 202 Principles of Microeconomics	Qtr. Hrs. - 3
PR: ECON 201. The determination of prices in a market economy; their	

*May be repeated.

role in allocating consumer and producer goods and in distributing incomes. Efficiency of markets and evaluation of public policies designed to improve efficiency.

ECON 203 Introduction to Aggregate Economics Qtr. Hrs. - 3

PR: ECON 201. A course providing further study in the area of national income accounting, income and employment theory, business fluctuations, and U.S. economic policy.

ECON 301 Intermediate Price Theory Qtr. Hrs. - 4

PR: ECON 203. Theoretical analysis of the determination of product and factor prices under different market structures.

ECON 307 Economic History of the United States Qtr. Hrs. - 3

PR: Junior standing or consent of instructor. An analysis of the historical growth and development of the American economy.

ECON 311 Intermediate Money, Income and Employment Theory

Qtr. Hrs. - 4

PR: ECON 203. Theoretical analysis of the determination of national income and employment, including an examination of the monetary system.

ECON 321 Business and Economic Statistics Qtr. Hrs. - 3

PR: ECON 203, MATH 115 and one prior course in statistics. The use of statistical methods as scientific tools in the analysis of economic and business problems. Emphasis is placed upon the collection, analysis, and interpretation of quantitative economic and business data (same as STAT 321).

ECON 322 Business and Economic Statistics Laboratory Qtr. Hrs. - 1

Use of computers in problem solving for ECON 321. Must be taken concurrently with ECON 321 (same as STAT 322).

ECON 325 Probability and Applications to Economic Decision Theory

Qtr. Hrs. - 3

PR: STAT 201 or STAT 301. Probability and sampling theories as applied to decision-making in cases of uncertainty.

ECON 331 Economics of Labor Qtr. Hrs. - 3

PR: ECON 203. A survey of the growth, structure, objectives, and collective bargaining practices of organized labor groups.

ECON 332 Manpower and Human Resources Qtr. Hrs. - 3

Examines labor as a human resource or human capital. Special emphasis placed upon the changing role of manpower and manpower policies.

ECON 341 International Economics Qtr. Hrs. - 3

PR: ECON 203. Fundamental principles of international trade and foreign exchange, including the balance of payments and problems of foreign economic policy.

- ECON 361 Agriculture in the American Economy** Qtr. Hrs. - 3
PR: ECON 203. Agriculture in a developed economy. The nature of agricultural markets, their structure and national farm policy issues.
- ECON 371 Mathematical Economics** Qtr. Hrs. - 3
PR: ECON 203 and MATH 223. An introduction to the mathematical tools of modern economic analysis.
- ECON 381 Economics of Public Utilities** Qtr. Hrs. - 3
PR: ACCY 112 or 307 and ECON 203 or consent of instructor. The nature of public utilities, the economics of rate determination, and regulatory policy.
- ECON 401 Managerial Economics** Qtr. Hrs. - 3
PR: ECON 203. The uses of economic analysis in economic decision-making and business policy formulation.
- ECON 411 Comparative Economic Systems** Qtr. Hrs. - 3
PR: ECON 203. An analysis of the fundamental institutions of the American economic system and a comparison of the American economic system with other economic systems.
- ECON 421 Economic Statistical Analysis** Qtr. Hrs. - 4
PR: ECON 321 and ECON 322. Concepts and methods of developing, analyzing, and interpreting measures of economic activity, and business and economic change.
- ECON 431 Public Finance in the American Economy** Qtr. Hrs. - 3
PR: ECON 203. Analysis of fiscal institutions and decision-making in the public sector of the American economy; budget planning and execution, taxation, debt, and theory of taxes.
- ECON 432 Fiscal Economics** Qtr. Hrs. - 3
PR: ECON 431. The economics of government spending and taxation; analysis of the fiscal role and instruments of government and their effects on the economy. Fiscal policy, intergovernmental fiscal relationships, inflation, debt.
- ECON 435 Monetary Theory and Policy** Qtr. Hrs. - 3
PR: FIN 331. A study of the factors that influence the supply of and demand for money and credit, and the effect of changes in these factors on the allocation of resources, levels of national income, employment, and prices.
- ECON 441 Economic Development** Qtr. Hrs. - 3
PR: ECON 203. The processes and problems of economic development.
- ECON 451 Econometrics** Qtr. Hrs. - 3
PR: ECON 371 and ECON 421. Application of modern statistical methods to economic theory and problems.

- ECON 461 Business and Government** Qtr. Hrs. - 3
PR: ECON 203. A survey of the most significant public policies affecting business firms.
- ECON 471 History of Economic Thought** Qtr. Hrs. - 3
PR: ECON 203. A study of the leading ideas of the major contributors to the development of economic thought.
- ECON 481 Economics of Urban Areas** Qtr. Hrs. - 3
PR: ECON 203. An analysis of the economic problems arising from and associated with the growth of cities and suburban areas within metropolitan districts.
- ECON 499 Undergraduate Research** Qtr. Hrs. 2-5
PR: Consent of instructor. May be repeated for credit.
- ECON 601 Economics of the Firm** Qtr. Hrs. - 3
PR: Graduate standing. The application of microeconomic theory to planning and decision-making in the business firm. Emphasis will be on demand estimation; production functions; measurement of costs; pricing objectives and policies; and government antitrust policy.
- ECON 611 Aggregate Economics — Income, Employment, and Growth** Qtr. Hrs. - 3
PR: Graduate standing. The application of macroeconomic theory to planning and decision-making in the business firm. Emphasis will be on aggregate supply and demand; determinants of consumption, saving, and investment; government's stabilization role; and forecasting of economic fluctuations.
- ECON 621 Statistics for Business and Economic Analysis** Qtr. Hrs. - 3
PR: Graduate standing. The use of advanced statistical methods in business decision-making. Emphasis will be on such topics as regression and correlation and correlation analysis, sampling procedures, and forecasting techniques.

BUSINESS EDUCATION — DEVELOPMENTAL

- EDBE 101 Introductory Typewriting** Qtr. Hrs. - 3
For the student with no previous instruction in typewriting. Development of basic elements in using the typewriter as a tool of literacy and communications.
- EDBE 102 Communications Production - I** Qtr. Hrs. - 3
PR: EDBE 101 or equivalent. Continuation of development of skills in speed and accuracy and introduction to skill building procedures in communications production.
- EDBE 103 Communications Production-II** Qtr. Hrs. - 3
PR: EDBE 102 or equivalent. Expansion of communications production development, speed and accuracy.

- EDBE 201 Principles of Shorthand-I** **Qtr. Hrs. - 3**
PR: Concurrent enrollment in EDBE 101 or equivalent. For students with no previous instruction in shorthand. Introduction to basic theory of Gregg Shorthand, vocabulary development, and speed building.
- EDBE 202 Principles of Shorthand-II** **Qtr. Hrs. - 3**
PR: EDBE 102, and EDBE 201 or equivalents. A continuation in the study of shorthand theory, vocabulary development, and speed building.
- EDBE 203 Principles of Shorthand-III** **Qtr. Hrs. - 3**
PR: EDBE 102, and EDBE 202 or equivalents. Development and refinement of sustained shorthand dictation, speed and vocabulary development.
- EDBE 301 Shorthand Dictation** **Qtr. Hrs. - 3**
PR: EDBE 102, and EDBE 203 or equivalents. Continued development and refinement of shorthand dictation and introductory communications productions.
- EDBE 302 Shorthand Transcription** **Qtr. Hrs. - 3**
PR: EDBE 102, and EDBE 301. Gregg Shorthand dictation and refinement of communications production.
- EDBE 305 Office Technology** **Qtr. Hrs. - 3**
PR: EDBE 102 or consent of instructor. Basic operation and function of technological media in modern business offices.
- EDBE 405 Principles of Business - Vocational Education** **Qtr. Hrs. 3**
PR: Senior standing. Study of historical development of business-vocational education with specific emphasis on identification and interpretation of present day trends and problems.
- EDBE 406 Office Systems and Procedures** **Qtr. Hrs. - 3**
PR: EDBE 302. Study of the responsibilities of the executive secretary and office supervisor; records management, travel services, case studies in human relations in executive level job performance.
- EDBE 601 Curriculum Innovations in Business Education** **Qtr. Hrs. - 3**
PR: CI. A critical analysis of the business curricula in post secondary schools; development of philosophy, objectives, and design of innovative programs in business.
- EDBE 602 Problems Issues, and Trends in Business Education** **Qtr. Hrs. - 3**
PR: Consent of instructor. Historical development; fundamentals of business education; its relation to business, vocational and general education, guidance, objectives and contemporary problems.
- EDBE 603 Analysis, Trends and Research in Typewriting Instruction** **Qtr. Hrs. - 3**
PR: Consent of instructor. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.

- EDBE 604 Evaluation in Business Education** Qtr. Hrs. - 3
 PR: EDTA 603 or consent of instructor. A study of standardized and prognostic business education tests; functions, construction, administration, and evaluation of measurement instruments.
- EDBE 610 Administration and Supervision of Business Education** Qtr. Hrs. - 3
 PR: Consent of instructor. Organization, administration, and supervision of Business Education.
- EDBE 611 Analysis of Instruction in Shorthand and Transcription** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Techniques, materials, and instructional media, psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 612 Analysis of Instruction in Office Technology** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Techniques, materials, and instructional media, psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 613 Analysis of Instruction in Basic Business and Accounting** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Techniques, materials, and instructional media, psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 614 Coordination of Cooperative Office Business Education** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. A study of cooperative programs; organization and coordination of cooperative business education programs.
- EDBE 615 Improvement of Related Instruction in Cooperative Business Education** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Techniques, materials, and instructional media, psychological principles, evaluation, and special attention to the study of research and new trends of instruction in related cooperative education study.

ELEMENTARY EDUCATION - DEVELOPMENTAL

- EDEL 301 Teaching Mathematics in the Elementary School** Qtr. Hrs. - 3
 PR: Admission to Phase II or consent of instructor. Consideration of selected concepts; organizing for instruction, techniques and activities; class and individual diagnosis; remedial procedures.
- EDEL 302 Mathematics Programs in the Elementary School** Qtr. Hrs. - 3
 PR: EDEL 301. Analysis of teaching arithmetic, geometry and measurement; philosophy and objectives; instructional materials; current research and new curricula.

- EDEL 306 Music in the Elementary School** **Qtr. Hrs. - 3**
Fundamental procedures for teaching elementary school music, stressing appropriate music materials and activities for different age groups; selected experiences in music.
- EDEL 307 Literature for Children** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. General survey of books and materials; criteria for analysis and evaluation; types of books available considered in terms of interests, needs, and abilities of children.
- EDEL 311 Basic Foundations of Reading** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Introduction to reading; principles, procedures and organization, current practices; analysis of reading materials; correlation with child development; investigation of research.
- EDEL 312 Reading in the Elementary School** **Qtr. Hrs. - 3**
PR: EDEL 311. Study of specific techniques and materials used to develop reading comprehension, vocabulary and rate; organizing and directing a reading lesson; individual differences; evaluation procedures.
- EDEL 315 Teaching Science in the Elementary School** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.
- EDEL 316 Elementary School Curriculum** **Qtr. Hrs. - 3**
PR: Admission to Phase II. Basic scope and sequence of the elementary school curriculum; philosophical concepts; techniques and materials for instruction; patterns of organization; planning for instruction.
- EDEL 317 Teaching Social Science in the Elementary School** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.
- EDEL 401 Programs in Early Childhood Education** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Overview of the philosophy, content, facilities, instructional materials, and activities appropriate for children ages 3, 4, and 5; current research and new curricula. Concurrent laboratory experiences.
- EDEL 402 Developmental Processes in Early Childhood** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Developmental processes and their relationship to learning and curriculum development; influence of the family and culture.
- EDEL 403 Language and Cognition of Young Children** **Qtr. Hrs. - 3**
PR: Admission to Phase II or consent of instructor. Language in the learning, patterns of thinking, and perceiving of young children. Theories of language and symbolic experience, verbal and non-verbal behavior.

EDEL 404 Organization of Instruction in Nursery-Kindergarten Education**Qtr. Hrs. - 3**

PR: Admission to Phase II or consent of instructor. Organization of instruction; selected themes and concepts; teaching procedures; evaluation techniques; special problems. Concurrent laboratory experiences.

EDEL 405 Language Arts in the Elementary School**Qtr. Hrs. - 5**

PR: Admission to Phase II or consent of instructor. Content, principles, materials and techniques involved in teaching speaking, listening, writing, and spelling in the elementary school; organizing for instruction.

EDEL 406 Art in the Elementary School**Qtr. Hrs. - 3**

Basic principles, purposes, scope and sequence; organization for instruction; evaluation of activities; selected art experiences.

EDEL 407 Classroom Diagnosis and Treatment of Reading Difficulties**Qtr. Hrs. - 3**

PR: EDEL 311 and 312. Principles and techniques of diagnosis and remedial teaching with the disabled reader; factors related to reading problems - physiological, psychological, cultural; materials for instruction.

EDEL 408 Science Programs in the Elementary School**Qtr. Hrs. - 3**

PR: EDEL 315. Overview of the instructional program in natural sciences; philosophy and objectives; special problems; instructional materials; current research and new curricula.

EDEL 409 Social Science Programs in the Elementary School**Qtr. Hrs. - 3**

PR: EDEL 317. Overview of the instructional program in the social sciences; philosophy and objectives; special problems; instructional materials; current research and new curricula.

EDEL 415 Teaching Elementary School Health and Physical Education**Qtr. Hrs. - 3**

PR: Admission to Phase II or consent of instructor. Observation, organization, practice, and conduct of health and physical education activities in the elementary school.

EDEL 455 Elementary School Curriculum**Qtr. Hrs. - 4**

PR: Bachelor's degree or consent of instructor. Advanced study of the elementary school curriculum; patterns of organization; school services; individual subject areas; school related activities; investigation of trends; research and new curricula.

EDEL 456, 457 Directed Study in Elementary Education**Qtr. Hrs. - 2-5, 2-5**

Workshop for the improvement of the elementary school curriculum. Open to in-service teachers.

EDEL 604 Leadership in Elementary Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Current issues with emphasis on the improvement of instruction, analysis of curriculum, and staff development procedures.

EDEL 605 Problems in Classroom Teaching in the Elementary School**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Identification and analysis of relevant major instructional problems in the elementary school.

EDEL 606 Curriculum Design in Elementary Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Design and construction of programs to meet needs of varying levels of student populations. (May be repeated.)

EDEL 607 Practicum in Elementary Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Supervised laboratory experiences including individual and small group instructional procedures. (May be repeated.)

EDEL 610 Trends in Elementary School Science Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Analysis of historical development and current trends in science education research.

EDEL 620 Trends in Elementary School Mathematics Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Analysis of historical development and current trends in mathematics education research.

EDEL 621 Diagnosis of Difficulties in Elementary School Mathematics**Qtr. Hrs. - 3**

PR: EDEL 620. Study and uses of tests regarding the symptoms and causes of specific learning skills in mathematics.

EDEL 622 Remediation of Difficulties in Elementary School Mathematics**Qtr. Hrs. - 3**

PR: EDEL 621. Selection of materials and techniques for a remedial program based on individual diagnosis.

EDEL 630 Trends in Elementary School Reading Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or CI. Analysis of historical development and current trends in reading research.

EDEL 631 Diagnosis of Difficulties in Elementary School Reading**Qtr. Hrs. - 3**

PR: EDEL 630. Study and uses of tests regarding the symptoms and causes of specific learning skills in reading.

EDEL 632 Remediation of Difficulties in Elementary School Reading**Qtr. Hrs. - 3**

PR: EDEL 631. Selection of materials and techniques for a remedial program based on individual diagnosis.

EDEL 640 Trends in Elementary School Language Arts Education**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Analysis of historical development and current trends in language arts research.

- EDEL 641 Investigation in Children's Literature** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Analysis of the various approaches available for learning through the utilization of children's literature.
- EDEL 650 Trends in Elementary School Social Science Education** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Analysis of historical development and current trends in social science education research.
- EDEL 681 Seminar in Early Childhood Education** Qtr. Hrs. - 3
 PR: Rank III Certificate or consent of instructor. Study and evaluation of research applicable to the design and construction of a curriculum for 3, 4, and 5 year old children.

LIBRARY SCIENCE

- EDLS 301 Library Materials** Qtr. Hrs. - 3
 A general introduction to the selection, acquisition, processing, and use of all types of library materials.
- EDLS 321 Library Organization and Administration I** Qtr. Hrs. - 3
 Principles and practices of library organization and administration as applied to all types of libraries, including personnel, financial support, organization and servicing of the collection, planning and equipping libraries, planning and evaluating services.
- EDLS 322 Library Organization and Administration II** Qtr. Hrs. - 3
 PR: EDLS 321 or equivalent. Continuation of EDLS 321.
- EDLS 334 Selection and Acquisition of Library Materials** Qtr. Hrs. - 4
 Principles and methods of evaluating, selecting and acquiring book and non-book materials. The use and study of standard selection aids, reviewing media, publishers and jobbers. Procedures for budgeting, financial and statistical records, gifts and exchanges.
- EDLS 384 History of Books and Libraries** Qtr. Hrs. - 3
 A history of books and libraries from ancient times to the present, in relation to the society of which they were a part.
- EDLS 424 School Library Administration** Qtr. Hrs. - 3
 PR: Consent of instructor. Principles and practices of library administration applied to elementary and secondary school libraries.
- EDLS 431 Cataloging and Classification I** Qtr. Hrs. - 4
 PR: EDLS 301 or consent of instructor. Introduction to the theory and practice of cataloging and classifying library materials. Practical problems in descriptive cataloging, subject cataloging and Dewey Decimal classification as practiced in small libraries.
- EDLS 432 Cataloging and Classification II** Qtr. Hrs. - 4
 PR: EDLS 431 or equivalent. Additional study in the theory and practices of cataloging and classification. Introduction to Library of Congress classification and subject headings, divided and classified catalogs, and filing rules.

- EDLS 444 Reference Materials and Services** Qtr. Hrs. - 3
Selection, evaluation, and use of basic reference materials, with emphasis on functions and services of a reference department.
- EDLS 451 Introduction to Educational Media** Qtr. Hrs. - 4
Principles and practices of communication theory and its application in the classroom; selection, evaluation, acquisition, storage, and use of non-book materials and related equipment; organizing audio-visual services.
- EDLS 452 Preparation and Production of Instructional Media** Qtr. Hrs. - 3
Selection, evaluation, and production of instructional materials with emphasis on production of projected materials; display and presentation techniques.

MUSIC EDUCATION

- EDME 401 Elementary School Music Instructional Analysis** Qtr. Hrs. - 3
PR: Admission to Phase II. Instructional planning; sources of information; instructional techniques; and special evaluation procedure in elementary school music.
- EDME 402 Secondary School Music Instructional Analysis** Qtr. Hrs. - 3
PR: Admission to Phase II. Instructional planning; sources of information; instructional techniques; special evaluation procedures in secondary school music.

PHYSICAL EDUCATION — DEVELOPMENTAL

- EDPE 305 Rehabilitation Training Techniques** Qtr. Hrs. - 3
PR: Admission to Phase II or consent of instructor. Recognition and rehabilitation of sports injuries, including first aid.
- EDPE 306 Administration and Coaching** Qtr. Hrs. - 3
PR: Admission to Phase II or consent of instructor. Development of optimal individual and team performance in interscholastic athletics.
- EDPE 307 School and Community Recreation** Qtr. Hrs. - 3
PR: Admission to Phase II or consent of instructor. Knowledge and skills of after school activity and summer recreational programs.
- EDPE 308 Human Performance Learning** Qtr. Hrs. - 5
PR: Admission to Phase II or consent of instructor. Theories of movement and factors influencing the learning of gross and fine motor skills. (Includes lecture and laboratory).
- EDPE 309 Kinesiology** Qtr. Hrs. - 5
PR: Admission to Phase II or consent of instructor. The application of the structure of man to the study of human movement. (Includes lecture and laboratory).
- EDPE 321 Exercise Physiology - Cardiovascular** Qtr. Hrs. - 5
PR: ZOO 234. A circulatory study of man's homeostatic regulation during environmental stress. (Includes lecture and laboratory).

- EDPE 322 Exercise Physiology - Respiratory** Qtr. Hrs. - 5
PR: ZOOL 234. A study of metabolic costs and respiratory adjustment to exercise.
- EDPE 324 Instructional Analysis in Tennis** Qtr. Hrs. - 2
Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 325 Instructional Analysis in Aquatics** Qtr. Hrs. - 2
Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 326 Instructional Analysis in Gymnastics and Tumbling** Qtr. Hrs. - 2
Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 327 Instructional Analysis in Golf** Qtr. Hrs. - 2
Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.
- EDPE 328 Instructional Analysis in Wrestling (M)** Qtr. Hrs. - 2
Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.
- EDPE 329 Choreography of Contemporary Dance (W)** Qtr. Hrs. - 2
Dance production as an art form.
- EDPE 330 Rhythms, Notation, Meter and Form** Qtr. Hrs. - 2
Elements common to music and movement.
- EDPE 405 Organization and Administration of Secondary School Physical Education** Qtr. Hrs. - 3
Nature and scope of secondary school physical education; athletic, intramural and adaptive programs.
- EDPE 406 Organization and Administration of Elementary School Physical Education** Qtr. Hrs. - 3
Nature and scope of elementary school physical education; athletic, intramural and adaptive programs.
- EDPE 407 Family Living Concepts** Qtr. Hrs. - 5
The ideas and principles of healthy family living.
- EDPE 408 Contemporary Health Hazards** Qtr. Hrs. - 5
The effects of drugs and other mood modifiers.
- EDPE 601 Philosophical Foundations of Physical Education** Qtr. Hrs. - 3
PR: Rank III Certificate or CI. Analysis of the forces and events leading to the development of current concepts in physical education.
- EDPE 602 Trends and Readings in Physical Education** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. A comprehensive review of the literature influencing trends in physical education.

EDPE 603 Organization and Design of Physical Education Programs**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Study of physical education and its existing organization. Emphasis on ethics, values, principles and issues.

EDPE 611 Physiology of Exercise - Environmental**Qtr. Hrs. - 5**

PR: Rank III Certificate or consent of instructor. A study of physiological adaptation resulting from prescribed physical activity programs.

EDPE 612 Primate Gross Anatomy Dissection**Qtr. Hrs. - 5**

PR: Rank III Certificate or consent of instructor. Dissection, identification, and analysis of select vertebrate morphology.

EDPE 613 Perceptual Motor Learning**Qtr. Hrs. - 5**

PR: Rank III Certificate or consent of instructor. A study of optimal human factors controlling performance.

EDPE 621 School Recreation**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. A study of recreational programs related to the public schools.

EDPE 622 Kinesthetic Analysis of Individual Activities**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. A kinesiological approach to select individual movement activities.

EDPE 623 Kinesthetic Analysis of Dual and Team Activities**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. A kinesiological approach to select dual and team activities.

EDPE 624 Rhythmics**Qtr. Hrs. - 3**

PR: Rank III Certificate or consent of instructor. Instructional analysis in classical and modern rhythms.

PROFESSIONAL LABORATORY — APPLICATION**EDPL 320 Elementary School Student Teaching - Block A****Qtr. Hrs. - 3**

PR: EDTA 206 and EDTA 307. Junior year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 321 Elementary School Student Teaching - Block B**Qtr. Hrs. - 3**

PR: EDPL 320. Junio year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 330 Secondary School Student Teaching - Block A**Qtr. Hrs. - 3**

PR: EDTA 206 and EDTA 307. Junior year student teaching in a secondary school under the supervision of a certified classroom teacher.

EDPL 408 Teaching Strategies**Qtr. Hrs. - 3**

PR: Admission to Phase III. Seminar taken concurrently with student

teaching. Problem study focused on current needs such as: classroom management and control, planning for instruction, and aspects of professionalism.

EDPL 409 Teaching Strategies **Qtr. Hrs. - 4**

PR: Bachelor's degree or consent of instructor. A seminar taken concurrently with Teaching Practicum, EDPL 465. Advanced problem study focused on current needs such as: classroom management and control, planning for instruction, and aspects of professionalism.

EDPL 421 Elementary School Student Teaching - Block C **Qtr. Hrs. - 9**

PR: EDPL 321. Senior year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 430 Secondary School Student Teaching - Block C **Qtr. Hrs. - 9**

PR: EDPL 330. Senior year student teaching in a secondary school under the direction of a certified classroom teacher.

EDPL 458 Supervision of Professional Laboratory Experiences **Qtr. Hrs. - 3**

PR: Consent of instructor. Study of the undergraduate professional laboratory experiences program with emphasis on the role and responsibilities of the Teacher Education Associate or Supervising Teacher.

EDPL 459 Supervision of Professional Laboratory Experiences **Qtr. Hrs. - 1**

PR: Consent of instructor. Participation as a Teacher Education Associate or Supervising Teacher in the Florida Technological University laboratory experience program. May be taken concurrently with EDPL 458.

EDPL 465, 466 Teaching Practicum **Qtr. Hrs. - 5,5**

PR: Bachelor's degree and approved application. Directed observation, participation, and teaching in an elementary or secondary school under the direction of a selected teacher.

SECONDARY EDUCATION — DEVELOPMENTAL

EDSE 303 School Programs **Qtr. Hrs. - 3**

A study of the public school curriculum, kindergarten through grade twelve.

EDSE 304 Instructional Techniques **Qtr. Hrs. - 3**

PR: Admission to Phase II. Procedures, applications, and evaluation of technical skills a teacher may employ in the classroom.

EDSE 305 Secondary School Curriculum **Qtr. Hrs. - 3**

PR: Admission to Phase II. Study of total school patterns with emphasis on new trends, including individual subject areas, administration, supervision, school services and school related activities.

EDSE 306 Business Instructional Analysis-I **Qtr. Hrs. - 4**

PR: Admission to Phase II. Techniques, materials, and instructional

media; psychological principles, evaluation, and current trends in typewriting instruction.

EDSE 307 English Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of course objectives for the high school curriculum and survey of methods and material having special application for teaching English.

EDSE 308 Mathematics Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching mathematics.

EDSE 309 Science Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching science.

EDSE 405 Business Instruction Analysis-II **Qtr. Hrs. - 3**

PR: Admission to Phase II. Techniques, materials, and instructional media; psychological principles, evaluation, and current trends in shorthand and related instruction.

EDSE 406 Business Instructional Analysis-III **Qtr. Hrs. - 3**

PR: Admission to Phase II. Techniques, materials, and instructional media; psychological principles, evaluation, and current trends in accounting and basic business instruction.

EDSE 407 Foreign Language Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching foreign language.

EDSE 408 Physical Education Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching physical education.

EDSE 409 Social Science Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of instructional programs in Social Sciences; objectives; materials; techniques; organization of instruction; evaluation procedures; current research.

EDSE 410 Speech Instructional Analysis **Qtr. Hrs. - 4**

PR: Admission to Phase II. Study of instructional programs in speech; objectives, materials, techniques, organization for instruction, evaluation procedures, current research.

EDSE 415 Reading in the Secondary School **Qtr. Hrs. - 3**

PR: Admission to Phase II or consent of instructor. Developmental reading for the junior and senior high school pupil.

- EDSE 441 Literature for Adolescents** **Qtr. Hrs. - 3**
Selecting and evaluating books for adolescents with emphasis on the uses of books in the development of young people.
- EDSE 475 Secondary School Curriculum** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of secondary school curriculum; patterns of organization, school services, individual subject areas, school related activities; investigation of trends, research and new curricula.
- EDSE 476, 477 Directed Study in Secondary Education** **Qtr. Hrs. - 2-5,2-5**
Workshop for improvement of the secondary school curriculum. Open to in-service teachers.
- EDSE 478 Instructional Analysis in Business** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of the instructional programs in Business; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 479 Instructional Analysis in English** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in English; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 485 Instructional Analysis in Foreign Language** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in Foreign Language; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 486 Instructional Analysis in Mathematics** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in Mathematics; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 487 Instructional Analysis in Physical Education** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in Physical Education; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 488 Instructional Analysis in Science** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in Science; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.
- EDSE 489 Instructional Analysis in Social Sciences** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of instructional programs in Social Sciences; objectives; materials; techniques; organization for instruction; evaluation procedures; current research.

- EDSE 491 Contemporary Biology** **Qtr. Hrs. - 3**
 PR: Admission to Phase II or consent of instructor. Concepts, experiments, problems and advanced topics included in courses such as BSCS biology and other modern approaches to secondary school biology. (Same as BIOL 491.)
- EDSE 492 Contemporary Chemistry** **Qtr. Hrs. - 3**
 PR: Admission to Phase II or consent of instructor. Concepts, experiments, problems, and advanced topics included in courses such as CHEM Study and other modern approaches to secondary school chemistry. (Same as CHEM 491.)
- EDSE 493 Contemporary Mathematics** **Qtr. Hrs. - 3**
 PR: Admission to Phase II or consent of instructor. Concepts, problems, and advanced topics included in courses such as SMSG mathematics and other modern approaches to secondary school mathematics. (Same as MATH 491.)
- EDSE 494 Contemporary Physics** **Qtr. Hrs. - 3**
 PR: Admission to Phase II or consent of instructor. Concepts, experiments, problems and advanced topics included in courses such as PSSC physics and other modern approaches to secondary school physics. (Same as PHYS 491.)
- EDSE 541 English Programs in the Secondary School** **Qtr. Hrs. - 3**
 PR: Consent of the instructor. Concepts, problems, and advanced topics in such courses as Project English and other secondary school English projects.
- EDSE 561 General Science Programs in the Secondary School** **Qtr. Hrs. - 3**
 PR: Consent of instructor. Basic concepts, philosophies, and formats of experimental secondary school general science programs (may be repeated).
- EDSE 571 Social Science Programs in the Secondary School** **Qtr. Hrs. - 3**
 PR: Consent of instructor. Concepts, problems, experiments and advanced topics in high school social studies (may be repeated).
- EDSE 601 Curriculum Planning** **Qtr. Hrs. - 3**
 PR: Rank III Certificate or consent of instructor. Identifying major concepts, writing objectives, listing activities and developing course layouts for a secondary school subject area.
- EDSE 602 Theory and Application of Group Behavior in the Classroom** **Qtr. Hrs. - 3**
 PR: Rank III Certificate or consent of instructor. Understanding, predicting, and guiding persons who are members of small groups.
- EDSE 603 Teaching Systems of Cognition** **Qtr. Hrs. - 3**
 PR: Rank III Certificate or consent of instructor. A study of the thinking process and experimentation with specific practical techniques for helping to develop students' thinking skills.

- EDSE 604 Simulation Techniques in Instruction** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. Survey and experimental application of selected simulation and game techniques.
- EDSE 605 Analysis of Classroom Interaction** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. Methods of recording classroom interactions; significant research results; and skill building in using selected instruments.
- EDSE 651 Laboratory Programs in Mathematics** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. Design, organization and development of special materials and projects for mathematics independent study.
- EDSE 662 Laboratory Programs in Science Education** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. Design, organization and development of special materials and projects for science independent study centers.
- EDSE 671 Laboratory Program in the Social Sciences** Qtr. Hrs. - 3
PR: Rank III Certificate or consent of instructor. Design, organization and development of special materials related to selected conceptual specializations. (To be taken in conjunction with six hours of content related to concept specialization).

TEACHING ANALYSIS

- EDTA 206 Human Development** Qtr. Hrs. - 3
Analysis of basic principles and applications in growth and learning from conception through adolescence. EDTA 307 recommended concurrently.
- EDTA 305 Principles of Evaluation** Qtr. Hrs. - 3
PR: Admission to Phase II. Principles of evaluation applied to advising pupils, diagnosing learning deficiencies, determining effectiveness of instruction and judging pupil progress.
- EDTA 306 Learning Theory** Qtr. Hrs. - 3
PR: Admission to Phase II. Study of applications of learning theory to classroom teaching.
- EDTA 307 Teaching Analysis** Qtr. Hrs. - 5
Initial requirement; an opportunity to examine and participate in general and specific dimensions of teaching with socio-economic factors emphasized. EDTA 206 recommended concurrently.
- EDTA 405 Teaching Analysis** Qtr. Hrs. - 4
PR: Bachelor's degree or consent of instructor. Advanced study, examination, and participation in general and specific dimensions of the teaching task in current American Society.

- EDTA 406 Human Development** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Advanced study of basic principles and their application in physical, intellectual, emotional and social development from conception through adolescence.
- EDTA 407 Learning Theory** **Qtr. Hrs. - 4**
PR: Bachelor's degree or consent of instructor. Analysis and advanced study of the applications of learning theory as applied to teaching in the elementary and secondary classroom.
- EDTA 490 Senior Seminar: Education in Human Affairs** **Qtr. Hrs. - 2**
Provides an overview of basic objectives, strategies, and techniques in education. This course, primarily intended for the senior student, is offered as one of the advanced Environmental Studies Seminars. Not open to the student enrolled in the College of Education.
- EDTA 601 Social Factors in American Education** **Qtr. Hrs. - 3**
PR: Rank III Certificate or CI. Analysis of general and specific aspects of American education as they relate to Social and Behavioral Sciences.
- EDTA 602 Education, Human Development and Learning** **Qtr. Hrs. - 3**
PR: Rank III Certificate or CI. Recent research in Human Development and learning relevant to contemporary American education.
- EDTA 603 Measurement and Evaluation in Education** **Qtr. Hrs. - 3**
PR: Rank III Certificate or CI. Rationale and construction of evaluative instruments, parametric and non-parametric statistics, interpretation of data.
- EDTA 604 Research Design and Techniques in Education** **Qtr. Hrs. - 3**
PR: EDTA 603 or CI. Design rationale and construction, sampling methods, control and limits.
- EDTA 606 Behavior Problems in the Public School** **Qtr. Hrs. - 3**
PR: Rank III Certificate or consent of instructor. Role of the teacher in identification, strategies for remediation and referral procedures for working with behavioral problem children. Mental hygiene principles stressed.
- EDTA 695 Research Report** **Qtr. Hrs. - 4-6**
PR: Admission to Candidacy. A report based on a concentrated application of theory, research and the student's creative effort toward investigating a problem germane to his area of concentration. The student's project is subject to his graduate adviser's approval.
- EDTA 696 Special Topics** **Qtr. Hrs. - 2-5**
PR: Rank III Certificate or consent of instructor. (May be repeated for credit).

EDUCATION — VISUAL ARTS

EDVA 401 Secondary School Art Instructional Analysis Qtr. Hrs. - 3
PR: Admission to Phase II or consent of instructor. Methods and curriculum materials for teaching Visual Arts in the secondary schools.

EDVA 402 Elementary School Art Instructional Analysis Qtr. Hrs. - 3
PR: Admission to Phase II or consent of instructor. Methods and curriculum materials appropriate for teaching Visual Arts in the elementary schools.

EDVA 431 Two-Dimensional Instructional Materials Qtr. Hrs. - 3
PR: EDVA 401 or 402 or consent of instructor. Application of two-dimensional materials to appropriate levels of instruction: chalk, water colors, crayon, tempera, acrylics, mosaics, and fabrics.

EDVA 432 Three-Dimensional Instructional Materials Qtr. Hrs. - 3
PR: EDVA 401 or 402 or consent of instructor. Application of three-dimensional materials to appropriate levels of instruction: wood, paper, plaster, concrete, clay, wax, soap and fabrics.

EDVA 433 Graphic Instructional Materials Qtr. Hrs. - 3
PR: EDVA 401 or 402 or consent of instructor. Application of graphic materials to appropriate level of instruction: printing, woodcuts, silk screens, film-making, and projectuals.

EDVA 434 Found Arts Qtr. Hrs. - 3
PR: EDVA 431 and 432 or consent of instructor. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

EDVA 491 Contemporary Visual Arts Education Qtr. Hrs. - 3
PR: EDVA 401 and 402 or consent of instructor. A study of current programs and innovations in public school Visual Arts Programs.

ELECTRICAL ENGINEERING & COMMUNICATIONS SCIENCES

EECS 311 Switching Theory Qtr. Hrs. - 3
PR: ENGR 321. Logical functions. Theory and application of Boolean algebra. The minimization of logical expression and networks including NAND and NOR logic.

EECS 321 Electrical Networks Qtr. Hrs. - 3
Continuation of ENGR 322.

- EECS 322 Electronic Engineering** **Qtr. Hrs. - 4**
Continuation of ENGR 323. Three lectures, three hours laboratory.
- EECS 331 Electromechanics** **Qtr. Hrs. - 3**
PR: ENGR 323 Energy conversion by electromechanical methods.
- EECS 341 Electromagnetic Fields** **Qtr. Hrs. - 4**
PR: ENGR 322 and MATH 331. Introduction to electric fields and waves.
- EECS 411 Logical Component Design** **Qtr. Hrs. - 3**
PR: EECS 311. Theory of number systems and arithmetic. Sequential circuit theory. Design and application of serial and parallel logical components including counters, registers, adders and subtractors. Principles of stored program computers.
- EECS 413 Digital Systems and Circuits** **Qtr. Hrs. - 4**
PR: ENGR 323 and EECS 311. Investigation of digital components and their incorporation into circuits for digital applications. Three lectures, three hours laboratory.
- EECS 412 Logical Systems Design** **Qtr. Hrs. - 4**
PR: EECS 411. Systems investigation, design, and operation of digital computers; study of a basic hardware set and a basic software set.
- EECS 414 Analog Computers** **Qtr. Hrs. - 3**
PR: EECS 321. Theory, operation and application of analog computers.
- EECS 421 Electrical Networks** **Qtr. Hrs. - 3**
PR: EECS 321 and 341. Traveling electromagnetic waves with application to distributed parameters. Two lectures, three hours laboratory.
- EECS 431 Electrical Machinery** **Qtr. Hrs. - 3**
PR: EECS 331. Methods and techniques of systems analysis applied to the dynamics of electrical machinery. Two lectures, three hours laboratory.
- EECS 442 Microwaves** **Qtr. Hrs. - 4**
PR: EECS 341 and 421. Microwave devices and systems. Three lectures, three hours laboratory.
- EECS 443 Coherent Optics Applications** **Qtr. Hrs. - 3**
PR: EECS 341. Theory and design of coherent optical systems lasers, information, processing, communication, holography.
- EECS 451 Communication Theory** **Qtr. Hrs. - 4**
PR: EECS 321 and 322. Information transmission, modulation, and noise. Three lectures, three hours laboratory.

- EECS 453 Random Processes** Qtr. Hrs. - 3
 PR: MATH 321 and ENGR 321. Random variables, averaging, sampling, elements of probability theory.
- EECS 461 Semiconductor Devices** Qtr. Hrs. - 3
 PR: EMS 411. Semiconductors with non-uniform impurity distribution; impurity diffusion, analysis of drift transistor with constant built-in field. Junction field-effect transistors. Two lectures, three hours laboratory.
- EECS 462 Solid State Systems** Qtr. Hrs. - 3
 PR: EECS 461. Theory of solid state devices.
- EECS 464 Solid State Electronics** Qtr. Hrs. - 3
 PR: EECS 461. Theory of solid state devices.
- EECS 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- EECS 497 Undergraduate Seminars** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- EECS 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- EECS 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

ENGINEERING CORE

- ENGR 101 Engineering Graphics** Qtr. Hrs. - 3
 Spatial visualization, sketching, and graphical presentation as a form of engineering communication. Engineering drawing, descriptive geometry, manipulation of vectors and graphical solution techniques. Two lectures, one two-hour laboratory.
- ENGR 103 Creative Design** Qtr. Hrs. - 3
 PR: Approval of instructor. Role of the engineer as a creative design professional. Emphasis on understanding the creative process and factors that influence it. Attitudes and viewpoints of the designer and an investigation of the techniques of analysis, synthesis, and evaluation used. Two lectures, two hours recitation-laboratory.
- ENGR 111 Engineering Concepts** Qtr. Hrs. - 4
 CR: MATH 221. Introduction to the basic physical phenomena essential to the understanding of engineering structures, machines, processes, and systems. Primary emphasis on mechanics, materials behavior, and thermofluid mechanics phenomena. Lecture, demonstration, and recitation.

- ENGR 151, 152 Chemical Foundations of Engineering** Qtr. Hrs. - 3,3
PR: Satisfactory performance in one year of high school chemistry or physics. CR: MATH 211. Engineering applications of basic chemical concepts. Atomic and molecular structure, states of matter and their energies, chemical equilibria and reaction rates, organic compounds, and industrial processes. Lecture, demonstration, recitation.
- ENGR 201 Engineering Design Case Studies** Qtr. Hrs. - 1
PR: Sophomore standing and ENGR 103. Discussion of the role of various engineering disciplines in the creative design process. Invited guest speakers will review pertinent case studies covering a broad spectrum of engineering problems.
- ENGR 211 Engineering Analysis-Statics** Qtr. Hrs. - 4
PR: MATH 222 and ENGR 111. Force systems, resultants, equilibrium, distributed forces. First and second moments of areas and masses.
- ENGR 221 Electrical Science** Qtr. Hrs. - 4
PR: MATH 223 and ENGR 111. Basic concepts of electricity and magnetism. The development of fundamental laws and their engineering application. Lecture, demonstration, and laboratory.
- ENGR 311 Engineering Analysis — Dynamics** Qtr. Hrs. - 4
PR: ENGR 211 and MATH 223. Kinematics and kinetics of particles, moving coordinate systems. Dynamics of systems of particles and rigid bodies.
- ENGR 312 Mechanics of Materials** Qtr. Hrs. - 5
PR: ENGR 211; CR: MATH 331. Concepts of stress and strain, Hooke's Law; strength and deflection of axial force members, shafts in torsion and beams in flexure; combined stress; stability of columns. Lecture, demonstration and laboratory.
- ENGR 321 Principles of Electrical Engineering** Qtr. Hrs. - 4
PR: ENGR 221; CR: MATH 331. Introduction to fundamental laws of electrical circuits, network analysis, magnetic properties, electromagnetic interaction, magnetic and electric fields, and electrical and magnetic properties of solids. Lecture, demonstration, and laboratory.
- ENGR 322 Electrical Networks** Qtr. Hrs. - 4
PR: ENGR 321. Mathematical analysis of networks and linear systems. Lecture, demonstration, and laboratory.
- ENGR 323 Electronic Engineering** Qtr. Hrs. - 4
PR: ENGR 322. Electronic circuits. Lecture, demonstration, and laboratory.
- ENGR 331 Thermodynamics** Qtr. Hrs. - 4
PR: ENGR 152. CR: MATH 321. Work, heat and other energy transformation. Relation of properties. Laws, concepts and modes of analysis common to all applications of thermodynamics in engineering.

- ENGR 332 Fluid Mechanics** **Qtr. Hrs. - 4**
PR: ENGR 311 and ENGR 331. Basic principles of continuum fluid mechanics and transport concepts. Lecture, demonstration, and laboratory.
- ENGR 341 Engineering Economic Analysis** **Qtr. Hrs. - 3**
PR: MATH 221. Economic evaluation of engineering alternatives.
- ENGR 342 Systems Analysis** **Qtr. Hrs. - 3**
PR: ENGR 341; CR: ENGR 371. Integrated systems approach to the analysis, design, and optimization of engineering hardware and software.
- ENGR 351 Structure & Properties of Materials** **Qtr. Hrs. - 3**
PR: ENGR 152; CR: ENGR 331. Quantum mechanical introduction to atomic bonding. Classification of solids. Crystal structures and the diffraction of X-rays by crystals. Effects of imperfections on physical properties.
- ENGR 352 Materials of Engineering** **Qtr. Hrs. - 3**
PR: ENGR 351. Properties and behavior of engineering materials. Laboratory investigations and text criteria. Lecture demonstrations and laboratory.
- ENGR 361 Man and His Environment** **Qtr. Hrs. - 3**
PR: ENGR 152 or equivalent. Man's interaction with the air, water, and land environment in which he lives. The role of engineering in control of the physical environment for the benefit of mankind.
- ENGR 371 Probability and Statistics for Engineers** **Qtr. Hrs. - 3**
PR: MATH 223. Axioms of probability; combinatorial and geometrical probability; probability distributions; measures of location and dispersion; sampling and sampling distributions; estimation and tests of hypotheses; engineering applications. (Same as STAT 335.)
- ENGR 421 Linear Control Systems** **Qtr. Hrs. - 4**
PR: MATH 331, ENGR 332. Theoretical and experimental study of the dynamics of linear, lumped-parameter models of mechanical, electrical, fluid, thermal and mixed systems as applied to control systems. Laplace transforms, analog computers, root-locus method, frequency response methods and performance improvement are investigated.
- ENGR 431 Transport Processes** **Qtr. Hrs. - 3**
PR: ENGR 332. Analogous development and application of the principles of viscous fluid flow, conduction and convective heat transfer, and mass diffusion processes.
- ENGR 441 Technical Communications** **Qtr. Hrs. - 3**
PR: Junior standing. Composition for technical papers, reports and scientific articles suitable for publication. Oral and written presentation.

- ENGR 442 Operations Research** **Qtr. Hrs. - 3**
 PR: ENGR 371. Mathematical methods of operations research; linear programming.
- ENGR 443 Engineering Administration** **Qtr. Hrs. - 3**
 PR: Senior standing. Engineering organization and administration; delegation of authority and responsibility; effective utilization of resources; compensation structure, labor-management relations.
- ENGR 471, 472 Engineering Mathematical Analysis** **Qtr. Hrs. - 3,3**
 PR: MATH 321, MATH 331. The application of mathematical methods to engineering problems, including vector and tensor fields, state space techniques, orthogonal curvilinear coordinates and orthogonal functions.
- ENGR 473 Analytical Methods in Engineering** **Qtr. Hrs. - 3**
 PR: ENGR 471 or consent of instructor. The kinematics and dynamics of ideal field theory problems and their mathematical expression. Formulation of boundary conditions. Basic concepts of complex potential and conformal mapping with application to problems in fluid flow, thermal and electric potential.
- ENGR 474 Analytical Methods in Engineering** **Qtr. Hrs. - 3**
 PR: ENGR 471 or consent of instructor. Engineering applications of partial differential equations and the concept of the mathematical modeling of physical problems. Development of characteristic properties of equations and methods of solutions, including separation of variables, transform techniques, and method of characteristics.
- ENGR 475 Numerical Analysis in Engineering** **Qtr. Hrs. - 3**
 PR: MATH 321, MATH 331. Application of numerical techniques to the solution of complex engineering problems. Analysis and organization of practical programs for numerical solution of initial, boundary and eigenvalue problems.

ENGINEERING — INTERDISCIPLINARY COURSES

- ENGR 481 Man and Machine** **Qtr. Hrs. - 3**
 The influence and interrelationship of invention and technical progress on the evolution of social forms and institutions.
- ENGR 482 Engineering & Technology in History** **Qtr. Hrs. - 3**
 Important developments in engineering and technology and their effect on society and our socio-economic processes and institutions.
- ENGR 483 Technology and Social Change** **Qtr. Hrs. - 3**
 Review of existing theories of social change, analysis of the role of technology as related to social change, and study of contemporary events in technology and their possible impact on society.

- ENGR 484 Science in History** Qtr. Hrs. - 3
Examination of the reciprocal relations of science and society from ancient to recent times.
- ENGR 485 Topics in Urban Development** Qtr. Hrs. - 3
Production, distribution, and consumption of various commodities and engineering relationships to distribution, internal structure, and function of urban developments. Interrelationship of engineering, social, economic, and cultural phenomena.
- ENGR 486 Science, Engineering, and Ethical Systems** Qtr. Hrs. - 3
A study of the contributions of science and engineering to society in light of moral, social, and ethical principles. A systematic and critical consideration of representative ethical problems created by advancing technology.
- ENGR 487 Historical Architecture** Qtr. Hrs. - 3
Architecture as the realization of changing aesthetic and cultural ideals and the expression of changing forms of society. Development of understanding of our physical environment through a study of the forms, functions and determinants of architecture.
- ENGR 488 Man and Environment** Qtr. Hrs. - 3
PR: Permission of instructor. A discussion of environmental factors of importance to man, man's interaction with the environment, engineering and non-engineering measures to insure improvement and maintenance of environmental quality. Not intended for engineering students.
- ENGR 490 Engineering in Human Affairs** Qtr. Hrs. - 2
The impact of engineering on modern society. This course, primarily intended for the senior student, is offered as one of the Advanced Environmental Studies Seminars. Not open to students majoring in the College of Engineering.
- ENGR 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ENGR 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ENGR 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ENGR 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

ENGINEERING MECHANICS & MATERIALS SCIENCES

- EMS 411 Semiconductor Materials and Devices** Qtr. Hrs. - 3
PR: ENGR 323 and ENGR 351. Electrical conduction in semiconductors; basic concepts of drift, diffusion, carrier generation and recombination.

Physical theory and models for the junction diode and transistor. Representation in terms of linear, incremental, and nonlinear charge control models.

EMS 412 Electronic Properties of Materials **Qtr. Hrs. - 3**

PR: ENGR 351. Electronic processes in solids. Electrical, magnetic and optical properties of solids. Electron energies in solids. Superconducting materials.

EMS 413 Thermodynamic Properties of Materials **Qtr. Hrs. - 3**

PR: ENGR 351. Fundamental concepts of thermodynamics and kinetics are applied to the study of solid state phase transformations, equilibrium in multicomponent systems and diffusion in solids.

EMS 421 Theory of Crystalline Solids **Qtr. Hrs. - 3**

PR: ENGR 351. Modern theory of crystalline materials. Topics treated include crystal structure, mechanical, thermal and transport properties.

EMS 431 Engineering Materials and Processes **Qtr. Hrs. - 3**

PR: Senior standing. Basic properties and metallurgy of engineering materials, including ferrous and nonferrous metals and alloys; studies of cermets and plastics; production and processing of engineering materials. Two lectures, three hours laboratory.

EMS 432 Metallurgy **Qtr. Hrs. - 3**

PR: EMS 431. Extraction of metals, crystal and atomic structure, phase transformations, tests and properties of high temperature metals and refractories, and introduction to spectroscopy. Two lectures, three hours laboratory.

EMS 441 Materials Processing **Qtr. Hrs. - 3**

PR: ENGR 351. Phase transformations, crystallography, growth processes, kinetics of solid state transformations; technology of high and low temperatures, vacuum systems, high pressure, and clean environments.

EMS 451 Mechanical Properties of Materials **Qtr. Hrs. - 3**

PR: ENGR 351. Fundamentals of mechanical behavior of engineering materials. Selected topics include fracture, creep, fatigue, and microscopic interpretation of results of mechanical testings.

EMS 452 Engineering Materials **Qtr. Hrs. - 3**

PR: ENGR 351. Engineering testing methods for materials in common use in construction applications. Properties of structural alloys, concrete, asphalt, plastics, and interpretation of test results.

EMS 496 Special Topics **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

EMS 497 Undergraduate Seminar **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

- EMS 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- EMS 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

ENGLISH

- ENG 101 Composition I** Qtr. Hrs. - 3
 Expository writing, with emphasis on effective communication. Grammar and mechanics will not form a major part of this course; if the student is deficient, he will achieve proficiency through independent study. Writing topics to be based on selected readings.
- ENG 102 Composition II** Qtr. Hrs. - 3
 PR: ENG 101 or equivalent. Writing practice involving the mechanics of research and evaluation of varied readings. A documented paper will demonstrate the student's grasp of writing principles studied.
- ENG 103 Current Literature** Qtr. Hrs. - 3
 PR: ENG 101 or equivalent. Contemporary prose and poetry selected to invite the interest of students in literature. Writing related to readings.

Note on Freshman English Program:

ENG 101, 102 and 103 may be taken to satisfy the State Department requirement for certification in secondary school teaching or for transfer to colleges that require one full year of Freshman English. Students who intend to major in English, English Education, or Library Science must take ENG 102 and 103, and must complete ENG 210 before enrolling in any English courses numbered above 210 with the exception of ENG 301.

- ENG 208 Principles of Creative Writing** Qtr. Hrs. - 3
 For freshman and sophomore students. An exploratory course in the several types of creative writing; group analysis of original writing; critical reading of established authors. May be repeated once for credit.
- ENG 210 Principles of Literature** Qtr. Hrs. - 3
 Literary terms, forms, and types, illustrated in a wide variety of readings.
- ENG 211 Survey of English Literature to 1625** Qtr. Hrs. - 3
- ENG 212 Survey of English Literature, 1626-1798** Qtr. Hrs. - 3
- ENG 213 Survey of English Literature, 1798-1914** Qtr. Hrs. - 3
- ENG 300 Expository Writing** Qtr. Hrs. - 3
 Training in advanced composition, primarily intended for students in the College of Education. Theory and practice of the several forms and applications of expository writing.

- ENG 301 Professional Report Writing** **Qtr. Hrs. - 3**
 For scientific, professional, or business students. The first half of the course lays emphasis upon clear expository writing with particular attention to business letters and memoranda. The second half of the course stresses the production of professional reports or articles in the student's particular discipline.
- ENG 302 Creative Writing Workshop I** **Qtr. Hrs. - 3**
 PR: Permission of instructor. Practice in writing in established forms: essay, short story, and poetry.
- ENG 303 Creative Writing Workshop II** **Qtr. Hrs. - 3**
 PR: ENG 302 or permission of instructor. Individualized practice in writing in one of the established forms; analytic study of the work of pertinent authors.
- ENG 304 Creative Writing Workshop III** **Qtr. Hrs. - 3**
 PR: ENG 302 or permission of instructor. Individualized practice in writing in one of the established forms; students who have completed ENG 303 will be expected to do intensive work in a different form from that practiced in the course; analytic study of the work of pertinent authors.
- ENG 311 Survey of American Literature, 1588-1865** **Qtr. Hrs. - 3**
- ENG 312 Survey of American Literature, 1865-1914** **Qtr. Hrs. - 3**
- ENG 313 Survey of American Literature Since 1914** **Qtr. Hrs. - 3**
- ENG 314 Survey of British Literature Since 1914** **Qtr. Hrs. - 3**
- ENG 316 Continental European Fiction Since 1900** **Qtr. Hrs. - 3**
 A selection of significant works of fiction written in various languages during the present century, read in translation.
- ENG 321 Exploring Poetry** **Qtr. Hrs. - 3**
 A broad, cultural approach to poetry, with emphasis upon the major themes and preoccupations of poets of all ages.
- ENG 361 Practical Criticism** **Qtr. Hrs. - 3**
 Student evaluation of selected fiction, poetry, and drama through practical exercises in literary criticism.
- ENG 371 Principles of Linguistics** **Qtr. Hrs. - 3**
 An overview of the modern linguist's approach to language. The nature of communication systems. Structure and function of the organs of articulation; language acquisition. Theory and analytic methods of phonology, morphology, syntax. Brief systematic survey of Idiolectology, Dialectology, Linguistic Prehistory.

- ENG 401 Senior Writing Workshop I** **Qtr. Hrs. - 3**
 PR: Evidence of writing skill satisfactory to the instructor. Analysis of significant nonfiction; market research; intensive writing practice leading to a completed body of nonfiction writing suitable for publication. Should be taken in conjunction with ENG 498. (May be repeated once for credit.)
- ENG 402 Senior Writing Workshop II** **Qtr. Hrs. - 3**
 PR: Evidence of writing skill satisfactory to the instructor. Analysis of significant fiction; market research; intensive writing practice leading to a completed body of fiction writing suitable for publication. Should be taken in conjunction with ENG 498. (May be repeated once for credit.)
- ENG 403 Senior Writing Workshop III** **Qtr. Hrs. - 3**
 PR: Evidence of writing skill satisfactory to the instructor. Analysis of significant poetry; market analysis; intensive writing practice leading to a completed body of verse suitable for publication. Should be taken in conjunction with ENG 498. (May be repeated once for credit.)
- ENG 404 English Versification** **Qtr. Hrs. - 3**
 Intensive study of the structural characteristics of English poetry, metrical systems, rhyme, scansion, and poetic rhetorical devices.
- ENG 410 Contributions of Minority Groups to American Literature** **Qtr. Hrs. - 3**
 Contributions of linguistic and ethnic groups of non-English origin to the literature of the United States.
- ENG 421 Studies in 17th Century English Literature I** **Qtr. Hrs. - 3**
 Early prose, poetry, and drama (exclusive of Shakespeare).
- ENG 422 Studies in 17th Century English Literature II** **Qtr. Hrs. - 3**
 Literature of the Puritan domination.
- ENG 423 Studies in 17th Century English Literature III** **Qtr. Hrs. - 3**
 Literature of the Restoration period.
- ENG 424 Studies in 18th Century English Literature I** **Qtr. Hrs. - 3**
 Selected works of writers of the first 40 years of the 18th Century.
- ENG 425 Studies in 18th Century English Literature II** **Qtr. Hrs. - 3**
 The rise of the English novel and the "Age of Johnson."
- ENG 426 Studies in 18th Century English Literature III** **Qtr. Hrs. - 3**
 Early romanticism; the Gothic novel and the novel of manners; the drama of the 18th Century.
- ENG 427 Studies in 19th Century English Literature I** **Qtr. Hrs. - 3**
 English literature from 1798-1832: the Romantic Triumph in poetry and prose.

- ENG 428 Studies in 19th Century English Literature II Qtr. Hrs. - 3
English literature from 1832 to 1870: the early Victorians.
- ENG 429 Studies in 19th Century English Literature III Qtr. Hrs. - 3
English literature from 1870 to 1914: later Victorians and transitional writers.
- ENG 430 Chaucer Qtr. Hrs. - 3
The Canterbury Tales, Troilus and Criseyde, and other works.
- ENG 431 Shakespeare's Comedies Qtr. Hrs. - 3
- ENG 432 Shakespeare's Histories Qtr. Hrs. - 3
- ENG 433 Shakespeare's Tragedies Qtr. Hrs. - 3
- ENG 434 Milton Qtr. Hrs. - 3
Paradise Lost, Paradise Regained, Samson Agonistes, shorter poems, and selected prose.
- ENG 441 English Drama to 1642 (exclusive of Shakespeare) Qtr. Hrs. - 3
- ENG 442 Restoration and 18th Century English Drama Qtr. Hrs. - 3
- ENG 444 The British Novel in the 18th Century Qtr. Hrs. - 3
- ENG 445 The British Novel in the 19th Century Qtr. Hrs. - 3
- ENG 446 The American Novel in the 19th Century Qtr. Hrs. - 3
- ENG 451 British and American Fiction Since 1900 Qtr. Hrs. - 3
- ENG 452 British and American Poetry Since 1900 Qtr. Hrs. - 3
- ENG 453 British and American Drama Since 1900 Qtr. Hrs. - 3
- ENG 460 Historical Survey of Literary Criticism Qtr. Hrs. - 3
Study of the major critics from classical antiquity through the modern era.
- ENG 461 British Literary Criticism to 1900 Qtr. Hrs. - 3
PR: ENG 460. Study of the major critics in England from the Renaissance through the Victorian period.
- ENG 462 British Literary Criticism Since 1900 Qtr. Hrs. - 3
PR: ENG 460. Study of the important critical theories and principles developed in England from the Edwardian era to the present.
- ENG 463 Literary Criticism in the United States Qtr. Hrs. - 3
PR: ENG 460. Study of American literary critics to the present.

- ENG 471 Modern English Grammar** Qtr. Hrs. - 3
 PR: ENG 371. Methods in the study of modern English grammar. Emphasis upon the analysis and comparison of traditional, structural, and transformational grammars.
- ENG 472 History of the English Language** Qtr. Hrs. - 3
 PR: ENG 371. Study of the English language and its development from Anglo-Saxon to Modern English. Attention given to Old, Middle, and Early Modern English grammar and syntax.
- ENG 473 English Linguistics** Qtr. Hrs. - 3
 PR: ENG 371. The application of modern linguistic methods to the phonology, morphology, and syntax of present-day English.
- ENG 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- ENG 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- ENG 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- ENG 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

ENVIRONMENTAL STUDIES PHYSICAL EDUCATION

The Environmental Studies Physical Education Elective Program is designed to enhance the physical and mental development of the student. A student may receive three quarter hours credit toward graduation by enrolling and satisfactorily completing any one of the following courses:

- ESPE 301 Aquatics** Qtr. Hrs. - 3
 A study and application of the physiological benefits of basic aquatic developmental skills — elementary and advanced strokes, water safety, springboard diving, and interval training. (2 hours lecture; 2 hours activity)
- ESPE 302 Body Development (M)** Qtr. Hrs. - 3
ESPE 303 Body Development (W) Qtr. Hrs. - 3
 A study and application of the metabolic, neuromuscular, and cardiovascular changes resulting from select physical activities. (2 hours lecture; 2 hours activity)
- ESPE 304 Golf** Qtr. Hrs. - 3
 A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carry-over activity. (2 hours lecture; 2 hours activity)

- ESPE 305 Tennis** **Qtr. Hrs. - 3**
 A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carry-over activity. (2 hours lecture; 2 hours activity)
- ESPE 306 Life Saving** **Qtr. Hrs. - 3**
 Instruction, training and certification in basic life saving swimming skills. (2 hours lecture; 2 hours activity)
- ESPE 307 Scuba Diving** **Qtr. Hrs. - 3**
 Instruction, training and certification in basic diving skills with self-contained underwater breathing apparatus. Students may be required to supply their own equipment. (2 hours lecture; 2 hours activity)
- ESPE 308 Interpretive Dance** **Qtr. Hrs. - 3**
 Instruction and analysis of creative dance performance as an art form. (2 hours lecture; 2 hours activity)

FINANCE

- FIN 301 Finance** **Qtr. Hrs. - 5**
 PR: ACCY 112, ECON 203. Fundamentals of obtaining and administering funds to meet short-term and long-term capital requirements.
- FIN 311 Risk and Insurance** **Qtr. Hrs. - 4**
 PR: ECON 203 or consent of instructor. Principles and methods of risk reduction and specialization, with particular emphasis on insurance.
- FIN 321 Investments** **Qtr. Hrs. - 4**
 PR: ECON 203 or consent of instructor. Principles of determining investment policy for individual and institutional portfolios.
- FIN 331 Money and Banking** **Qtr. Hrs. - 4**
 PR: ECON 203 or consent of instructor. The nature of money, the functioning of the commercial banking system and its relation to the level of economic activity, and the activities of the Federal Reserve System and Treasury.
- FIN 341 Real Estate** **Qtr. Hrs. - 4**
 PR: Junior standing. Basic principles of real estate ownership, its use and transfer, brokerage, management, legislation, and importance to the economy.
- FIN 411 Financial Institutions** **Qtr. Hrs. - 4**
 PR: FIN 301. The operation of financial institutions and an analysis of their role in the economy.
- FIN 421 Security Analysis** **Qtr. Hrs. - 4**
 PR: FIN 301 and FIN 321. The problems of selecting securities for various investment purposes.

- FIN 431 Financial Management** Qtr. Hrs. - 4
 PR: FIN 301. Analytical techniques for dealing with financial problems and their application to corporate financial management.
- FIN 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- FIN 601 Capital Budgeting and Financial Planning** Qtr. Hrs. - 3
 PR: Graduate standing. Financial planning and forecasting, sources of long-term capital, concepts of the cost of capital, and capital budgeting.
- FIN 611 Working Capital and Financial Problems** Qtr. Hrs. - 3
 PR: Graduate standing. Managing cash, receivables and inventories; sources of short-term funds; and special problems such as expansion, contraction, merger and failure.
- FIN 621 Financial Policy** Qtr. Hrs. - 3
 PR: FIN 601 and FIN 611. Formulation of financial policy in profit-making organizations. Evaluation of objectives, analysis of alternatives, and selection of criteria for decision-making.

FRENCH

- FRE 101 Elementary French Language and Civilization** Qtr. Hrs. - 3
 Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to French culture.
- FRE 102 Elementary French Language and Civilization** Qtr. Hrs. - 3
 PR: FRE 101 or equivalent. Continuation of FRE 101.
- FRE 103 Elementary French Language and Civilization** Qtr. Hrs. - 3
 PR: FRE 102 or equivalent. Continuation of FRE 102.
- FRE 201 Intermediate French Language and Civilization** Qtr. Hrs. - 3
 PR: FRE 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, study of syntax, idiomatic expressions, extensive readings and further study of French culture.
- FRE 202 Intermediate French Language and Civilization** Qtr. Hrs. - 3
 PR: FRE 201 or equivalent. Continuation to FRE 201.
- FRE 203 Intermediate French Language and Civilization** Qtr. Hrs. - 3
 PR: FRE 202 or equivalent. Continuation of FRE 202 with greater emphasis on French civilization from the Middle Ages to the present.
- FRE 301 French Composition** Qtr. Hrs. - 4
 PR: FRE 203 or equivalent. Development of skills in composition through systematic review of grammar, syntax, and development of style. Free and controlled written compositions required.

- FRE 303 French Conversation** **Qtr. Hrs. - 4**
 PR: FRE 203 or equivalent. Development of skills in conversation and comprehension through practice and systematic review of phonology and grammatical structure.
- FRE 311 Survey of French Literature** **Qtr. Hrs. - 3**
 PR: FRE 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance.
- FRE 312 Survey of French Literature** **Qtr. Hrs. - 3**
 PR: FRE 203 or equivalent. Main literary currents and works of the seventeenth and eighteenth centuries.
- FRE 313 Survey of French Literature** **Qtr. Hrs. - 3**
 PR: FRE 203 or equivalent. Main literary currents and works of the nineteenth and twentieth centuries.
- FRE 401 French Phonetics and Diction** **Qtr. Hrs. - 2**
 PR: FRE 303 or equivalent. French phonology with emphasis on phonic groupings.
- FRE 422 Seventeenth Century French Theater** **Qtr. Hrs. - 3**
 PR: FRE 312. Corneille, Racine, and Moliere. A study of the life and principal works of the authors.
- FRE 431 French Literature of the Eighteenth Century** **Qtr. Hrs. - 3**
 PR: FRE 312. The philosophical movement: Montesquieu, Vauvenargues, Voltaire, Diderot, Buffon.
- FRE 441 Nineteenth Century French Literature** **Qtr. Hrs. - 3**
 PR: FRE 313. Romanticism.
- FRE 442 Nineteenth Century French Literature** **Qtr. Hrs. - 3**
 PR: FRE 313. Realism and naturalism.
- FRE 443 Nineteenth Century French Literature** **Qtr. Hrs. - 3**
 PR: FRE 313. Parnassianism and symbolism.
- FRE 451 Twentieth Century French Literature** **Qtr. Hrs. - 3**
 Contemporary French drama and poetry.
- FRE 453 Twentieth Century French Literature** **Qtr. Hrs. - 3**
 PR: FRE 313. Contemporary French novel.
- FRE 497 Undergraduate Seminar** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- FRE 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

GEOLOGY

- GEOL 100 Introductory Geology** Qtr. Hrs. - 3
 A survey of physical and historical geology with an introduction to basic scientific principles and methods. Designed for nonscience majors; appropriate for the Environmental Studies Program. Recommended that GEOL 110 be taken concurrently.
- GEOL 101 Physical Geology** Qtr. Hrs. - 3
 PR: Any one of the following: GEOL 100, ENGR 151, CHEM 161, or PHYS 208. The earth's inorganic materials and the processes by which they interact: crystals, minerals, rocks, volcanism, earthquake activity, erosion, sedimentation, glaciation, mountain-building, drifting of continents, movements of the sea-floor, origin of landforms. Lunar geology is also considered. Recommended that GEOL 110 and/or GEOL 111 be taken concurrently.
- GEOL 102 Historical Geology** Qtr. Hrs. - 3
 PR: GEOL 100 or GEOL 101. Evolution of the earth and of life on the earth as reconstructed from geologic evidence and fossil remains. Emphasis on North America, but other continents considered. Recommended that GEOL 112 be taken concurrently.
- GEOL 110 Introductory Geology Laboratory** Qtr. Hrs. - 1
 CR: GEOL 100 or GEOL 101. Provides first-hand experience with mineral crystals, rocks, fossils, with the processes of rock formation, and with geologic maps.
- GEOL 111 Physical Geology Laboratory** Qtr. Hrs. - 1
 CR: GEOL 101 and GEOL 110. Provides additional experience with physical materials and processes of geology and with the use of maps and stereo photographs for earth crust studies.
- GEOL 112 Historical Geology Laboratory** Qtr. Hrs. - 1
 PR: GEOL 110. CR: GEOL 102. Provides further experience with fossils and geologic evidence and exercises in reconstructing earth history.

GERMAN

- GER 101 Elementary German Language and Civilization** Qtr. Hrs. - 3
 Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to German culture.
- GER 102 Elementary German Language and Civilization** Qtr. Hrs. - 3
 PR: GER 101 or equivalent. Continuation of GER 101.
- GER 103 Elementary German Language and Civilization** Qtr. Hrs. - 3
 PR: GER 102 or equivalent. Continuation of GER 102.

- GER 201 Intermediate German Language and Civilization** Qtr. Hrs. - 3
 PR: GER 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, study of syntax, idiomatic expressions, extensive reading, and further study of German culture.
- GER 202 Intermediate German Language and Civilization** Qtr. Hrs. - 3
 PR: GER 201 or equivalent. Continuation of GER 201.
- GER 203 Intermediate German Language and Civilization** Qtr. Hrs. - 3
 PR: GER 202 or equivalent. Continuation of GER 202 with greater emphasis on German civilization from the Middle Ages to the present.
- GER 301 German Composition** Qtr. Hrs. - 4
 PR: GER 203 or equivalent. Development of skills in composition through systematic review of grammar, syntax, and development of style. Free and controlled compositions required.
- GER 303 German Conversation** Qtr. Hrs. - 4
 PR: GER 203 or equivalent. Development of skills in conversation and comprehension through practice and systematic review of phonology and grammatical structure.

HISTORY

- HIST 201 Western Culture and Civilization I** Qtr. Hrs. - 4
 Rise of culture and civilization in the West from earliest times to the eve of the Renaissance.
- HIST 202 Western Culture and Civilization II** Qtr. Hrs. - 4
 Continuation of HIST 201. Europe from its feudal-manorial state through the Napoleonic era.
- HIST 203 Western Culture and Civilization III** Qtr. Hrs. - 4
 Continuation of HIST 202. The Romantic era, the influence of liberalism, nationalism, and modern industrialism upon political, social, economic, and intellectual life.
- HIST 311 American History I** Qtr. Hrs. - 4
 An introduction to the culturally interrelated problems of American values and institutions; past and present. Historical basis of evolving institutions of the United States is demonstrated in economic life, government, education, family life, and religion.
- HIST 312 American History II** Qtr. Hrs. - 4
 Continuation of HIST 311. A topical study of America's evolving political institutions in response to population growth, national wealth, and changing needs in an age of science and technology; the urban-suburban revolution, social stratification, the family, and educational and religious institutions and values.

- HIST 313 American History III** Qtr. Hrs. - 4
Continuation of HIST 312. The public and private sectors of the American mixed economy; U. S. involvement in world affairs, economically, politically, and militarily.
- HIST 320 The Changing Frontier in American History** Qtr. Hrs. - 4
A survey of the types and geographic settings of the frontiers. Attention given to the impact of the frontier on American History.
- HIST 324 Black American History** Qtr. Hrs. - 4
The history of the Negro in Africa and in the United States. Emphasis is placed on the effects of an African heritage, slavery, and post-Civil War conditions on Black Americans. In addition, contemporary issues relating to Black Americans are analyzed.
- HIST 330 Latin American History: The Colonial Period** Qtr. Hrs. - 4
A survey course in Latin American history to the beginning of the Wars of Independence in 1810.
- HIST 331 Latin American History: The 19th Century** Qtr. Hrs. - 4
Continuation of HIST 330.
- HIST 332 Latin American History: The 20th Century** Qtr. Hrs. - 4
Continuation of HIST 331.
- HIST 412 United States History: 1492-1789** Qtr. Hrs. - 4
History of the British Colonies from their founding to the organization of U. S. Constitutional Government.
- HIST 413 United States History: 1789-1824** Qtr. Hrs. - 4
The writing of the Constitution, the Federalist decade, Jeffersonian Democracy, the War of 1812, and emergence of New Nationalism.
- HIST 414 United States History: 1820-1860** Qtr. Hrs. - 4
Administration of Andrew Jackson to the Civil War.
- HIST 415 United States History: 1860-1876** Qtr. Hrs. - 4
Civil War, Reconstruction, and impact of industrialism.
- HIST 416 United States History: 1876-1918** Qtr. Hrs. - 4
The Agrarian Revolt, the Spanish-American War, and the Progressive Era.
- HIST 417 United States History: 1914-1940** Qtr. Hrs. - 4
The Progressive Reforms of Woodrow Wilson, World War I, post-war prosperity, the Depression, and the New Deal.
- HIST 418 United States History: 1941-present** Qtr. Hrs. - 4
Contemporary America from World War II.

- HIST 420 United States Diplomatic History** Qtr. Hrs. - 5
The foreign relations of the United States from the founding of the Republic to the present.
- HIST 430 Latin American History: The ABC Countries** Qtr. Hrs. - 5
A survey of the histories of Argentina, Brazil, and Chile from the colonial period to the present.
- HIST 452 The Middle Ages and The Renaissance** Qtr. Hrs. - 5
PR: HIST 201. The ideas and institutions of Medieval Europe; the great cultural and intellectual achievements of the 15th and 16th Centuries in Italy and Northern Europe; the rise of the territorial states; and the effects of nationalism on the political and social structure of Europe.
- HIST 455 The Age of the Reformation and the Enlightenment** Qtr. Hrs. - 5
PR: HIST 202. Europe from the 16th Century to the 18th Century.
- HIST 457 Modern Europe: 1789-1918** Qtr. Hrs. - 5
- HIST 459 Modern Europe: 1918 to the Present** Qtr. Hrs. - 5
- HIST 461 English History to 1485** Qtr. Hrs. - 4
- HIST 462 English History: 1485-1815** Qtr. Hrs. - 4
- HIST 463 British History: 1815 to Present** Qtr. Hrs. - 4
- HIST 464 British Empire and Commonwealth** Qtr. Hrs. - 4
Development of the British Empire and Commonwealth since the American Revolution.
- HIST 466 British History: Tudor-Stuart Period** Qtr. Hrs. - 4
A study of the Tudor-Stuart period, with particular emphasis on the civil/religious conflicts of the time.
- HIST 470 History of Russia to 1856** Qtr. Hrs. - 4
- HIST 471 History of Russia: 1856-1917** Qtr. Hrs. - 4
- HIST 472 History of the Soviet Union: 1917 to the Present** Qtr. Hrs. - 4
- HIST 480 History and Historians** Qtr. Hrs. - 4
PR: Permission of instructor. A general study of historiography, tracing the thoughts and works of the great historians. Attention is also given to the trends and interpretations of history in the areas of student specialization.
- HIST 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- HIST 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

HIST 499 Undergraduate Research

Qtr. Hrs. - 2-5

PR: Consent of instructor. May be repeated for credit.

HUMANITIES**HUM 201 Western Humanities Survey**

Qtr. Hrs. - 4

A series of lectures on each of the major cultural epochs, designed to give the student a historical perspective and to equip him to select periods for intensive study from the Mind-and-Art Series.

HUM 300 The Hebrew and Christian Heritage

Qtr. Hrs. - 4

The religious, literary, and artistic influences of early Judaism and Christianity on Western Culture; their basis in the social and political context of the Fertile Crescent. (Same of REL 300.)

HUM 301 The Mind and Art of Greece

Qtr. Hrs. - 4

The principal monuments in philosophy, architecture, drama, poetry, and sculpture from the Minoan-Mycenaean to the Hellenistic Age.

HUM 304 The Mind and Art of Rome

Qtr. Hrs. - 4

Contributions to law, literature, architecture, and the ordering of culture, from the Etruscan period to the Age of Constantine.

HUM 305 Mind and Art of the Middle Ages

Qtr. Hrs. - 4

The merging of Classical, Christian, and Germanic influences during the age of faith, from St. Augustine to Dante; their expression in stone, in music, in poetry, in painting, and in philosophy.

HUM 306 Mind and Art of the Renaissance

Qtr. Hrs. - 4

The re-birth of humanistic art and free inquiry, particularly in Italy, from Giotto to Titian, with emphasis on the Neo Platonic Academy, polyphonic music, and visual realism.

HUM 307 Reformation and Early Baroque Era

Qtr. Hrs. - 4

The growth of humanism and Protestantism in the north, Mannerism and Counter Reformation in the south; the age of Shakespeare, Cervantes, El Greco, and Bernini in the arts.

HUM 308 Enlightenment and Late Baroque

Qtr. Hrs. - 4

Literary and philosophical landmarks in the age of rational confidence and Newtonian astronomy; the music of Bach and Handel; the rise of a bourgeois and Rococo style in art.

HUM 309 Revolution and Romanticism

Qtr. Hrs. - 4

The intellectual and artistic tension between freedom and order, between pastoral and urban, between humanitarian reform and the appeal of the past, from Rousseau to Darwin; the great era of music from Haydn to Wagner.

- HUM 310 Mind and Art of the Recent Past** **Qtr. Hrs. - 4**
The influence of evolution, science, and utilitarian thought on various literary, artistic, and musical styles from the mid-19th Century to World War I.
- HUM 311 Egypt and the Near East** **Qtr. Hrs. - 4**
The life and thought of ancient civilizations as revealed through art and archaeology.
- HUM 315 China and Japan** **Qtr. Hrs. - 4**
A study of the highest achievements in art, literature, and thought; an examination of the philosophical, spiritualistic, and rationalistic foundations of Confucianism, Taoism, Zen, and Shintoism. (Same as REL 315.)
- HUM 317 India** **Qtr. Hrs. - 4**
The cultural traditions and the principal monuments in art and literature; a study of Hindu and Buddhist religious thought as it developed in India and Southeast Asia. (Same as REL 317.)
- HUM 318 Islamic Cultures** **Qtr. Hrs. - 4**
An inquiry into the foundations and development of Islamic thought and culture in various geographical locations. (Same as REL 318.)
- HUM 319 Russia** **Qtr. Hrs. - 4**
Outstanding examples of Russian music, dance, drama, and fiction, with attention to the distinctive mixture of cultural influences they reveal.
- HUM 335 Afro-American Culture** **Qtr. Hrs. - 4**
The artistic influence of the Negro in America.
- HUM 351 Latin-American Cultures** **Qtr. Hrs. - 4**
The art and archaeological remains of Inca, Mayan, and Aztec civilizations; their influences on Latin-American music, art and literature.
- HUM 355 American Ideas I** **Qtr. Hrs. - 4**
A history of ideas course using the American Studies approach and emphasizing the significance of Puritanism, capitalism, nationalism, and the idea of progress in the development of American ideals.
- HUM 356 American Ideas II** **Qtr. Hrs. - 4**
Continuation of HUM 355 with emphasis on the effect of industrialism, pragmatism, individualism, and the cycles of reform and reaction.
- HUM 371 Contemporary Culture** **Qtr. Hrs. - 4**
An integrated view of the art, music, and literature of our time, revealing the impact of depersonalization, alienation, revolt, and the search for self-awareness.

- HUM 413 The Romantic Mood** **Qtr. Hrs. - 4**
 A comparative study of selected romantic art works in various periods and places, including modern America.
- HUM 421 Purposes of Art** **Qtr. Hrs. - 4**
 An introduction to the history and appreciation of the visual arts through an understanding of the various purposes art has fulfilled in man's effort to master and enjoy his environment. For visual arts education majors as well as for humanities majors.
- HUM 441 Purposes of Music** **Qtr. Hrs. - 4**
 Religious and social functions of music and its relationships with other arts.
- HUM 451 The Epic** **Qtr. Hrs. - 4**
 The epic hero as a model of human ideals in various cultural settings.
- HUM 455 The Tragic View** **Qtr. Hrs. - 4**
 A study of tragedy as an archetype of human experience and a view of life; examples from the literature of Greece, Rome, France, England and America.
- HUM 459 The Comic View** **Qtr. Hrs. - 4**
 A definition of the comic and satiric views of life and a study of examples in literature from Aristophanes to Ionesco.
- HUM 471 Mythic Literature** **Qtr. Hrs. - 4**
 A comparative study of the significance of myth in the evolution of folk traditions: Oriental, Near Eastern, Greek, Scandinavian, American.
- HUM 473 Confession Literature** **Qtr. Hrs. - 4**
 A comparative study of works offering insight into the minds and personal lives of influential thinkers from St. Augustine to the present.
- HUM 475 Wisdom Literature** **Qtr. Hrs. - 4**
 An examination of several texts of aphorisms, parables, and tales, ranging from the Book of Proverbs to Kafka, from the later Chan Masters to the French Moralistes, in an attempt to unravel the common thread of human speculation on human affairs.
- HUM 496 Special Topics** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- HUM 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

HUMANITIES AND FINE ARTS

- HFA 490 Senior Seminar: Humanities and Arts in Human Affairs** **Qtr. Hrs. - 2**
 A forum on the art and thought of the contemporary world as they

provide insight into the recurring problems of human existence and as they relate to the search for fulfillment, self-awareness, and wholeness. Primarily intended for senior students. Offered as one of the Advanced Environmental Studies seminars. Not open to students in the College of Humanities and Fine Arts.

INDUSTRIAL ENGINEERING & MANAGEMENT SYSTEMS

- IEMS 311 Engineering Law** **Qtr. Hrs. - 3**
 PR: Junior standing. Influence of contract, property, and tort law upon engineering activities; contracts, agency, partnerships, corporations, liens, and expert testimony.
- IEMS 331 Work Analysis and Design** **Qtr. Hrs. - 3**
 PR: Junior standing or approval of instructor. Analysis, design and operation of work systems; their relationship to job evaluation and wage payment systems. Laboratory assignments.
- IEMS 332 Statistical Quality Control** **Qtr. Hrs. - 3**
 Statistical concepts and methods applied to the control of quality of manufactured products. (Same as STAT 332.)
- IEMS 361 Engineering Applications of Computer Methods** **Qtr. Hrs. - 3**
 PR: MATH 223, COMP 102 or approval of instructor. Methods of structuring engineering problems for computers; general characteristics and performance measures of computers and auxiliary equipment. Introduction to computer-aided design and time-sharing systems, case studies. Laboratory assignments.
- IEMS 411 Industrial Administration** **Qtr. Hrs. - 3**
 PR: ENGR 443. Role of the engineer in manufacturing management. Basic functions, departmentation, authority relationships, and methods of control.
- IEMS 421 Operations Research Models** **Qtr. Hrs. - 3**
 PR: ENGR 371. Inventory and replacement models, queueing theory, sequencing, forecasting, dynamic programming.
- IEMS 422 Network Analysis** **Qtr. Hrs. - 3**
 PR: IEMS 435 and ENGR 442. Analysis of networks including: CPM, PERT, GERT, maximum flow problems.
- IEMS 423 Analysis of Industrial Operations** **Qtr. Hrs. - 3**
 PR: Minimum of 12 credits of IEMS course work. An extensive and intensive analysis of industrial operations for optimum utilization of resources. Laboratory assignments.
- IEMS 433 Queueing Theory** **Qtr. Hrs. - 3**
 PR: ENGR 371. Analysis of queues using analytical and Monte Carlo methods.

- IEMS 435 Probability for Engineers** **Qtr. Hrs. - 3**
 PR: ENGR 371. Combinatorial analysis, sample space, events, probability, discrete and continuous random variables, probability distributions with applications in engineering. (Same as STAT 435.)
- IEMS 436 Statistics for Engineers** **Qtr. Hrs. - 3**
 PR: ENGR 371. Significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation with applications in engineering. (Same as STAT 436.)
- IEMS 442 Engineering Economic Analysis** **Qtr. Hrs. - 3**
 PR: ENGR 341 and IEMS 435. The engineering economic audit, breakeven point analysis, variable budget control of manufacturing costs, cost analysis, and product pricing.
- IEMS 443 Analysis of Decision Processes** **Qtr. Hrs. - 3**
 PR: ENGR 371 and ENGR 341. Methods of making economic decisions; effects of risk, uncertainty, and strategy on managerial economic decision.
- IEMS 451 Human Engineering** **Qtr. Hrs. - 3**
 PR: Senior standing. Man-machine systems; design and conduct of human engineering studies. Laboratory assignments.
- IEMS 452 Human Factors in Space Travel** **Qtr. Hrs. - 3**
 PR: IEMS 451. Artificial environments and environmental control of upper atmosphere and space.
- IEMS 461 System Simulation with Digital Computers** **Qtr. Hrs. - 3**
 PR: IEMS 361. Methods and procedures for simulating large scale systems with digital computers. FORTRAN and GASP programming languages are used. Laboratory assignments.
- IEMS 462 Information Acquisition** **Qtr. Hrs. - 3**
 PR: IEMS 435. The design of systems to collect data for use in managerial decision models, job evaluation, wage payment, production standards, queueing studies, engineering evaluations and reliability predictions.
- IEMS 463 Project Engineering** **Qtr. Hrs. - 3**
 PR: Senior standing. Role of the project engineer in research and development, emphasizing the complete sequence of steps from project proposal to project completion. Analytical techniques such as CPM, PERT/COST will be considered.
- IEMS 464 Design of Industrial Operations** **Qtr. Hrs. - 3**
 PR: IEMS 331. Planning, analyzing, controlling and evaluating production systems. Laboratory assignments.
- IEMS 496 Special Topics** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- IEMS 497 Undergraduate Seminar** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

- IEMS 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- IEMS 499 Undergraduate Research** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

INHALATION THERAPY

- INHT 350 Introduction to Respiratory Equipment** **Qtr. Hrs. - 3**
 Fundamental functions of basic inhalation therapy equipment. Systems of oxygen storage. Safety precautions. Preparation for clinical practice.
- INHT 351 Respiratory Equipment Laboratory** **Qtr. Hrs. - 1**
 Procedures in cleaning, sterilizing, maintenance, and repair of equipment. Taken concurrently with INHT 350.
- INHT 355 Introduction to Pharmacology** **Qtr. Hrs. - 3**
 Regulatory agencies and the regulations concerning the use of drugs. Review of pharmacological mathematics. Drug absorption and distribution in the human body.
- INHT 360 Respiratory Equipment Function** **Qtr. Hrs. - 3**
 PR: INHT 350. Function of advanced respiratory equipment. Arterial blood gas equipment. Prolonged mechanical ventilation. Bedside respiratory volumetric monitoring. Evaluation prior to and during weaning from respirator.
- INHT 361 Respiratory Equipment Function Laboratory** **Qtr. Hrs. - 1**
 Care and sterilization of respirators. Calibration of blood gas analyzers. Care and standardization of bedside volumetric equipment. Taken concurrently with INHT 360.
- INHT 370 Pulmonary Physiology** **Qtr. Hrs. - 3**
 PR: CHEM 113 and PHYS 281. Normal ventilation of respiration. Response to gases and ions. Lung reflexes. Ventilatory, mechanical factors. Pulmonary circulation, gas diffusion and transport. Manual respiratory adjustments. Manifestations of disease.
- INHT 371 Pulmonary Physiology Laboratory** **Qtr. Hrs. - 1**
 Experiments in ventilation mechanics, diffusion, circulation, and gas transport. Taken concurrently with INHT 370.
- INHT 380 Respiratory Pathology** **Qtr. Hrs. - 3**
 PR: ZOOL 234. Cellular pathology with emphasis on pathology of respiratory and cardiovascular systems.
- INHT 381 Respiratory Pathology Laboratory** **Qtr. Hrs. - 1**
 Macro and microscopic identification of respiratory diseases. Gross pathology. Taken concurrently with INHT 381.

- INHT 390 Cardiopulmonary Resuscitation** **Qtr. Hrs. - 3**
PR: Permission of instructor. Resuscitative procedures in respiratory and cardiac emergencies. Airway maintenance. Defibrillation and post-resuscitative care. Drowning. Underwater, aviation, and space physiology.
- INHT 391 Cardiopulmonary Resuscitation Laboratory** **Qtr. Hrs. - 1**
Adult intubation and available airways. Defibrillation practice. Taken concurrently with INHT 390.
- INHT 450 Pulmonary Function Studies** **Qtr. Hrs. - 3**
PR: Permission of instructor. Detailed procedures and tests to provide objective information for diagnosis of respiratory diseases.
- INHT 451 Pulmonary Function Laboratory** **Qtr. Hrs. - 1**
Testing procedures and experiments in normal and abnormal respiratory functions. Taken concurrently with INHT 450.
- INHT 455, 456 Medical Pharmacology** **Qtr. Hrs. - 3,3**
PR: INHT 355. Use of drugs in cardiovascular diseases. Effects on the nervous system, gastrointestinal tract, and neuroeffectors. Depressants and stimulants; influence on metabolism and endocrine functions. Anesthetics. Chemotherapy. Poisons and antidotes.
- INHT 460 Medicine** **Qtr. Hrs. - 3**
PR: INHT 370. Disease states treated medically in conjunction with one or more modalities of respiratory therapy.
- INHT 461 Equipment Selection and Use in Specific Diseases** **Qtr. Hrs. - 1**
The selection of proper equipment and use with common medically treated diseases. Taken concurrently with INHT 460.
- INHT 470 Respiratory Physical Therapy** **Qtr. Hrs. - 3**
PR: Permission of instructor. The motor unit, exercise and fatigue. Therapeutic exercise, exercise in cardiopulmonary disease. Postural drainage, and vibration techniques.
- INHT 471 Respiratory Physical Therapy Laboratory** **Qtr. Hrs. - 1**
Observation and assistance in respiratory physical therapy procedures performed on hospital patients. Taken concurrently with INHT 470.
- INHT 480 Respiratory Pediatrics** **Qtr. Hrs. - 3**
PR: Permission of instructor. Fetal lung development and circulation. Fetal and newborn regulation of respiration. Pulmonary function in congenital anomalies, infant infections, and hyaline membrane disease. Resuscitation at birth. Respiratory diseases of childhood.
- INHT 481 Respiratory Pediatrics Laboratory** **Qtr. Hrs. - 1**
Review of pediatric equipment. Treatment of specific diseases. Infant resuscitative procedures and intubation. Taken concurrently with INHT 480.

INHT 490 Cardiopulmonary Therapy **Qtr. Hrs. - 3**
PR: INHT 370. Introduction of diagnostic and surgical techniques in thoracic and general surgery.

INHT 491 Cardiopulmonary Therapy Laboratory **Qtr. Hrs. - 1**
Student participation in cardiac catheterizations and cardiopulmonary bypass techniques. Assignment to the operating room area as observers during thoracic and general surgery. Taken concurrently with INHT 490.

ITALIAN

ITA 101 Elementary Italian Language and Civilization **Qtr. Hrs. - 3**
Designed to initiate the student to the major language skills: listening, speaking, reading, and writing, in addition to an introduction to Italian culture.

ITA 102 Elementary Italian Language and Civilization **Qtr. Hrs. - 3**
PR: ITA 101 or equivalent. Continuation of ITA 101.

ITA 103 Elementary Italian Language and Civilization **Qtr. Hrs. - 3**
PR: ITA 102 or equivalent. Continuation of ITA 102.

JOURNALISM

JRN 319 News Writing **Qtr. Hrs. - 4**
PR: Consent of instructor and student must have a minimum ability to type. Development of skills in gathering and writing for the mass media.

JRN 320 Press Photography **Qtr. Hrs. - 3**
Learning the use of the still camera, darkroom procedures, role of the photographer.

JRN 321 Copy Editing **Qtr. Hrs. - 4**
PR: JRN 319. Fundamentals of copy editing for printed media, including selection, processing and display of news.

JRN 322 Information Processing **Qtr. Hrs. - 4**
Planning content and format of newspapers and other periodicals; layout, dummyming, departmental editing, copy desk management.

JRN 330 History of Journalism **Qtr. Hrs. - 3**
Development of newspapers and magazines, the press associations and the growth of the electronic media.

JRN 331 Film Criticism **Qtr. Hrs. - 3**
PR: Consent of instructor. The practice of writing movie reviews: students will review at least one film a week during the course.

- JRN 421 Editorial and Column Writing** Qtr. Hrs. - 4
PR: Consent of instructor. Building the editorial page, backgrounding and interpreting the news.
- JRN 422 Public Affairs Reporting** Qtr. Hrs. - 4
PR: JRN 319 or permission of instructor. Study of community news sources, reporting courts, city and county government.
- JRN 423 Writing for the Mass Media** Qtr. Hrs. - 4
PR: Consent of instructor. Students write for a certain segment of the mass media of their own choosing. Will include playwriting, creative writing, article writing, etc. May be repeated for credit.
- JRN 424 Critical Writing** Qtr. Hrs. - 4
PR: Consent of instructor. Practice in writing reviews of plays, concerts, and books.
- JRN 425 Feature Writing** Qtr. Hrs. - 4
PR: Consent of instructor. Writing of feature articles for newspapers and magazines.
- JRN 426 Public Relations** Qtr. Hrs. - 4
Principles and practice of public relations, the means of gaining publicity and influencing people.
- JRN 427 Public Relations Campaigns** Qtr. Hrs. - 4
The planning and execution of a public relations campaign; use of research and coordination of elements of the campaign.
- JRN 429 Mass Media and Popular Culture** Qtr. Hrs. - 4
An impact study of mass media upon American culture; past to present.
- JRN 431 International Communication and the Foreign Press** Qtr. Hrs. - 4
A study of the news communicating systems of the world, the role of foreign correspondents, the foreign press.
- JRN 432 The Mass Media in Developing Countries** Qtr. Hrs. - 3
Role of the media in the developing areas of the world, how the nations and media help shape the direction of one another.
- JRN 433 Propaganda and Psychological Warfare** Qtr. Hrs. - 4
Propaganda and psychological warfare principles with a study of the activities engaged in by nations.
- JRN 434 Principles of Advertising** Qtr. Hrs. - 4
Fundamentals of advertising theory and practice, including social and economic aspects.
- JRN 435 Advertising Media** Qtr. Hrs. - 4
PR: JRN 434 or consent of instructor. Evaluations of advertising media in terms of their ability to serve the advertiser's communication needs and the tools of analysis used in determining media success.

- JRN 436 Advertising Copy** **Qtr. Hrs. - 4**
PR: Consent of instructor. The writing and preparation of copy for advertisements.
- JRN 437 Advertising Campaigns** **Qtr. Hrs. - 4**
PR: JRN 436 or consent of instructor. The planning and execution of an advertising campaign; use of research and coordination of elements of the campaign.
- JRN 496 Special Topics** **Qtr. Hrs. - 2-5**
PR: Consent of instructor. May be repeated for credit.
- JRN 498 Independent Study** **Qtr. Hrs. - 2-5**
PR: Consent of instructor. May be repeated for credit.

MANAGEMENT

- MGMT 301 Management** **Qtr. Hrs. - 5**
PR: ECON 203. Fundamentals of management underlying the solution of problems relating to the organization and operation of business enterprises.
- MGMT 324 Production Management** **Qtr. Hrs. - 5**
PR: MGMT 301. Principles and methods of production viewed from a managerial decision-making level.
- MGMT 344 Organization Theory** **Qtr. Hrs. - 5**
PR: MGMT 301. Elements in organizations and the processes by which they develop and influence behavior are considered.
- MGMT 347 Human Relations in Management** **Qtr. Hrs. - 3**
PR: MGMT 344. The individual, interpersonal and group relations and inter-group and organizational problems in business.
- MGMT 364 Personnel Management** **Qtr. Hrs. - 5**
PR: MGMT 301. An investigation of personnel practices and interpersonal relationships involved in managing employees. Internal problems of labor control and the utilization of human resources are considered.
- MGMT 367 Industrial Relations** **Qtr. Hrs. - 3**
PR: MGMT 364. The impact of trade unionism on industrial relations; current problems, conflicts and trends; the development of managerial approaches to achieve labor-management cooperation.
- MGMT 424 Production Management Problems** **Qtr. Hrs. - 3**
PR: MGMT 324. Problems in the management of industrial enterprise. Management principles and mathematical analysis applied to manufacturing; product development and production; materials and production control; employee relations.

MGMT 464 Personnel Problems

Qtr. Hrs. - 3

PR: MGMT 364. Case studies in personnel problems directed toward the application of personnel management theory and concepts to organization problems.

MGMT 499 Undergraduate Research

Qtr. Hrs. - 2-5

PR: Consent of instructor. May be repeated for credit.

MGMT 601 Management Process

Qtr. Hrs. - 3

PR: Graduate standing. The organization as a "natural system," its functional components and the processes whereby these components interact to accomplish organizational goals.

MGMT 611 Organizational Behavior

Qtr. Hrs. - 3

PR: Graduate standing. The relationship of human behavior to organization performance, including motivation, leadership, organizational environment, social environment and communication.

MGMT 621 Group Decisions and Analysis

Qtr. Hrs. - 3

PR: Bus. Core and graduate standing. Experience in company-wide management decision-making by groups using the management game technique. Analysis of the group decision-making process using video tapes.

MARKETING**MKTG 301 Marketing**

Qtr. Hrs. - 5

PR: ECON 203. Study of functions, institutions and basic problems in marketing of goods and services in our economy.

MKTG 324 Marketing Environment

Qtr. Hrs. - 3

PR: MKTG 301. A course emphasizing the relationship of firm to firm, to government, to labor and to other organized groups or institutions as they interact with the marketing function of the firm.

MKTG 326 Consumer Market Behavior

Qtr. Hrs. - 3

PR: MKTG 301 and PSY 300 or 314. An analysis of consumer motivation, buying behavior, market adjustment and product innovation. Behavioral aspects of the marketing process from producer to ultimate user or consumer are considered.

MKTG 334 Pricing Policies

Qtr. Hrs. - 3

PR: MKTG 301. The nature of marketing decisions and pricing; marketing organization and the pricing process; price theories and pricing models.

- MKTG 344 Marketing Logistics** **Qtr. Hrs. - 3**
PR: MKTG 301 and ECON 321 or BADM 311. The ecology, analysis and development of integrated distribution systems; the application of quantitative tools, economic analysis, transportation and marketing management in the analysis and interpretation of the design and physical flow of goods through marketing network alternatives.
- MKTG 364 Advertising Management** **Qtr. Hrs. - 3**
PR: MKTG 301. Analysis of field of advertising; purposes, techniques, media, organization, and role of research; economic and social aspects of advertising.
- MKTG 367 Sales Management** **Qtr. Hrs. - 3**
PR: MKTG 301. Problems confronting sales manager; training in sales techniques; sales objectives and policies; organization; and administration of sales force.
- MKTG 384 Marketing Research** **Qtr. Hrs. - 5**
PR: MKTG 301 and ECON 321. Study of research procedures and techniques applicable to problem solving in marketing. The marketing management process is analyzed; the underlying concepts related to the information needed to serve the processes are explored; and the incorporation of information resources into the management function is demonstrated.
- MKTG 469 Channels of Distribution Management** **Qtr. Hrs. - 3**
PR: MKTG 301. Study of marketing activities and relationship within channels of distribution. Major attention given to decision making and formulation of policies appropriate for wholesalers, retailers, and vertically integrated marketing institutions.
- MKTG 495 Marketing Policies and Strategies** **Qtr. Hrs. - 3**
PR: MKTG 384 and MKTG 469. Marketing problems and policies are explored with emphasis placed on the decision-making process.
- MKTG 499 Undergraduate Research** **Qtr. Hrs. - 2-5**
PR: Consent of instructor. May be repeated for credit.
- MKTG 601 Marketing Policy** **Qtr. Hrs. - 3**
PR: Graduate standing. Marketing policy formulation and decision-making with respect to planning, pricing, promoting, and distributing.
- MKTG 602 Current Marketing Problems** **Qtr. Hrs. - 3**
PR: MKTG 301 or equivalent and graduate standing. Analysis of marketing problems stemming from broad social, economic, and political developments. Topics treated cover broad classes of marketing institutions.

MATHEMATICS

MATH 100 Principles of Mathematics **Qtr. Hrs. - 4**

PR: Two years of high school mathematics. Selected topics in mathematics with primary emphasis on developing conceptual understanding and broadening insight into mathematics. Not intended for students in the Colleges of Business Administration, Engineering, or Natural Sciences.

MATH 104 Fundamental Algebra **Qtr. Hrs. - 4**

Elementary algebra including factoring, plane coordinates, systems of linear equations, exponents and radicals, quadratic equations and inequalities, ratio, proportion, and logarithms. For those students whose preparation in mathematics is noncurrent or insufficient for MATH 110, 111.

MATH 110 Precalculus Mathematics I **Qtr. Hrs. - 4**

PR: MATH 104, or two years of high school algebra and one year of high school plane geometry. This course is intended to cover most of the topics usually found in college algebra emphasizing the notion of function.

MATH 111 Precalculus Mathematics II **Qtr. Hrs. - 4**

PR: MATH 110 or equivalent (e.g., a course in college algebra which required the mastery of the function concept). Exponential and logarithmic functions; circular and trigonometric functions; inverses of circular functions; complex numbers.

MATH 115 Finite Mathematics **Qtr. Hrs. - 5**

PR: MATH 104 or one and one half years of high school algebra and one year of plane geometry or two years of high school algebra. Mathematical logic, set theory, counting and the binomial theorem, probability.

MATH 198 Freshman Seminar **Qtr. Hrs. - 3**

PR: Consent of instructor. This course develops the student's ability to analyze and solve logical and mathematical problems by careful analysis of selected problems. (Required of all majors in the Mathematical Sciences.)

MATH 211 Analytic Geometry **Qtr. Hrs. - 3**

CR: MATH 111 or equivalent. Plane and three-dimensional analytic geometry developed with the aid of vectors. Topics include coordinate systems; vectors; lines in the plane; lines and planes in space; conic sections; polar coordinates; transformation of coordinates.

MATH 221,222,223, Calculus **Qtr. Hrs. - 4,4,4**

PR: MATH 110 and MATH 111, or equivalent. CR: MATH 211. The differential and integral calculus of elementary functions of one variable with attention to a variety of geometric and physical applications.

MATH 314 Boolean Algebra **Qtr. Hrs. - 4**

PR: MATH 223 or consent of instructor. Axiomatic development of Boolean algebra; the algebras of sets, logic and circuits as Boolean algebras.

- MATH 315,316 Introduction to Number Theory** Qtr. Hrs. - 3,3
PR: Consent of instructor. Divisibility; primes and composites; divisors; multiples; Euclid's algorithm; Diophantine equations; modulo arithmetic; simple continued fractions. Intended for prospective teachers of mathematics.
- MATH 317 Matrices** Qtr. Hrs. - 3
PR: MATH 223. Elementary properties of matrices; special, real and complex matrices; determinants and inverses; rank and systems of equations; transformations; eigenvectors; diagonalization; quadratic forms.
- MATH 318,319 Linear Algebra** Qtr. Hrs. - 3,3
PR: MATH 223. A detailed analysis of finite dimensional linear spaces including bases, subspaces, dual spaces, quadratic forms, and applications to geometry.
- MATH 321 Intermediate Calculus** Qtr. Hrs. - 4
PR: MATH 223. Differential and integral calculus of functions of several variables with applications. Topics include vector differential calculus; partial derivatives; multiple integrals; line and surface integrals.
- MATH 331 Differential Equations** Qtr. Hrs. - 4
PR: MATH 321. First order ordinary differential equations; equations with constant coefficients; the method of variation of parameters; step-by-step integration; reduction of order; Picard's method, the method of Frobenius; introduction to input-output analysis and transform methods.
- MATH 341 Vector Analysis** Qtr. Hrs. - 3
PR: MATH 321. Scalar and vector products; limits, derivatives and integrals of vector valued functions of real vectors; the directional derivative and vector operators; the theorems of Green, Gauss and Stokes; generalized curvilinear coordinates; applications in engineering and physical sciences.
- MATH 351, 352 Foundations of Geometry** Qtr. Hrs. - 3,3
PR: Consent of instructor. Euclidean geometry; geometry of transformations; projective and other non-Euclidean geometries.
- MATH 411,412,413 Algebraic Structures** Qtr. Hrs. - 3,3,3
PR: MATH 223. An introduction to the properties of groups, rings, polynomial rings, integral domains and fields.
- MATH 414 Semi-groups and Groups** Qtr. Hrs. - 3
PR: Consent of instructor. An axiomatic development of basic properties of semi-groups and groups.
- MATH 420 Sequences and Series** Qtr. Hrs. - 3
PR: Consent of instructor. Convergence of infinite sequences and series; double series; infinite products. Intended for prospective teachers of mathematics.

- MATH 421,422,423 Advanced Calculus** Qtr. Hrs. - 3,3,3
PR: MATH 321. Limits, sequences and concepts of continuity; differentiation and integration; derivatives of integrals; infinite series and concepts of convergence; the Bolzano-Weierstrass theorem and the Heine-Borel theorem; extensions in Euclidean n -space.
- MATH 424 Lebesgue Theory** Qtr. Hrs. - 3
PR: MATH 423. Inner and outer measure; measurable sets and functions; the Lebesgue integral.
- MATH 425 Techniques of Complex Variables** Qtr. Hrs. - 3
PR: MATH 321. Analytic functions; integration in the complex plane; Laurent series and residue calculus, inversion of Laplace transforms; conformal mappings; applications in engineering and the physical sciences.
- MATH 426,427 Theory of Complex Variables** Qtr. Hrs. - 3,3
PR: MATH 425. Analytic and harmonic functions; Cauchy's theorem and its implications; the maximum modulus principle; series expansions; decomposition of meromorphic functions into partial fractions; analytic continuation; asymptotic expansions; the Mittag-Leffler Theorem; integral functions of finite order; Riemann surfaces.
- MATH 428 The Number System** Qtr. Hrs. - 3
PR: MATH 420. An axiomatic development of the natural numbers followed by a constructive development of the real and complex numbers. Intended for prospective teachers of mathematics.
- MATH 429 Foundations of Calculus** Qtr. Hrs. - 3
PR: MATH 420. Functions; limits; continuity; differentiation and integration. This course is a study of the basic structure of the calculus and is recommended for prospective teachers of mathematics.
- MATH 431 Ordinary Differential Equations** Qtr. Hrs. - 3
PR: MATH 331. Systems of equations; the Wronskian; Abel's identity; integrating factors and adjoint equations.
- MATH 432 Theory of Differential Equations** Qtr. Hrs. - 3
PR: MATH 331. The existence and uniqueness of solutions; oscillation theory; asymptotic solutions; stability.
- MATH 434 Partial Differential Equations** Qtr. Hrs. - 3
PR: MATH 331. Separation of variables; orthogonality and Fourier series; classification of equations; solutions in different coordinate systems; methods of characteristics; the Fourier integral transform and Dirac's delta function.
- MATH 435 Boundary Value Problems** Qtr. Hrs. - 3
PR: MATH 434. Adjoint forms and Green's functions; applications in engineering and the physical sciences.

- MATH 436 Special Functions** **Qtr. Hrs. - 3**
PR: MATH 331. Special functions represented as series, products and integrals; generating functions and recursion formulas; orthogonal expansions and interrelations between special functions. Emphasis will be on the Bessel, Legendre, gamma and hypergeometric functions with an introduction to other polynomial sets.
- MATH 437 Laplace Transforms** **Qtr. Hrs. - 3**
PR: MATH 331. The Laplace and Z transforms; solutions of ordinary and partial differential equations; application to circuit analysis and difference equations.
- MATH 438 Transform Calculus** **Qtr. Hrs. - 3**
PR: MATH 331. Fourier, Hankel and other transforms with applications to physical problems; the transformations of distributions.
- MATH 461 Basic Topology** **Qtr. Hrs. - 3**
PR: MATH 421 or MATH 420. Compactness; connectedness; general metric spaces; topological spaces; limit points.
- MATH 462 Concepts in Topology** **Qtr. Hrs. - 3**
PR: MATH 461. Topology of surfaces, Euler characteristic; spheres with handles and crosscaps; algebraic invariants; combinatorial topology.
- MATH 490 History of Mathematics** **Qtr. Hrs. - 3**
PR: Five hours of mathematics. A chronological study of the evolution of mathematical thought from primitive counting through modern ideas of the twentieth century. Recommended for prospective teachers of mathematics.
- MATH 491 Contemporary Mathematics** **Qtr. Hrs. - 3**
PR: Consent of the instructor. Concepts, problems, and advanced topics included in current approaches to secondary mathematics. (Same as EDSE 493).
- MATH 496 Special Topics** **Qtr. Hrs. - 2-5**
PR: Consent of the instructor. May be repeated for credit.
- MATH 497 Undergraduate Seminar** **Qtr. Hrs. - 2-5**
PR: Consent of the instructor. May be repeated for credit.
- MATH 498 Independent Study** **Qtr. Hrs. - 2-5**
PR: Consent of the instructor. May be repeated for credit.
- MATH 499 Undergraduate Research** **Qtr. Hrs. - 2-5**
PR: Consent of the instructor. May be repeated for credit.

MECHANICAL ENGINEERING & AEROSPACE SCIENCES

- MEAS 341 Mechanisms** **Qtr. Hrs. - 3**
PR: ENGR 311. Relative motions of machine parts; cams, rolling contact, gearing, and flexible connectors. Synthesis of mechanisms. Two lectures, two hours laboratory.
- MEAS 342 Dynamics in Design** **Qtr. Hrs. - 3**
PR: MEAS 341. Experimental mechanics, dynamics, measurements; applications of dynamics in design.
- MEAS 351 Measurement Systems** **Qtr. Hrs. - 3**
PR: ENGR 312 and 322. Application of system design concepts to measurements. Fundamental theory of static and dynamic measurements. Behavior of transducers individually and in open-loop systems. Validation of experimental data. Measurements are considered as information transfer accompanied by energy transfer. Two lectures, one laboratory lecture, two hours laboratory bi-weekly.
- MEAS 371 Fluid Mechanics** **Qtr. Hrs. - 4**
PR: ENGR 332. Continuation of ENGR 332. Topics in gas dynamics, including shock waves, viscous flow analysis and solutions in boundary layer theory.
- MEAS 372 Thermodynamics of Mechanical Systems** **Qtr. Hrs. - 4**
PR: ENGR 331. Applied thermodynamics; gas mixtures, power cycles, and reactive systems.
- MEAS 411 Aerodynamics** **Qtr. Hrs. - 3**
PR: ENGR 332. Principles of subsonic and supersonic flight; airfoils in compressible and incompressible flow; flow about a body; thin airfoil and finite airfoil theory.
- MEAS 413 Stability and Control** **Qtr. Hrs. - 3**
PR: MEAS 411. Application of elementary aerodynamic principles to static and dynamic stability and control surface theory.
- MEAS 421 Space Mechanics** **Qtr. Hrs. - 4**
PR: ENGR 311. Dynamics with applications to aeronautical and astronautical problems, orbits and trajectories, motion in a resisting medium, performance and optimization of multistage rockets.
- MEAS 423 Vibration Analysis** **Qtr. Hrs. - 4**
PR: ENGR 312. Undamped and damped vibrations of single degree of freedom systems. Forced vibrations, transient response. Many degrees of freedom systems, normal modes, vibration of elastic bodies.
- MEAS 424 Flight Vehicle Structures** **Qtr. Hrs. - 3**
PR: CEES 351. Space structures; thin-walled structures; load factors; nonsymmetrical bending and transverse shear; shear center and shear flow;

semimonocoque construction, fuselage rings; multicelled structures; sandwich panels, fatigue.

MEAS 432 Propulsion Systems **Qtr. Hrs. - 3**

PR: MEAS 372. Analysis of jet propulsion systems including turbojets, ramjets, and rockets.

MEAS 436 Mechanical Power Systems **Qtr. Hrs. - 3**

PR: MEAS 372. Analysis and design of large power generating systems and components thereof with emphasis on steam plants utilizing both chemical and nuclear fuels. Boiler, turbine, condenser, and auxiliary equipment design and performance analysis.

MEAS 437 Energy Conversion **Qtr. Hrs. - 3**

PR: MEAS 372 and PHYS 344. Unconventional methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics, nuclear, and magnetohydrodynamics.

MEAS 441,442 Principles of Design **Qtr. Hrs. - 3,3,**

PR: MEAS 342. Design procedures; force and motion analysis; failure modes; stress and deflection analysis; stress concentration; fatigue; selected components.

MEAS 451 Measurement Systems **Qtr. Hrs. - 3**

PR: MEAS 351. Extension of fundamental measurement principles; discussion of DC, sine wave and pulse carrier systems and of unbalance and reference-balance measuring methods; simple computing-type transducer. Two lectures, two hours lecture-laboratory.

MEAS 471 Statistical Thermodynamics **Qtr. Hrs. - 3**

PR: ENGR 331. Statistical approach to thermodynamic concepts, laws, and methods of analysis. Generalized p-v-T data. Special systems.

MEAS 472,473 Heat Transfer **Qtr. Hrs. - 3**

CR: MEAS 371. Steady and unsteady heat conduction in one and two dimensions. Application of boundary layer analysis and thermodynamics to forced and free convection of heat. Introduction to radiation concepts.

MEAS 496 Special Topics **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

MEAS 497 Undergraduate Seminar **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

MEAS 498 Independent Study **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

MEAS 499 Undergraduate Research **Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

MEDICAL RECORDS SCIENCE

- MRSC 300,301,302,303 Medical Records Science** Qtr. Hrs. - 3,4,4,4
Methods of securing and preserving medical records; establishing medical reference library; research and statistical techniques; types of records.
- MRSC 310 Medical Terminology** Qtr. Hrs. - 3
Scientific prefixes and suffixes; terminology of disease and operations; drug and anesthesia terms; abbreviations; hospital terminology.
- MRSC 320,321 Medical Records Organization and Administration** Qtr. Hrs. - 3,3
Principles of management; procedures in medical records department; control and production standards; administration of data processing systems.
- MRSC 370,371,372 Directed Practice in Medical Records** Qtr. Hrs. - 2,2,2
A rotating supervised practice enabling the student to deal with problems, to accept responsibility, and to appreciate the confidential nature of medical records.
- MRSC 375 Problems in Medical Records Administration** Qtr. Hrs. - 3
Study of problem areas in medical records administration, discussion of topics involving students' experiences in medical records.

MEDICAL TECHNOLOGY

- MEDT 360,361 Clinical Microbiology** Qtr. Hrs. - 2,2
Bacteria, parasites, and fungi harmful to man; their cultural and clinical characteristics; techniques of recovery and examination.
- MEDT 362,363 Clinical Biochemistry** Qtr. Hrs. - 2,2
Biochemistry of blood and other body fluids; theory and practical application of laboratory methods in biochemistry.
- MEDT 375 Clinical Microscopy** Qtr. Hrs. - 3
Microscopic examination of transudates and exudates.
- MEDT 385 Blood Banking** Qtr. Hrs. - 3
Immuno-hematology; blood transfusion; methods used in preservation and selection of properly matched blood.
- MEDT 386,387 Clinical Hematology** Qtr. Hrs. - 2,2
Microscopic study of normal and abnormal blood cells; methods of obtaining and preserving blood; aseptic techniques.
- MEDT 388 Clinical Use of Isotopes** Qtr. Hrs. - 2
Principles of radioisotopes detection and measurement, storage clinical use, and disposal.

MICROBIOLOGY

- MICR 200 General Microbiology** **Qtr. Hrs. - 4**
PR: 8 hours in biological sciences. Fundamentals of microbiology, morphology, metabolism. Laboratory emphasizes procedures and principles in microbiology.
- MICR 210 Culture Media and Reagents** **Qtr. Hrs. - 2**
PR: MICR 200. Preparation of differential, selective, and enrichment media; reagents used in microbiology.
- MICR 220 Sanitary Science and Public Health** **Qtr. Hrs. - 3**
PR: MICR 200. Theories of diseases; sanitary procedures in water purification; sewage disposal; refuse collection; milk supplies; swimming pools; air contamination; personal and public health. (Not for majors in microbiology).
- MICR 300 Advanced General Microbiology** **Qtr. Hrs. - 4**
PR: MICR 200. Advanced fundamental theory and technique.
- MICR 320 Pathogenic Microbiology** **Qtr. Hrs. - 4**
PR: MICR 300. Microorganisms producing disease in man and other animals; means of transmission; protection against disease.
- MICR 322 Microbiology of Water and Waste** **Qtr. Hrs. - 4**
PR: MICR 300. Organisms in water and their relationship to production and distribution of potable water; disposal of sewage.
- MICR 350 Microbial Ecology** **Qtr. Hrs. - 4**
PR: MICR 300. Study of the roles of microbes in the environment.
- MICR 410 Diagnostic Microbiology** **Qtr. Hrs. - 5**
PR: MICR 320. Techniques used in identifying pathogenic bacteria in man.
- MICR 430 Microbial Physiology** **Qtr. Hrs. - 4**
PR: MICR 300 and CHEM 442, 444. Relationship between structure and function in microorganisms.
- MICR 440 Determinative Microbiology** **Qtr. Hrs. - 4**
PR: MICR 300. Microbial classification, rules of nomenclature, bacterial code and identification of species.
- MICR 470 Virology** **Qtr. Hrs. - 4**
PR: MICR 300 and CHEM 442. Nature of viruses and Rickettsiae, including their structure, propagation, isolation, and identification.
- MICR 496 Special Topics** **Qtr. Hrs. - 2-5**
PR: Consent of instructor. May be repeated for credit.

- MICR 497 Undergraduate Seminar Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- MICR 498 Independent Study Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

MUSIC

Courses are classified as follows:

Music Theory and Composition: 101, 102, 103, 201, 202, 203, 301, 302, 303, 320, 321, 322, 350, 390, 401, 402, 403.

History and Literature: 104, 105, 106, 218, 219, 220, 221, 222, 223, 340, 341, 342, 399, 450, 451, 452.

Applied Music (Ensemble and Individual instruments): 111, 112, 113, 114, 115, 116, 117, 118, 211, 212, 213, 214, 215, 216, 217, 304, 307, 308, 309, 311, 312, 313, 314, 315, 316, 317, 411, 412, 413, 414, 415, 416, 417, 421, 422, 423, 424, 425, 426, 427.

- MUS 101,102,103 Music Theory Qtr. Hrs. - 3,3,3
 The fundamental course in basic musicianship integrating the various musical skills with the development of the student's musical perception and understanding. Required of all music majors.
- MUS 104,105,106 Music Literature Qtr. Hrs. - 2,2,2
 Analysis and discussion of important musical works, Baroque to contemporary periods; introduction to stylistic differences of the various musical eras. Primarily for music majors.
- MUS 111 Class Piano Qtr. Hrs. - 2
 May be repeated for credit.
- MUS 112 Voice Qtr. Hrs. - 1
 One half-hour private instruction per week. May be repeated for credit.
- MUS 113 String Qtr. Hrs. - 1
 One half-hour private instruction per week. May be repeated for credit.
- MUS 114 Woodwind Qtr. Hrs. - 1
 One half-hour private instruction per week. May be repeated for credit.
- MUS 115 Brass Qtr. Hrs. - 1
 One half-hour private instruction per week. May be repeated for credit.
- MUS 116 Percussion Qtr. Hrs. - 1
 One half-hour private instruction per week. May be repeated for credit.

- MUS 117 Organ** **Qtr. Hrs. - 1**
One half-hour private instruction per week. May be repeated for credit.
- MUS 118 Piano** **Qtr. Hrs. - 1**
One half-hour private instruction per week. May be repeated for credit.
- MUS 201,202,203 Music Theory** **Qtr. Hrs. - 3,3,3**
PR: MUS 103 or equivalent. Continuation of course content of MUS 101 through 103 integrated with intensive training in aural comprehension.
- MUS 204 Voice Class** **Qtr. Hrs. - 1**
Fundamental principles of the three areas of activity in singing, breathing, phonetive, and resonation.
- MUS 205 String Class** **Qtr. Hrs. - 1**
PR: Consent of instructor. Fundamental principles of string instrument technique. May be repeated for credit.
- MUS 206 Woodwind Class** **Qtr. Hrs. - 1**
PR: Consent of instructor. Fundamental principles of woodwind instrument technique. May be repeated for credit.
- MUS 207 Brass Class** **Qtr. Hrs. - 1**
PR: Consent of instructor. Fundamental principles of brass instrument technique. May be repeated for credit.
- MUS 211 Piano** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 212 Voice** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 213 String** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 214 Woodwind** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 215 Brass** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 216 Percussion** **Qtr. Hrs. - 2**
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.

- MUS 217 Organ** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 218,219,220 Piano Literature** Qtr. Hrs. - 2,2,2
 PR: Proficiency in an applied instrument or voice (200 level or above) or consent of instructor. Survey of stringed keyboard literature from the sixteenth century to the present with emphasis on technical, formal and performance problems.
- MUS 221,222,223 Song Literature** Qtr. Hrs. - 2,2,2
 PR: Proficiency in an applied instrument or voice (200 level or above) or consent of instructor. Survey of the development of the art song from the Middle Ages to the present with emphasis on technical, formal and performance problems.
- MUS 301,302,303 Counterpoint** Qtr. Hrs. - 3.3.3
 PR: MUS 203. Analysis and creative writing in the contrapuntal-harmonic technique of Baroque composers through the various methods of the twentieth century.
- MUS 304 Madrigal Singers** Qtr. Hrs. - 1
 PR: Consent of instructor by audition. May be repeated for credit. Participation in a select vocal ensemble for the study and performance of madrigals and similar works from the fourteenth century to the present.
- MUS 307 Concert Choir** Qtr. Hrs. - 1
 PR: Consent of instructor. May be repeated for credit. Study, rehearsal and performance of choral works of all styles and periods. Open to all students.
- MUS 308 Band** Qtr. Hrs. - 1
 PR: Consent of instructor. Participation in a chamber or large ensemble for purposes of studying and performing band literature. Open to all students. May be repeated for credit.
- MUS 309 Orchestra** Qtr. Hrs. - 1
 PR: Consent of instructor. Participation in a chamber or large ensemble for purposes of studying and performing symphonic orchestral literature. Open to all students. May be repeated for credit.
- MUS 310 Chamber Music** Qtr. Hrs. - 1
 PR: Consent of instructor. Participation in small ensemble for purposes of studying and performing chamber music literature. May be repeated for credit.
- MUS 311 Piano** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.

- MUS 312 Voice** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 313 String** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 314 Woodwind** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 315 Brass** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 316 Percussion** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 317 Organ** Qtr. Hrs. - 2
 PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 320,321,322 Orchestration** Qtr. Hrs. - 3,3,3
 PR: Proficiency in an applied instrument or voice (300 level or above) or Music Theory 203. Preliminary study of band and orchestral instruments. Scoring for band, orchestra and various instrumental combinations.
- MUS 340,341,342 Music History** Qtr. Hrs. - 3,3,3
 Music in Western Civilization traced from its primitive sources to the present; emphasis on composers' styles in relation to the cultural backgrounds of the various eras.
- MUS 350 Composition** Qtr. Hrs. - 2-5
 PR: MUS 303 or consent of instructor. May be repeated for credit. Creative work in large and small forms in the area of choral, instrumental and keyboard media.
- MUS 351,352 Conducting** Qtr. Hrs. - 2
 PR: Junior standing. Fundamental principles of instrumental and choral conducting techniques.
- MUS 390 Fundamental Music Skills** Qtr. Hrs. - 3
 (For non-majors). Primarily for the prospective teacher as an introduction to the basic music skills necessary for teaching in elementary and secondary schools; notation, rhythm, singing, basic piano skills and fundamentals of conducting.

- MUS 399 Introduction to Music** Qtr. Hrs. - 3
(For non-majors). The study of music through listening, readings and discussions leading to greater enjoyment of music.
- MUS 401,402,403 Form and Analysis** Qtr. Hrs. - 3,3,3
PR: MUS 303. Formal aspects of the styles of major composers with an emphasis on orchestral literature.
- MUS 411 Piano** Qtr. Hrs. 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 412 Voice** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 413 String** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 414 Woodwind** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 415 Brass** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 416 Percussion** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 417 Organ** Qtr. Hrs. - 2
PR: Consent of instructor. One hour private instruction per week. May be repeated for credit.
- MUS 421 Piano** Qtr. Hrs. - 2-5
PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 422 Voice** Qtr. Hrs. - 2-5
PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 423 String** Qtr. Hrs. - 2-5
PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 424 Woodwind** Qtr. Hrs. - 2-5
PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.

- MUS 425 Brass** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 426 Percussion** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 427 Organ** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. Hours of instruction are variable. May be repeated for credit.
- MUS 450,451,452 Music of the Twentieth Century** **Qtr. Hrs. - 3,3,3**
 Problems of contemporary style; electronic methods, literary and technical points of view; analysis of selected works from Satie, Debussy, Ravel, Stravinsky, Bartok, Schoenberg, Berg, Webern, Cage, Babbitt, Badings, Carter, Ives, Stockhausen, Messiaen, Xenakis, Varese, Henze and others.
- MUS 496 Special Topics** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- MUS 497 Undergraduate Seminar** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- MUS 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

PHILOSOPHY

- PHI 105 Non-Formal Logic** **Qtr. Hrs. - 4**
 An examination of fallacies and other logical abuses in conjunction with an analysis of traditional modes in an attempt to encourage meaningful thought and usage.
- PHI 205 Elementary Formal Logic** **Qtr. Hrs. - 4**
 Basic analysis of patterns of inference; examination of logical form; development of elementary techniques for assessing validity of inferences.
- PHI 221 Introduction to Philosophy** **Qtr. Hrs. - 4**
 Inquiry into the meaning and justification of fundamental ideas and beliefs concerning reality, knowledge, and values; application to relevant topics in ethics, religion, and politics.

- PHI 305 Intermediate Formal Logic** Qtr. Hrs. - 4
 PR: PHI 205. Systematic study of propositional and first-order predicate logic; logistic systems and axiomatic methods; problems of metatheory, including consistency, completeness and decidability.
- PHI 312 Existentialism** Qtr. Hrs. - 4
 Study of existentialist analysis and criticism of the human situation as found in the writings of such philosophers as Kierkegaard, Nietzsche, Heidegger, Sartre, and Camus.
- PHI 314 Philosophical Analysis** Qtr. Hrs. - 4
 The role of philosophy as the clarification of basic concepts used in various kinds of discourse. The impact of logical positivism and linguistic analysis.
- PHI 331 Ethics** Qtr. Hrs. - 4
 An examination of the nature of moral problems, judgments and principles with an emphasis on recent formulations in ethical theory.
- PHI 341 Aesthetics** Qtr. Hrs. - 4
 An investigation into the nature of human artistic experience with special reference to the problems of creativity.
- PHI 405 Philosophy of Religion** Qtr. Hrs. - 4
 Examination of basic ideas, beliefs, attitudes and functions of religion. The significance of religion in human experience.
- PHI 409 Philosophy of Science** Qtr. Hrs. - 4
 An examination of the conceptual foundations and methodology of modern science.
- PHI 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- PHI 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

PHYSICS

- PHYS 100,101 Physical Science** Qtr. Hrs. - 4,4
 Introduction to the basic principles of physical science. A study of selected topics emphasizing general concepts of the field. Familiarization with the basic laws governing our universe and man's environment. Recommended for satisfying the science requirements of the Environmental Studies Program.
- PHYS 103 Astronomy** Qtr. Hrs. - 4
 PR: Two years of high school mathematics. An elementary survey of the astronomical universe including pulsars and the application of space technology to observational astronomy. Appropriate for the Environmental Studies Program.

- PHYS 107,108 College Physics** **Qtr. Hrs. - 4,3**
PR: Two years of high school mathematics. A study of classical mechanics, thermodynamics, electricity, magnetism, optics, and modern physics. Especially suited for students who desire to use physics to satisfy the science requirements of the Environmental Studies Program.
- PHYS 189 College Physics Laboratory** **Qtr. Hrs. - 1**
PR: PHYS 107. Laboratory experimentation and instruction covering selected topics in physics. Three hours per week.
- PHYS 211, 212, 213 General Physics** **Qtr. Hrs. - 4,3,3**
CR: MATH 211. An introductory course for students requiring a thorough study of the basic principles of physics. A study of classical mechanics, thermodynamics, electricity, magnetism, optics, and modern physics.
- PHYS 227,228 Classical Mechanics** **Qtr. Hrs. - 3,3**
PR: PHYS 213 or PHYS 108 or consent of instructor. A study of statics and dynamics of rigid bodies, planetary motion, and special relativity. Intended for prospective teachers of science in secondary schools and others desiring knowledge of mechanics.
- PHYS 281 Scientific Instruments Laboratory** **Qtr. Hrs. - 4**
PR: PHYS 107 or 103 or consent of instructor. A lecture-laboratory course in the fundamentals of mechanics, electrical circuitry, optics and nuclear physics as required in the application and operation of scientific instruments. Two three-hour classes per week.
- PHYS 282,283 General Physics Laboratory** **Qtr. Hrs. - 1,1**
PR: PHYS 211. Laboratory experimentation and instruction covering selected topics in physics. Three hours per week.
- PHYS 287,288,289 Physical Measurements** **Qtr. Hrs. - 3,3,3**
PR: PHYS 213 or 108 or consent of instructor. A laboratory oriented course that begins with basic electrical circuits and includes a study of vacuum tubes, semiconductors and other electronic devices such as rectifiers, amplifiers and oscillators. Experiments in Modern Physics are also included. Intended for prospective teachers of science in secondary schools and others desiring knowledge and experience in circuits and electronics related to physical measurements.
- PHYS 304 Astronomy** **Qtr. Hrs. - 4**
PR: PHYS 103 or equivalent. A continuation of PHYS 103 with emphasis on stellar and galactic evolution, and recent discoveries in astronomy. Appropriate for the Environmental Studies Program.
- PHYS 321,322,323 Mechanics** **Qtr. Hrs. - 3,3,3**
PR: PHYS 213 and MATH 222 or consent of instructor. A study of mechanics including vectors, coordinate transformations, fundamental theorems of Newtonian mechanics, rigid body dynamics, small oscillations, Lagrangian mechanics, and special relativity.

- PHYS 331,332,333 Electricity and Magnetism** Qtr. Hrs. - 3,3,3
PR: PHYS 213, CR: MATH 321 or consent of instructor. An introduction to scalar and vector fields, electrostatics, electrodynamics, magnetism, Maxwell's equations, radiation, waveguides, and physical optics.
- PHYS 335,336 Electronics** Qtr. Hrs. - 3,3
PR: PHYS 213 or consent of instructor. The study of basic D.C. and A.C. circuit theory, the properties of vacuum tubes, semiconductors, power supplies, vacuum triodes and transistors, amplification, oscillation, modulation, detection, and noise.
- PHYS 341,342,343 Modern Physics** Qtr. Hrs. - 3,3,3
PR: PHYS 213 and MATH 223 or consent of instructor. The study of black body radiation, the interaction of radiation and matter, atomic spectra, nuclear and high energy physics, particle accelerators, molecular, and solid state physics.
- PHYS 344 Modern Physics for Engineers** Qtr. Hrs. - 3
PR: ENGR 221 and MATH 331. Selected topics in atomic, nuclear, molecular, and solid state physics. A study of spectroscopy, X-rays, nuclear radiation, and cosmic rays.
- PHYS 347,348 Concepts in Modern Physics** Qtr. Hrs. - 3,3
PR: PHYS 213 or PHYS 108 or consent of instructor. A study of modern physics, including atomic and molecular structure, Bohr model of the atom, special relativity, and solid state physics. Intended for prospective teachers of science in secondary schools and others desiring an introductory course in modern physics.
- PHYS 351,352 Optics** Qtr. Hrs. - 3,3
PR: PHYS 213 or consent of instructor. A study of refraction, interference, diffraction, optical instruments, dipole radiation, Kirchoff integral, scattering, polarization, and stimulated emission.
- PHYS 354 Optics and Wave Motion for Engineers** Qtr. Hrs. - 3
PR: ENGR 211 and MATH 321. Selected topics in optics, acoustics, and related wave phenomena. A study of reflection, refraction, interference, and diffraction.
- PHYS 357,358 Wave Motion and Optics** Qtr. Hrs. - 3,3
PR: PHYS 213 or PHYS 108 or consent of instructor. A lecture and laboratory study of ripple tank water waves, sound waves, microwaves, and optics. Topics in both geometrical and physical optics will be considered. Intended for prospective teachers of science in secondary schools and others desiring knowledge and experience in wave phenomena.
- PHYS 381 Physics Laboratory - Electronics** Qtr. Hrs. - 3
PR: PHYS 213 or consent of instructor. Lecture and laboratory work stressing electronic principles through the study of test equipment, power supplies, amplifiers, oscillators, and pulse circuits.

- PHYS 382 Physics Laboratory - Electricity and Magnetism** Qtr. Hrs. - 3
 PR: PHYS 213 or consent of instructor. Lecture and laboratory work in basic electrical measurements, measurement of e/m , transmission lines, microwaves, and Zeeman effect.
- PHYS 383 Physics Laboratory - Nuclear Physics** Qtr. Hrs. - 3
 PR: PHYS 213 or consent of instructor. Lecture and laboratory work in nuclear physics stressing nuclear radiation and the interaction of radiation with matter.
- PHYS 384 Physics Laboratory - Optics and Wave Motion** Qtr. Hrs. - 3
 PR: PHYS 213 or consent of instructor. Lecture and laboratory work in basic optics and wave phenomena. Selected experiments in interference and diffraction of waves, polarized light, spectroscopy, microwaves, and optical pumping.
- PHYS 385 Physics Laboratory - Modern and Solid State Physics** Qtr. Hrs. - 3
 PR: PHYS 213 or consent of instructor. Lecture and laboratory work in selected areas of modern and solid state physics. A study of electrical conductivity in solids, temperature dependence in semiconductors, Hall effect, and electron mobility.
- PHYS 461 Solid State Physics** Qtr. Hrs. - 3
 PR: PHYS 343 or consent of instructor. Properties of solids, crystal binding, free electron model, band theory of solids, Fermi surface, and solid state applications.
- PHYS 471,472 Quantum Mechanics** Qtr. Hrs. - 3,3
 PR: PHYS 343 or consent of instructor. A study of the postulates of quantum mechanics, the Schrodinger equation, and an introduction to the statistics of many particle systems.
- PHYS 475 Statistical Physics** Qtr. Hrs. - 3
 PR: PHYS 343 or consent of instructor. An introduction to thermodynamics, statistical mechanics, and kinetic theory.
- PHYS 491 Contemporary Physics** Qtr. Hrs. - 3
 PR: Consent of instructor. Concepts, experiments, problems and advanced topics included in courses such as PSSC physics and other modern approaches to secondary school physics. For prospective teachers of physics. (Same as EDSE 494.)
- PHYS 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- PHYS 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- PHYS 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

PHYS 499 Undergraduate Research**Qtr. Hrs. - 2-5**

PR: Consent of instructor. May be repeated for credit.

POLITICAL SCIENCE**PCL 201 American National Government****Qtr. Hrs. - 4**

A study of the dynamics of American national government, including its structure, organization, powers, and procedures.

PCL 203 Principles of Political Science**Qtr. Hrs. - 4**

Scope of political science and its development as a field with emphasis on areas of concern; analysis of major approaches to the study of politics; familiarization with recent developments in research and research approaches.

PCL 301 American State and Local Government**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. Analysis of the organization and functions of state and local governments and of problems of policy formulation and execution, particularly as they relate to the federal system.

PCL 305 Political Parties and Processes**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. Study of American politics with major emphasis upon the role, organization, functions, and processes of parties in the American political system.

PCL 308 The American Presidency**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. Examination of the presidency as an institution and of the evolution in status, powers, administrative responsibilities, leadership and decision-making roles of the chief executive in the American political system.

PCL 310 Congress and the Legislative Process**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. The nature, role, and functions of the legislative process; the dynamics of executive-legislative relations and resultant problems.

PCL 321 International Relations**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. Analysis of the fundamental principles and factors affecting interstate relations; the foreign policy decision-making processes of states; the role and problem of power; conflict and methods of resolution.

PCL 323 International Relations**Qtr. Hrs. - 4**

PR: PCL 201, 203 or consent of instructor. Application of the theory and fundamentals of international politics to contemporary world affairs with attention to the impact of twentieth century developments upon the international system and its actors.

- PCL 341 Comparative European Politics** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. An analytical and comparative study of the major governments of Europe and their impact upon the development of types of political systems.
- PCL 343 Politics of Developing Areas** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. An analysis of non-Western political systems with emphasis upon the problems of political, socio-economic, and cultural development as they affect attempts to achieve the transformation to modernization.
- PCL 360 American Political Philosophy** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. A survey of the chief contributions of American political thought, their sources and background as focused within the context of American historical and institutional development.
- PCL 403 Political Behavior** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. A study of the role and impact of group behavior and interest articulation in a pluralistic society and their effect upon the political process.
- PCL 405 Political Theory** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Examination of various normative and empirical approaches to the study of political science, stressing contemporary developments in the field.
- PCL 410 Public Administration** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Analysis of administrative theories and the process of implementing public policies in a democratic society.
- PCL 413 Metropolitan Politics** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Analysis of political patterns, processes and issues in American communities.
- PCL 414 Metropolitan Administration I** Qtr. Hrs. - 3
PR: PCL 410 or 413 or consent of instructor. Study of the formal and informal socio-political structures that govern urban areas; emerging patterns of government, and management practices in urban and suburban settings.
- PCL 415 Metropolitan Administration II** Qtr. Hrs. - 3
PR: PCL 410 or 413 or consent of instructor. The study of the legislative, administrative, and judicial aspects of government participation in urban development processes, and of the devices and techniques that have been developed to guide and implement these activities.
- PCL 427 American Foreign Policy** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. An analysis of the traditions and development of American foreign policy with major emphasis on the role and policies of the United States in the contemporary world.

- PCL 430 International Organizations** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. The nature and growth of international agencies of cooperation. Attention focused on the problems and development of functional, regional, and universal organizations.
- PCL 433 International Law** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. An introduction to the nature of evolution, and sources of international law and its role in interstate relations.
- PCL 461 Political Philosophy** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Study of the development of political and social ideas in Western thought from early Greece to the Renaissance.
- PCL 462 Political Philosophy** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Renaissance to the 19th Century.
- PCL 463 Political Philosophy** Qtr. Hrs. - 4
PR: PCL 201, 203 or consent of instructor. Study of contemporary Western political and social thought in the 19th and 20th Centuries.
- PCL 471 American Constitutional Law** Qtr. Hrs. - 5
PR: PCL 201, 203 or consent of instructor. The impact of judicial decision-making upon the growth of American political institutions and processes.
- PCL 473 American Constitutional Law** Qtr. Hrs. - 5
PR: PCL 201, 203 or consent of instructor. The role of the judiciary in the focusing and refinement of individual rights and civil liberties in American society.
- PCL 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- PCL 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- PCL 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

PSYCHOLOGY

- PSY 201,202 General Psychology** Qtr. Hrs. - 3,3
The basic principles, theories, and methods of contemporary psychology.
- PSY 300 Applied Psychology** Qtr. Hrs. - 4
Applications of principles of psychology to problems of human development, personal and social adjustment, career choice and satisfaction.

- PSY 301 Basic Learning Processes** Qtr. Hrs. - 4
PR: PSY 201, 202. A survey of theories and research findings from basic laboratory investigation of learning phenomena. Lec-lab.
- PSY 302 Complex Human Learning** Qtr. Hrs. - 4
PR: PSY 201, 202. Selected topics from theories and research on complex human learning and problem solving. Lec-lab.
- PSY 303 Physiological Psychology** Qtr. Hrs. - 4
PR: PSY 201, 202. Physiological bases and correlates of behavior. Lec-lab.
- PSY 304 Perception** Qtr. Hrs. - 4
PR: PSY 201, 202. Consideration of physical and psychological variables in perceptual phenomena, Lec-lab.
- PSY 305 Psychological Measurement** Qtr. Hrs. - 4
PR: PSY 201, 202, STAT 201. Theory of test construction and consideration of selected measures of psychological characteristics.
- PSY 306 Psychology of Adjustment** Qtr. Hrs. - 4
Psychological principles of adjustment, application of psychology to problems in living.
- PSY 307 Motivation** Qtr. Hrs. - 4
PR: PSY 201, 202. Psychological and physiological aspects of human motivation.
- PSY 308 Social Psychology** Qtr. Hrs. - 4
PR: PSY 201, 202. Effects of social situations and social variables on the behavior of individuals.
- PSY 309 Personality Theory** Qtr. Hrs. - 4
PR: PSY 201, 202. A survey of theory and research on the development of personality characteristics. Lec-lab.
- PSY 310 Abnormal Psychology** Qtr. Hrs. - 4
PR: PSY 201, 202. Classification, causation, and treatment of deviant patterns of behavior.
- PSY 311 Methods of Psychological Research** Qtr. Hrs. - 3
PR: PSY 201, 202. Critical evaluation of research methods in psychology, considerations of internal and external validity.
- PSY 312 Clinical Psychology** Qtr. Hrs. - 4
PR: PSY 309, 310. Consideration of psychodiagnostics, behavioral modification techniques and clinical research. Lec-lab.
- PSY 313 Developmental Psychology** Qtr. Hrs. - 4
The effects of genetic, psychological, maturational, and social factors on behavior at various stages of development.

- PSY 314 Industrial Psychology** Qtr. Hrs. - 4
 PR: PSY 201, 202, STAT 201. Psychological principles of employee selection, training, and morale.
- PSY 321 Principles of Behavior Modification** Qtr. Hrs. - 4
 PR: PSY 301. An examination of the control of behavior through applications of principles and theories of learning. Examples are drawn from clinical and social psychology, and from child rearing.
- PSY 323 Comparative Psychology** Qtr. Hrs. - 4
 PR: PSY 201, 202. A study of comparative behaviors of lower animals.
- PSY 401 Senior Research Proposal** Qtr. Hrs. - 2
 PR: STAT 401 and senior standing. Study in depth of bibliography and methods of psychological research. Each student will write, and have approved, a proposal for an original piece of research.
- PSY 405 History and Systems of Psychology** Qtr. Hrs. - 4
 PR: PSY 301, 309. Historical development of psychology with emphasis on classical theoretical positions.
- PSY 408 Experimental Social Psychology** Qtr. Hrs. - 4
 PR: PSY 201, 202, STAT 201. Study of experimental investigations of the social behavior of animal and man. Lec-lab.
- PSY 415 Individual Intelligence Testing** Qtr. Hrs. - 5
 PR: PSY 305. A consideration of the nature of intelligence and its measurement. Supervised training in Stanford-Binet and Wechsler testing. Lec-lab.
- PSY 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- PSY 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- PSY 499 Undergraduate Research** Qtr. Hrs. - 8
 PR: Consent of instructor.

RADIO/TELEVISION

- RTV 140 Radio-Television I** Qtr. Hrs. - 4
 Nature of the media, the mechanics of operation, history, economics, programming, and internal and external controls.
- RTV 240 Audio Production I** Qtr. Hrs. - 3
 Sound recording; acoustics; and music and effects, both live and recorded, for radio and television. RTV 260 required for students taking RTV 240.

- RTV 241 Television Production I** **Qtr. Hrs. - 3**
Studio operation; available means of presentation: studio, lights, sets, graphics, cameras, audio switching, and video tape recording. RTV 261 required for students taking RTV 241.
- RTV 260 Audio Production I Laboratory** **Qtr. Hrs. - 1**
Required of students taking RTV 240. Three hours per week are required in the production of radio programs. Students are assigned specific production responsibilities.
- RTV 261 Television Production I Laboratory** **Qtr. Hrs. - 1**
Required of students taking RTV 241. Three hours per week are required in the production of television programs. Students are assigned specific production responsibilities.
- RTV 340 Audio Production II** **Qtr. Hrs. - 3**
PR: RTV 240 or consent of instructor. The production of music (live and recorded), talk, interview, discussion, sports, and documentary including performance (talent and announcing) and direction. RTV 360 required for students taking RTV 340.
- RTV 341 Television Production II** **Qtr. Hrs. - 3**
PR: RTV 241 or consent of instructor. Emphasis on the coordination of talent, cameras, visuals, audio and lighting with the dramatic values of the presentation. RTV 361 required for students taking RTV 341.
- RTV 342 Broadcast Journalism I** **Qtr. Hrs. - 4**
Examination of the historical, legal, and quasi-legal influences on broadcast news; introduction to news sources, writing, and interviewing techniques for radio-television news.
- RTV 344 Broadcast Continuity and Programming I** **Qtr. Hrs. - 4**
Practice in the preparation of written materials for all kinds of radio and television programs except news, documentary, and drama. Examination of program practices, development, and traffic systems.
- RTV 345 Film for Television** **Qtr. Hrs. - 4**
Principles and practices of 8mm and 16mm film usage within the television industry.
- RTV 346 Radio, Television, and Society** **Qtr. Hrs. - 3**
A study of the impact of electronic media upon the habits, customs, and thinking of our times. Considerations of internal media problems.
- RTV 350 Speech for Television** **Qtr. Hrs. - 4**
PR: SPE 101. Practice and performance in speech preparation and delivery for television. Types of speeches include the television demonstrative, television stimulative and the television persuasive. All speeches are televised in the television laboratory.

- RTV 351 Radio Production and Directing** Qtr. Hrs. - 3
PR: RTV 340. Techniques and practice in producing and directing radio programs. RTV 371 required for students taking RTV 351.
- RTV 360 Audio Production II Laboratory** Qtr. Hrs. - 1
Required of students taking RTV 340. Three hours per week are required in the production of radio programs. Students are assigned specific production responsibilities.
- RTV 361 Television Production II Laboratory** Qtr. Hrs. - 1
Required of students taking RTV 341. Three hours per week are required in the production of television programs. Students are assigned specific production responsibilities.
- RTV 371 Radio Production and Directing Laboratory** Qtr. Hrs. - 1
Required of students taking RTV 351. Three hours per week are required in the production of radio programs. Students are assigned specific production responsibilities.
- RTV 441 Television Production and Directing** Qtr. Hrs. - 3
PR: RTV 341. The planning, preparation and directing of programs with emphasis on dramatic values of composition, movement, position, action, timing, pacing, climax, ascendant and descendant values; integration of the parts to the whole. RTV 461 required for students taking RTV 441.
- RTV 444 Broadcast Continuity and Programming II** Qtr. Hrs. - 4
PR: RTV 344 or consent of instructor. Preparation of documentaries and dramatic writing for radio and television.
- RTV 445 Television Film Production** Qtr. Hrs. - 4
PR: Consent of instructor. Planning and preparation of filmed documentaries, public service and commercial productions. (Laboratory hours to be arranged.)
- RTV 448 Broadcast Regulations** Qtr. Hrs. - 3
PR: RTV 140 or RTV 342. Federal, state, local and self-regulatory agencies and practices which govern electronic media.
- RTV 450 Broadcast Journalism II** Qtr. Hrs. - 3
PR: RTV 342 or JRN 321. Principles and practice of news preparation for electronic media. RTV 470 required for students taking RTV 450.
- RTV 451 Radio-Television Advertising** Qtr. Hrs. - 3
PR: Consent of instructor. Radio and television as advertising media, advertisers' demands and budgets; appropriate programs for the sponsors' needs; writing of commercial continuity.
- RTV 452 Broadcast Criticism** Qtr. Hrs. - 3
Evaluation and criticism of past and present radio and television programs, policies and critics. Concentration on the problem of criteria development.

- RTV 453 Educational Broadcasting** **Qtr. Hrs. - 4**
 Values and potentials of radio and television in education, with particular emphasis on current use of the media in elementary and secondary schools, colleges and universities, and adult education.
- RTV 454 Instructional Broadcasting** **Qtr. Hrs. - 3**
 Learning theory applied to the creation, production, and dissemination of lessons via electronic media. Introduction to and practicum in radio and television studios as well as lesson presentation. RTV 474 required for students taking RTV 454.
- RTV 457 Broadcast Internship** **Qtr. Hrs. - 12-15**
 PR: RTV 240 and RTV 344 and consent of instructor. Practicum at a selected professional broadcast production center for one quarter. In addition to a regular prescribed work schedule, the intern must submit a weekly log of his activities and produce a significant research paper.
- RTV 458 Broadcast Management** **Qtr. Hrs. - 3**
 PR: RTV 448. Consideration of broadcast management problems in station operations at the local, regional and national levels.
- RTV 461 Television Production and Directing Laboratory** **Qtr. Hrs. - 1**
 Required of students taking RTV 441. Three hours per week are required in the production of television programs. Students are assigned specific production responsibilities.
- RTV 470 Broadcast Journalism II Laboratory** **Qtr. Hrs. - 1**
 Required of students taking RTV 450. Three hours per week are required in the production of radio and/or television programs. Students are assigned specific production responsibilities.
- RTV 474 Instructional Broadcasting Laboratory** **Qtr. Hrs. - 1**
 Required of students taking RTV 454. Three hours per week are required in the production of radio and/or television programs. Students are assigned specific production responsibilities.
- RTV 496 Special Topics** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- RTV 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.

RELIGION

- REL 300 The Hebrew and Christian Heritage** **Qtr. Hrs. - 4**
 Same as HUM 300.
- REL 315 The Religious Heritage of China & Japan** **Qtr. Hrs. - 4**
 Same as HUM 315.

- REL 317 The Religious Heritage of India Qtr. Hrs. - 4
Same as HUM 317.
- REL 318 The Religious Heritage of Islam Qtr. Hrs. - 4
Same as HUM 318.
- REL 321 Religion in America Qtr. Hrs. - 4
The effect of Puritan, Quaker, Anglican, and Catholic traditions on various regions; the phenomenon of evangelism; the rise of new sects such as Mormonism.
- REL 441 Modern Theology Qtr. Hrs. - 4
An exploration of the revolution in religious thought based on the work of Kierkegaard, Jaspers, Heidegger, Tillich, Barth, Niebuhr, Bonhoeffer, Bultmann, Altizer, and Teilhard de Chardin.

RUSSIAN

- RUS 101 Elementary Russian Language and Civilization Qtr. Hrs. - 3
Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to Russian culture.
- RUS 102 Elementary Russian Language and Civilization Qtr. Hrs. - 3
PR: RUS 101 or equivalent. Continuation of RUS 101.
- RUS 103 Elementary Russian Language and Civilization Qtr. Hrs. - 3
PR: RUS 102 or equivalent. Continuation of RUS 102.
- RUS 201 Intermediate Russian Language and Civilization Qtr. Hrs. - 3
PR: RUS 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, study of syntax, idiomatic expressions, extensive reading, and further study of Russian culture.
- RUS 202 Intermediate Russian Language and Civilization Qtr. Hrs. - 3
PR: RUS 201 or equivalent. Continuation of RUS 201.
- RUS 203 Intermediate Russian Language and Civilization Qtr. Hrs. - 3
PR: RUS 202 or equivalent. Continuation of RUS 202 with greater emphasis on Russian civilization from the Middle Ages to the present.
- RUS 301 Russian Composition Qtr. Hrs. - 4
PR: RUS 203 or equivalent. Development of skills in composition through systematic review of grammar, syntax, and development of style. Free and controlled written compositions required.
- RUS 303 Russian Conversation Qtr. Hrs. - 4
PR: RUS 203 or equivalent. Development of skills in conversation and comprehension through practice and systematic review of phonology and grammatical structure.

SCIENCE

- SCI 490 Senior Seminar: Science in Human Affairs** **Qtr. Hrs. - 2**
 The impact of science on modern society. This course, primarily intended for the senior student, is offered as one of the Advanced Environmental Studies seminars.

SOCIAL SCIENCE

- SSC 490 Senior Seminar: Social Sciences in Human Affairs** **Qtr. Hrs. - 2**
 An overview of the development, purposes, and functioning of the social sciences in modern society. Primarily intended for senior students. Offered as one of the Advanced Environmental Studies seminars. Not open to the students in the College of Social Sciences.

SOCIOLOGY

Introductory Sequence: SOC 201, 202.

Theory and Research Sequence: SOC 304, 306, 307, 499.

Social Psychology Area: SOC 352, 353, 354, 451.

Anthropology Concentration: SOC 310, 311, 314, 315, 316, 402.

Social Welfare Concentration: SOC 340, 341, 342, 343, 412, 498.

Social Organization: SOC 325, 326, 333, 335, 407, 411, 416.

Social Deviance: SOC 331, 345, 346, 348, 350.

- SOC 201, 202 General Sociology** **Qtr. Hrs. - 3,3**
 An introduction to the principles of sociology. Primary emphasis is given to the understanding and application of such concepts as human interaction, the nature of the group and group interrelationships, social and cultural systems, the individual as a reflection of his group associations.

- SOC 304 The Development of Social Thought** **Qtr. Hrs. - 3**
PR: SOC 201, 202. An overview of theories concerning the nature of man as a "social being." The nature of society, from the beginnings of the scientific study of man's social life to World War II.

- SOC 306 Modern Sociological Thought** **Qtr. Hrs. - 3**
PR: SOC 201, 202, 304. A study of major European and American contributors to, and schools of, modern sociology from World War II to the present.

- SOC 307 The Sociology of Religion** **Qtr. Hrs. - 3**
 Patterns in religious behavior in various societies with primary emphasis on myth, rite, taboo and festival as social phenomena.

- SOC 310 Physical Anthropology & Archeology** Qtr. Hrs. - 3
 An introduction to the principles of anthropology. Inquiry into the natural history of mankind, man's place among the primates, and evolution. Review of evidence of earlier sociocultural framework, prehistory, and archeological background bearing on man's past achievements.
- SOC 311 Social Anthropology** Qtr. Hrs. - 3
 Framework and principles of sociocultural organization as exemplified among various cultures and ethnic groups around the world. Deals with kinship, subsistence techniques, political structure language, culture and personality, and other topics which combine to form the "holistic approach" of anthropology.
- SOC 314 Cultural Anthropology** Qtr. Hrs. - 3
 PR: SOC 310, 311. Emergence and history of man's cultures, their evolution and development, and the structure and functioning of human cultures in every time and place.
- SOC 315 Physical Anthropology** Qtr. Hrs. - 3
 PR: SOC 310, 311. The study of man as a product of the evolutionary process. Study and analysis of diversity among present human populations.
- SOC 316 Comparative Social Organization** Qtr. Hrs. - 3
 PR: SOC 310, 311. Introduction to anthropological viewpoints on role of marriage, family, kin groups, and descent as focal points for the study of economic, political, and ideological aspects of social organization.
- SOC 325 Urban Sociology** Qtr. Hrs. - 3
 PR: SOC 201, 202. Historical roots of urbanization. Impact of city life on social actions, social relationships, social institutions and the types of civilizations derived from and based on urban modes of living.
- SOC 326 Rural Sociology** Qtr. Hrs. - 3
 PR: SOC 201, 202. Rural American life, its resources, and the problems of changing patterns of rural social structure.
- SOC 331 Social Problems** Qtr. Hrs. - 3
 Major social problems created by the complex social situations of modern life. Sociological analysis of such problem areas as crime and delinquency, poverty, racial tensions, over-population, and drug addiction.
- SOC 333 Industrial Sociology** Qtr. Hrs. - 3
 PR: SOC 201, 202. Application or development of principles of sociology relevant to the industrial mode of production and the industrial way of life.
- SOC 335 Social Institutions** Qtr. Hrs. - 3
 Social institutions, social differentiation, and social control, with emphasis on American and other modern societies.

- SOC 336 Social Stratification** **Qtr. Hrs. - 3**
PR: SOC 201, 202. Study of class, status and power; cultural variations in stratification system; patterns of mobility and change.
- SOC 340 Social Welfare: A Social Institution** **Qtr. Hrs. - 5**
PR: SOC 201, 202. An introduction to social welfare as an institution. The historical and philosophical development of social welfare as related to current social welfare objectives and programs.
- SOC 341 Social Work: Principles and Methods** **Qtr. Hrs. - 3**
PR: SOC 340. A theoretical consideration of the concepts and methods of social work practice and the values, activities and roles of social workers in various practice settings.
- SOC 342 Government and Social Welfare** **Qtr. Hrs. - 3**
PR: SOC 340, 341. The role of federal, state, and local government in social welfare. Laws, policy formulation, administration, and current issues will be examined.
- SOC 343 The Community and Social Welfare** **Qtr. Hrs. - 3**
PR: SOC 340, 341. The community as a social system in meeting human needs. Emphasis on private agencies, including their organization, functions, interrelationships and coordination with governmental agencies.
- SOC 345 Juvenile Delinquency** **Qtr. Hrs. - 5**
PR: SOC 201, 202. Types of delinquent behavior found among juveniles, possible causes and ways society attempts to treat the various forms of delinquency.
- SOC 346 Criminology** **Qtr. Hrs. - 5**
PR: SOC 201, 202, 345. Chief causes of antisocial behavior and current methods of prevention and reform. Effects of heredity and environment, prevalence of delinquency and crime, penal institutions.
- SOC 348 Sociology of Alcoholism** **Qtr. Hrs. - 3**
Introduction to the nature of alcoholism and review of its impact on society.
- SOC 350 Sociology and the Supreme Court: A Focus for Social Change** **Qtr. Hrs. - 3**
Sociological, economic and political forces giving rise to and resulting from decisions of the Supreme Court.
- SOC 352 Intergroup Conflict and Prejudice** **Qtr. Hrs. - 3**
PR: SOC 201, 202. Causes and consequences of group conflict, with emphasis upon majority-minority relations, prejudice and discrimination, alternative theories of prejudice, the effects of minority status on individuals and possibilities for attitude and behavior change.
- SOC 353 Culture and Personality** **Qtr. Hrs. - 3**
PR: SOC 201, 202. Theories of the variations in personality in relation to culture and group life in tribal and modern societies.

- SOC 354 The Sociology of Adolescence** Qtr. Hrs. - 3
PR: SOC 201, 202. An examination of the transition to adulthood in various societies with primary emphasis on initiation and the contemporary American problems centering around the "adolescent crisis."
- SOC 360 Social Change: A Historical and Theoretical Approach** Qtr. Hrs. - 4
PR: SOC 201, 202. Concerned with the context and essential sources of social development and change.
- SOC 362 Contemporary Woman and Society** Qtr. Hrs. - 3
PR: SOC 201, 202. An introduction to the changing system of the American woman in contemporary society with emphasis on the political, historical, economic, and cultural forces influencing her role.
- SOC 402 Method and Theory in Anthropology** Qtr. Hrs. - 3
PR: SOC 310, 311. Central methodological and theoretical concerns of anthropology in its emergence as a separate discipline and field of study. Cultural evolutionism, diffusionism, historical particularism, functionalism and their role in the development of anthropology.
- SOC 407 The Family** Qtr. Hrs. - 5
PR: SOC 201, 202. The study of the family as a social institution. The family through history, and the family cross-culturally. The modern American family as a distinct social and cultural complex. Changes in the family system. Courtship and marriage.
- SOC 408 Social Change in Developing Areas** Qtr. Hrs. - 4
PR: SOC 201, 202 and one course in statistics. A study of growth problems in the emerging nations of Africa and Latin America.
- SOC 411 Demography** Qtr. Hrs. - 3
PR: SOC 201, 202. Concerned with the study of human population, its distribution, composition and change.
- SOC 412 Field Experience and Seminar** Qtr. Hrs. - 5
PR: SOC 340, 341, 342, 343 and Senior standing. Supervised learning experiences in local social agencies relating theory and academic preparation with practice. Eight hours per week plus two hour weekly seminar.
- SOC 416 Human Ecology** Qtr. Hrs. - 3
Principles governing the spatial distribution of human populations and activities within an area.
- SOC 451 Contemporary Social Movements** Qtr. Hrs. - 3
PR: SOC 201, 202, 231. Causes and effects of various social movements in American society compared to large-scale upheavals throughout the West. Considers various theories of explanation.

SOC	SPA	253
SOC 495 Undergraduate Research Methods	Qtr. Hrs. - 2-5	
PR: Consent of instructor. May be repeated for credit.		
SOC 496 Special Topics	Qtr. Hrs. - 2-5	
PR: Consent of instructor. May be repeated for credit.		
SOC 498 Independent Study	Qtr. Hrs. - 2-5	
PR: Consent of instructor. For graduating seniors in Sociology. May be repeated for credit.		
SOC 499 Undergraduate Research	Qtr. Hrs. - 2-5	
PR: Consent of instructor. May be repeated for credit.		

SPANISH

SPA 101 Elementary Spanish Language and Civilization	Qtr. Hrs. - 3
Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to Spanish culture.	
SPA 102 Elementary Spanish Language and Civilization	Qtr. Hrs. - 3
PR: SPA 101 or equivalent. Continuation of SPA 101.	
SPA 103 Elementary Spanish Language and Civilization	Qtr. Hrs. - 3
PR: SPA 102 or equivalent. Continuation of SPA 102.	
SPA 201 Intermediate Spanish Language and Civilization	Qtr. Hrs. - 3
PR: SPA 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, study of syntax, idiomatic expressions, extensive reading, and further study of Spanish culture.	
SPA 202 Intermediate Spanish Language and Civilization	Qtr. Hrs. - 3
PR: SPA 201 or equivalent. Continuation of SPA 201.	
SPA 203 Intermediate Spanish Language and Civilization	Qtr. Hrs. - 3
PR: SPA 202 or equivalent. Continuation of SPA 202 with greater emphasis on Spanish civilization from the Middle Ages to the present.	
SPA 301 Spanish Composition	Qtr. Hrs. - 4
PR: SPA 203 or equivalent. Development of skills in composition through systematic review of grammar, syntax and development of style. Free and controlled written composition required.	
SPA 303 Spanish Conversation	Qtr. Hrs. - 4
PR: SPA 203 or equivalent. Development of skills in conversation and comprehension through practice and systematic review of phonology and grammatical structure.	

- SPA 311 Survey of Spanish Literature Qtr. Hrs. - 3
PR: SPA 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance and Baroque.
- SPA 312 Survey of Spanish Literature Qtr. Hrs. - 3
PR: SPA 203 or equivalent. Main literary currents and works of the eighteenth and nineteenth centuries.
- SPA 313 Survey of Spanish Literature Qtr. Hrs. - 3
PR: SPA 203 or equivalent. Main literary currents and works from the Generation of 1898 to the present.
- SPA 316 Survey of Latin-American Literature Qtr. Hrs. - 3
PR: SPA 203 or equivalent. Main literary currents and works from the Colonial Period through the struggle for independence.
- SPA 317 Survey of Latin-American Literature Qtr. Hrs. - 3
PR: SPA 203 or equivalent. Main literary currents and works from the second half of the nineteenth century to the present.
- SPA 401 Spanish Phonetics and Diction Qtr. Hrs. - 2
PR: SPA 303 or equivalent. Spanish phonology with emphasis on phonic groupings.
- SPA 421 Golden Age Drama Qtr. Hrs. - 3
PR: SPA 311. A study of the drama of the Golden Age with special emphasis on Lope, Tirso, Alarcon, and Calderon. The controversies on the Spanish theatre and its influence abroad.
- SPA 423 Cervantes Qtr. Hrs. - 3
PR: SPA 311. *Don Quixote*.
- SPA 441 Nineteenth Century Spanish Literature Qtr. Hrs. - 3
PR: SPA 312. Romanticism in Spanish literature.
- SPA 442 Nineteenth Century Spanish Literature Qtr. Hrs. - 3
PR: SPA 312. The realistic and naturalistic novel in Spain.
- SPA 443 The Generation of 1898 Qtr. Hrs. - 3
PR: SPA 313. A study of the Generation's main authors and their works.
- SPA 451 Twentieth Century Spanish Literature Qtr. Hrs. - 3
PR: SPA 313. The contemporary Spanish novel.
- SPA 452 Twentieth Century Spanish Literature Qtr. Hrs. - 3
PR: SPA 313. Contemporary Spanish drama and poetry.
- SPA 497 Undergraduate Seminar Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

SPA 498 Independent Study

Qtr. Hrs. - 2-5

PR: Consent of instructor. May be repeated for credit.

SPEECH**SPE 101 Fundamentals of Oral Communication**

Qtr. Hrs. - 3

Use of the body and voice; participation in various speaking situations; planning, organizing, and delivering public speeches.

SPE 261 English Phonetics and American Dialects

Qtr. Hrs. - 3

Physiological description and visual notation of speech sounds; regional dialects of American English.

SPE 262 Psychology of Oral Communication

Qtr. Hrs. - 3

Psychological principles involved in the communicative process with application to individuals and groups.

SPE 360 Persuasion: Argumentation

Qtr. Hrs. - 4

PR: SPE 101 or consent of instructor. Study and practice in the preparation and delivery of argumentative speeches emphasizing argument, evidence and organization.

SPE 361 Persuasion: Motivation

Qtr. Hrs. - 4

PR: SPE 101 or consent of instructor. A study of motivational factors involved in persuasive speaking to secure belief and action.

SPE 362 Platform Speaking

Qtr. Hrs. - 4

PR: SPE 101 or consent of instructor. Theory and method; training in selecting and organizing materials for various types of speeches; practice in thinking and speaking before an audience; contemporary speeches as examples.

SPE 363 Group Discussion and Interaction

Qtr. Hrs. - 4

Nature of discussion and conference, problem analysis, duties of the participants, function of leader, and participation in various group situations.

SPE 365 Parliamentary Procedure

Qtr. Hrs. - 2

Principles and rules governing participation and leadership in the conduct of informal business meetings.

SPE 366 Speech Composition

Qtr. Hrs. - 4

PR: SPE 101 or consent of instructor. Study and practice in the preparation and delivery of speeches from manuscripts with emphasis on the development of oral style.

SPE 370 Directing Extracurricular Speech Activities

Qtr. Hrs. - 3

Debate, extemporaneous speech and other speech events; selection and training of contestants; interschool and intramural speech activities.

- SPE 371 Speech and Human Relations** Qtr. Hrs. - 3
Introduction to semantics; symbols and meaning and the relationship with human behavior.
- SPE 460 Group Dynamics** Qtr. Hrs. - 4
A study of human behavior in group situations.
- SPE 461 Studies in Modern Oral Communication Theory** Qtr. Hrs. - 4
Comparative study of the approaches of modern oral communication theorists.
- SPE 462 Attitude Formation and Change** Qtr. Hrs. - 4
PR: SPE 360 or consent of instructor. Application of the theory of reasoned discourse: factors involving the change of audience attitudes, and their application in the speaking situation.
- SPE 463 Studies in Listening** Qtr. Hrs. - 4
Analysis of current trends, professional literature, and resource materials bearing upon the teaching of listening in the classroom. Practice in listening; preparing listening experiences; oral and written reports.
- SPE 468 Survey of Rhetoric** Qtr. Hrs. - 5
General Survey: Major rhetorical trends from the classical era to the present. Comparison of Aristotelian and non-Aristotelian rhetorics. Contributions of principal figures will be discussed.
- SPE 469 Language Disorders of Children** Qtr. Hrs. - 3
Study of the facts, concepts, and theories applicable to the bases and diagnoses of language disorders in children.
- SPE 470 History and Criticism of American Public Address** Qtr. Hrs. - 4
Rhetorical criticism of speaking and writing of American statesmen who have had an influence on political, social, and economic milieu of their times.
- SPE 471 History and Criticism of British Public Address** Qtr. Hrs. - 3
Rhetorical criticism of speaking and writing of British statesmen who have had an influence on political, social, and economic milieu of their times.
- SPE 495 Undergraduate Research Methods** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- SPE 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- SPE 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

STATISTICS

STAT 201 Principles of Statistics **Qtr. Hrs. - 4**

A lecture-laboratory course designed to introduce the student to statistical concepts in modern society. An introduction to basic principles, frequency distributions, measures of location and dispersion, probability, probability distributions, statistical inference.

STAT 301 Fundamentals of Probability and Statistics **Qtr. Hrs. - 4**

PR: Four years of high school mathematics or MATH 110 or equivalent.

A lecture-laboratory course designed to introduce students to the ideas of statistical inference and prepare them for other courses in statistics.

STAT 321 Business and Economic Statistics **Qtr. Hrs. - 3**

PR: ECON 203, MATH 115, and one course in statistics. The use of statistical methods as scientific tools in the analysis of economic and business problems. Emphasis is placed on the collection, analysis, and interpretation of quantitative economic and business data. (Same as ECON 321.)

STAT 322 Business and Economic Statistics Laboratory **Qtr. Hrs. - 1**

CR: STAT 321. Use of computers in problem solving for STAT 321. (Same as ECON 322.)

STAT 332 Statistical Quality Control **Qtr. Hrs. - 3**

Statistical concepts and methods applied to the control of quality of manufactured products. (Same as IEMS 332.)

STAT 335 Probability and Statistics for Engineers **Qtr. Hrs. - 3**

PR: MATH 321. Axioms of probability; combinatorial and geometrical probability; probability distributions; measures of location and dispersion; sampling and sampling distributions; estimation and tests of hypotheses; engineering applications. (Same as ENGR 371.)

STAT 341, 342, 343 Mathematical Statistics **Qtr. Hrs. - 3,3,3**

PR: MATH 223 and a course in statistics. Sample space, probability axioms, distribution functions, sampling distributions, point and interval estimation, hypothesis testing, multivariate normal, regression and correlation, linear models, analysis of variance, distribution-free methods, an introduction to stochastic processes.

STAT 401, 402 Statistical Methods **Qtr. Hrs. - 4,4**

PR: One course in statistics or graduate standing. A lecture-laboratory course designed to introduce the student to the role of statistics in research; methods of analyzing data from experiments and surveys; statistical concepts and models; estimation; tests of hypotheses; regression and correlation; analysis of variance and covariance; an introduction to the principles of the statistical design of experiments and surveys.

- STAT 411 Experimental Design** Qtr. Hrs. - 3
 PR: STAT 402. Methods of constructing and analyzing designs for experimental investigations; concepts of blocking, randomization, and replication; experimental unit technique; complete block designs; confounding in factorial experiments; incomplete block designs; response surface methodology.
- STAT 421 Survey Design** Qtr. Hrs. - 3
 PR: STAT 402. Methods of constructing and analyzing designs for survey investigations; simple random, stratified, multistage, and multiphase sampling designs; questionnaire construction; methods of estimation; techniques of survey investigation.
- STAT 435 Probability for Engineers** Qtr. Hrs. - 3
 PR: STAT 335. Combinatorial analysis, sample space, events probability, discrete and continuous random variables, probability distributions with applications in engineering. (Same as IEMS 435.)
- STAT 436 Statistics for Engineers** Qtr. Hrs. - 3
 PR: STAT 335. Significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation with applications in engineering. (Same as IEMS 436.)
- STAT 447, 448 Probability Theory and Applications** Qtr. Hrs. - 3,3
 PR: MATH 321. Axioms of probability, discrete and continuous random variables, characteristic functions, Markov chains, recurrent events, sequences of random variables, random walk, simple stochastic processes.
- STAT 496 Special Topics** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- STAT 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- STAT 498 Independent Study** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.
- STAT 499 Undergraduate Research** Qtr. Hrs. - 2-5
 PR: Consent of instructor. May be repeated for credit.

THEATRE

- THA 180 Study of Drama and Theatre** Qtr. Hrs. - 3
 Nature of drama and the theatre, and basic principles of play analysis.
- THA 220, 221, 222 Theatre Practice I** Qtr. Hrs. - 1,1,1
 Introduction to stagecraft, lighting, properties, costume design. (Laboratory hours to be arranged and practical experience on technical crews as required.)

- THA 230 Interpretation I** **Qtr. Hrs. - 3**
 Analysis of thought; development of imagination; oral presentation of literary forms, individual problems in interpretive reading. (Recommended for students majoring in English and preparing to teach literature.)
- THA 283, 284, 285 Acting I** **Qtr. Hrs. - 1,1,1**
 Study and practical experience in the development of vocal and physical skills in acting. An introduction to mime, pantomime, and improvisation. May be repeated to a maximum of 3 hours credit per course.
- THA 310 History of the Motion Picture** **Qtr. Hrs. - 3**
 Development of the film industry; its social and economic impact. (Same as COM 310.)
- THA 320, 321, 322 Theatre Practice II** **Qtr. Hrs. - 1,1,1**
 PR: THA 220, 221, or 222. Practical experience in designing and operating technical aspects of dramatic productions. (Service on crews is required.)
- THA 330 Interpretation II** **Qtr. Hrs. - 3**
 PR: THA 230 or the equivalent and junior standing. Selecting and abridging literary material for platform use; preparation and presentation of program for special and general occasions.
- THA 331 History of the Theatre: Classic and Renaissance** **Qtr. Hrs. - 3**
 Development of theatre art from the earliest times through the sixteenth century.
- THA 332 History of the Theatre: XVII and XVIII Centuries** **Qtr. Hrs. - 3**
 Development of theatre art from the Renaissance through the neo-classic period to the beginning of the Romantic Movement.
- THA 333 History of the Theatre: XIX and XX Centuries** **Qtr. Hrs. - 3**
 Development of theatre art from the Romantic Period to the modern theatre.
- THA 380 Directing I** **Qtr. Hrs. - 3**
 Fundamental principles of play-directing; demonstrations of theory in group exercises. Each student is required to direct two short scenes for laboratory presentation and criticism. (Laboratory hours to be arranged, and work in departmental productions.)
- THA 381 Scene Design I** **Qtr. Hrs. - 3**
 Study and practice of scene design; perspective drawing, fundamentals of design, and techniques of scene painting. (Service on crews as required.)
- THA 382 Stage Lighting** **Qtr. Hrs. - 3**
 PR: Junior standing. Study of stage lighting techniques, practices, and equipment. (Service on light crew is required.)

- THA 421 Dramatic Theory** **Qtr. Hrs. - 3**
 PR: Consent of instructor. The theory and philosophy of the theatre; analysis of various types of plays, both modern and historical, from the point of view of their production on a stage.
- THA 422 High School Play Directing** **Qtr. Hrs. - 3**
 Introduction to the theory and practice of directing and producing, with particular emphasis upon methods practicable in high school and junior college play production.
- THA 423 Contemporary Theatre and Drama** **Qtr. Hrs. - 3**
 Trends in theatrical production and dramatic literature in Italy, France, Germany, Russia, and the Scandinavian countries.
- THA 424 Principles of Motion Picture Art** **Qtr. Hrs. - 3**
 PR: THA 310 or consent of instructor. Aesthetic consideration of the motion picture as art; critical criteria and stylistic comparisons are established through the viewing of films, reading assignments, and discussion.
- THA 425 Dramatic Criticism** **Qtr. Hrs. - 3**
 PR: Consent of instructor. Analysis of the nature of past and present day criticism of the drama; practical work in such criticism.
- THA 434 Modern Motion Picture Technique** **Qtr. Hrs. - 3**
 PR: THA 310 or consent of instructor. An examination of the techniques of motion picture art; directing, acting, editing, writing, cinematography.
- THA 480 Directing II** **Qtr. Hrs. - 3**
 PR: THA 380. Further theories and techniques of play direction, study of dramatic values, plot structure, style, mood, composition, and directing approach. Each student will direct scenes in class and laboratory and serve as assistant director or stage manager on a major production.
- THA 481 Acting II** **Qtr. Hrs. - 3**
 PR: THA 283, 284, or 285. Study and practical experience in creating roles in plays of different types, style, and period, with emphasis on developing flexibility of actor's equipment. (Laboratory hours to be arranged and work in departmental productions.)
- THA 483 Advanced Scene Design** **Qtr. Hrs. - 3**
 A continuation of THA 381 in which the emphasis is placed on independent planning and execution of a scene design. The student will be expected to work with the production group on a selected production.
- THA 486 American Theatre and Drama: XVIII and XIX Centuries** **Qtr. Hrs. - 3**
 An examination of the social, cultural and economic influences on the American drama and theatre. Trends in theatrical production and dramatic types, Revolutionary Drama, Social Comedy, Romantic Verse Drama, ethnic characters, and Naturalism.

- THA 487 American Theatre: XX Century** **Qtr. Hrs. - 3**
 A continuation of THA 486, with emphasis placed upon the aesthetic and literary development of the theatre in this century. The New Stagecraft, Agitprop Theatre, Federal Theatre, Antiwar Drama, the Absurdist and the avant-garde theatres will be dealt with in detail.
- THA 488 Creative Dramatics and Children's Theatre** **Qtr. Hrs. - 3**
 An introduction to the aesthetical and psychological bases of theatre production for and by young people. The production of children's theatre, play selection, scenery, costumes, management, and touring.
- THA 489 Studies in Oral Interpretation** **Qtr. Hrs. - 3**
 PR: THA 230. Individual oral reading projects; an intensive study of the literature for interpretation.
- THA 496 Special Topics** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- THA 497 Undergraduate Seminar** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.
- THA 498 Independent Study** **Qtr. Hrs. - 2-5**
 PR: Consent of instructor. May be repeated for credit.



ZOOLOGY

- ZOOL 100 General Zoology** **Qtr. Hrs. - 4**
 PR: BIOL 100. Introduction to zoology; structure, function, representative groups; current concepts in zoological sciences. Laboratory illustrates basic principles in zoology.

- ZOOL 220, 221 Comparative Vertebrate Anatomy** Qtr. Hrs. - 4,4
PR: ZOOL 100. The vertebrate animals; relationship of organs and systems; and their phylogenetic significance.
- ZOOL 234 Human Anatomy** Qtr. Hrs. - 5
PR: ZOOL 100. The structure of the human body. Not open to students with credit in ZOOL 220, 221 or equivalent.
- ZOOL 240 Invertebrate Zoology** Qtr. Hrs. - 5
PR: ZOOL 100. Taxonomy, anatomy, and ecology of the invertebrate animals.
- ZOOL 310 Histological Technique** Qtr. Hrs. - 4
PR: ZOOL 100 or consent of instructor. Preparation of tissues for microscopic study; paraffin and cryostat methods; use of microtome; staining procedures; whole mounts.
- ZOOL 320 Comparative Vertebrate Embryology** Qtr. Hrs. - 5
PR: ZOOL 220-221. Embryology of the vertebrates; fertilization of egg; stages of cleavage; development of organs and systems.
- ZOOL 322 Vertebrate Histology** Qtr. Hrs. - 4
PR: ZOOL 100. Anatomy, structure and function of major cell types and tissues.
- ZOOL 330 Animal Physiology** Qtr. Hrs. - 5
PR: BIOL 332 or consent of instructor. Function and interrelationships of nervous, endocrine, muscle, reticulo-endothelial, reproductive, excretory, respiratory, and digestive systems.
- ZOOL 340 Vertebrate Zoology** Qtr. Hrs. - 4
PR: 8 hours of zoology or consent of instructor. Emphasis on evolution and classification followed by an introduction to vertebrate ecology, natural history and behavior.
- ZOOL 345 General Entomology** Qtr. Hrs. - 4
PR: ZOOL 100. Introduction to insects; their identification, biology and ecology.
- ZOOL 355 Game Conservation and Management** Qtr. Hrs. - 3
PR: ZOOL 100. Principles of conservation and management; habitat improvement; wildlife techniques; public relations.
- ZOOL 370 Animal Parasitology** Qtr. Hrs. - 5
PR: ZOOL 100. Identification and life histories of representative parasitic protozoa and helminths emphasizing host-parasite relationships; techniques of animal examination; emphasis on human parasites.
- ZOOL 375 Vertebrate Ethology** Qtr. Hrs. - 3
PR: ZOOL 100. Classical ethology, modern experimental ethology and behavioral ecology are considered.

- ZOOL 440 Principles of Zoological Systematics** Qtr. Hrs. - 2
PR: BIOL 460 and 15 hours or zoology courses of 300-level or above. Theory and practice of taxonomy and classification of animals; introduction to the International Code of Zoological Nomenclature.
- ZOOL 445 Ichthyology** Qtr. Hrs. - 4
PR: ZOOL 340 or consent of instructor. Introduction to the biology of the fishes, their classification, evolution, and life histories.
- ZOOL 446 Herpetology** Qtr. Hrs. - 4
PR: ZOOL 340 or consent of instructor. Introduction to the biology of the amphibians and reptiles, their classification, evolution, and life histories.
- ZOOL 447 Ornithology** Qtr. Hrs. - 4
PR: ZOOL 340 or consent of instructor. Introduction to the biology of birds, their classification, evolution, and life histories.
- ZOOL 448 Mammalogy** Qtr. Hrs. - 4
PR: ZOOL 340 or consent of instructor. Introduction to the biology of mammals, their classification, evolution, and life histories.
- ZOOL 450 Fishery Biology** Qtr. Hrs. - 4
PR: BIOL 450 and ZOOL 445. Life histories, distribution, and identification of freshwater game fishes of North America with particular emphasis on the southeastern United States; interrelationship of biology and management.
- ZOOL 452 Lake and Stream Management** Qtr. Hrs. - 4
PR: ZOOL 450. The ecology of freshwater fishes; techniques of aquatic research.
- ZOOL 453 Zoogeography** Qtr. Hrs. - 3
PR: BIOL 350, 351. Principles and concepts concerning regional patterns of distribution of the animals of the world, both past and present.
- ZOOL 473 Medical Entomology** Qtr. Hrs. - 4
PR: ZOOL 345. A consideration of the recognition characteristics, biology, and control of insects and other arthropods of importance to the health of man, livestock and wildlife.
- ZOOL 496 Special Topics** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ZOOL 497 Undergraduate Seminar** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ZOOL 498 Independent Study** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.
- ZOOL 499 Undergraduate Research** Qtr. Hrs. - 2-5
PR: Consent of instructor. May be repeated for credit.

FACULTY

ABBOTT, DAVID W. (1969), B.A., M.S., Ph.D. (University of Massachusetts) — *Chairman, Department of Psychology and Associate Professor of Psychology*

ADICKS, RICHARD R., JR. (1968), B.A.E., M.A., Ph.D. (Tulane University) — *Associate Professor of English*

ALLEN, GEORGE E. (1968), B.S., M.A., Ph.D. (Mississippi State University) — *Professor of Biological Sciences*

ALLEN, WILLIAM D. (1969), A.A., B.Sc., M.S.W., Ph.D. (Ohio State University) — *Professor of Sociology*

ANDERSON, B. BETTY (1968), A.A., B.A., M.A., Ed.D. (University of Maryland) — *Assistant Professor of Education*

ANTHONY, JOBY M. (1970), B.S., M.A.M., Ph.D. (North Carolina State University) — *Assistant Professor of Mathematical Sciences*

ARMSTRONG, JOHN H. (1970), B.S., M.S. (Oklahoma State University) — *Assistant Professor of Education*

ARMSTRONG, LEE H. (1968) A.A., B.A., M.S. (Florida State University) — *Assistant Professor of Mathematical Sciences*

ARNOLD, ROBERT L. (1968), B.A., M.A., Ph.D. (Ohio University) — *Associate Professor of Communication*

ASBURY, LEONE J. (1969), B.S. (University of Tampa) — *Instructor, General Studies*

BAKER, GRAEME L. (1968), B.S., M.S., Ph.D. (Montana State University) — *Chairman, Department of Chemistry and Professor of Chemistry*

BALDWIN, VANIAH H., JR. (1970), B.S., M.S. (University of Alabama) — *Assistant Professor of Engineering*

BARNES, BETH W. (1968), B.A., M.A. (University of South Florida) — *Assistant Professor of English*

BARR, MURRAY P. (1968), B.S., M.S. (Adelphi University) — *Assistant Professor of Mathematical Sciences*

BAUER, CHRISTIAN S., JR. (1970) B.S.I.E., M.S.E. (University of Florida) — *Assistant Professor of Engineering*

BEADLE, JAMES S. (1968), B.S., M.A., Ph.D., (Michigan State University) — *Associate Professor of Education*

BECK, JAMES K. (1970), B.S.A.E. (Purdue University) — *Instructor of Engineering*

BERGSTROM, STANFORD E. (1970), B.A., M.A. (University of California) — *Instructor of Foreign Languages*

BERRY, WALDRON (1970), B.S., A.M., M.B.A. (Indiana University) — *Assistant Professor of Business Administration*

- BLEDSON, ROBERT L.** (1968), A.B., M.A. (University of Florida) — *Assistant Professor of Political Science*
- BLOCK, DAVID L.** (1968), B.S., M.S., Ph.D. (Virginia Polytechnic Institute) — *Assistant Dean, College of Engineering and Associate Professor of Engineering*
- BOLEMON, JAY S.** (1968), B.S., Ph.D. (University of South Carolina) — *Assistant Professor of Physics*
- BOLTE, JOHN R.** (1968), B.A., M.A., Ph.D. (State University of Iowa) — *Associate Dean for Academic Affairs and Professor of Physics*
- BOPP, WILLIAM J.** (1970), A.A., B.A., M.A. (University of California) — *Assistant Professor of Sociology*
- BRENNAN, JOHN J.** (1968), B.S., M.S., Ph.D. (Georgia Institute of Technology) — *Assistant Professor of Physics*
- BRIGHAM, ROBERT C.** (1970), B.S., M.S. (New York University) — *Assistant Professor of Mathematical Sciences*
- BROPHY, JAMES C.** (1969), B.A., Ph.D. (Vanderbilt University) — *Assistant Professor of Psychology*
- BROWNE, ROLAND A.** (1968), B.A., M.A., C.E.F. (Queen's University, Canada) — *Associate Professor of English*
- BRUMBAUGH, DOUGLAS K.** (1969), B.S., M.Ed., Ed.D. (University of Georgia) — *Assistant Professor of Education*
- BUCHANAN, RAYMOND W., JR.** (1970), B.A., M.A., Ph.D. (Louisiana State University) — *Assistant Professor of Communication*
- BUDINA, JOHN W., JR.** (1968), A.B., M.B.A., Ph.D. (St. Louis University) — *Associate Professor of Finance*
- BURROUGHS, WAYNE A.** (1969), B.A., M.A., Ph.D. (University of Tennessee) — *Assistant Professor of Psychology*
- CAPEHART, BARNEY L.** (1969), B.S.E.E., M.E., Ph.D. (University of Oklahoma) — *FTU Assistant Professor of Engineering Courtesy Appointment; Assistant Professor of Industrial and Systems Engineering, University of Florida, GENESYS — Orlando*
- CARRIERE, RONALD A.** (1969), B.A., M.A. (San Francisco State College) — *Instructor of Sociology*
- CARR, MAXINE F.** (1970), A.B., M.A. (Appalachian State University) — *Instructor of Education*
- CERVONE, ANTHONY V.** (1968), B.A., Ph.D. (St. Louis University) — *Chairman, Department of Foreign Languages and Associate Professor of Foreign Languages*
- CHARBA, JULIUS F.** (1969), B.S., M.S., Ph.D. (Washington State University) — *Assistant Professor of Biological Sciences*
- CHESNUT, THOMAS L.** (1969), B.S., M.S., Ph.D. (Mississippi State University) — *Assistant Professor of Biological Sciences*
- * **CLAPP, DAVID E.** (1969), B.S.C.E., M.S.E. (Arizona State University) — *Assistant Professor of Engineering*

- CLARKE, WENTWORTH (1970), B.S., M.S., Ed.D. (University of Nebraska) — *Associate Professor of Education*
- CLARK, EUGENE A. (1969), Ph.B. (Marquette University) — *Instructor of Education and Head Basketball Coach*
- CLAUSEN, CHRIS A. III (1969), B.S., Ph.D. (Louisiana State University) — *Assistant Professor of Chemistry*
- CLELAND, TROY S. (1969), B.S., M.S., Ph.D. (Florida State University) — *Assistant Professor of Education*
- COMBS, HOMER C. (1968), A.B., M.A., Ph.D. (Northwestern University) — *Assistant Dean, College of Humanities and Fine Arts and Professor of English*
- COMISH, NEWEL W. (1968), B.S., M.S., Ph.D. (Ohio State University) — *Professor of Business Administration*
- COUCH, JAMES E. (1970), B.S., M.S. (Florida State University) — *Assistant Professor of Communication*
- COWGILL, ROBERT G. (1969), B.S., M.A., Ph.D. (Indiana State University) — *Assistant Dean, College of Education and Associate Professor of Education*
- CRAIG, ALBERT T. (1970), B.S., M.A., M.A.E., Ed.D (Florida State University) — *Professor of Education*
- CUNNINGHAM, GLENN N. (1969), B.S., M.S., Ph.D. (North Carolina State University) — *Associate Professor of Chemistry*
- D'AUGUSTINE, CHARLES H. (1968), B.S., M.A., Ph.D. (Florida State University) — *Associate Professor of Education*
- DIPIERRO, JOHN C. (1970), A.B., M.A. (University of Kansas) — *Assistant Professor of Foreign Languages*
- DOERING, ROBERT D. (1969), B.E.M.E., M.S.C.E., M.S.I.E., Ph.D. (University of Southern California) — *Associate Professor of Engineering*
- DONNELLY, JEROME J. (1970), A.B., M.A., Ph.D. (University of Michigan) — *Assistant Professor of English*
- DUTTON, ARTHUR M. (1968), B.S., Ph.D. (Iowa State University) — *Chairman, Department of Mathematical Sciences and Professor of Mathematical Sciences*
- DZIUBAN, CHARLES D. (1970), A.A.S., B.S., M.Ed. (University of Miami) — *Assistant Professor of Education*
- EDELMAN, ROBERT I. (1970), B.A., M.S., Ph.D. (Florida State University) — *Associate Professor of Psychology*
- EDWARDS, THOMAS C. (1970) B.S.M.E., M.S.M.E., Ph.D. (Purdue University) — *Assistant Professor of Engineering*
- EHRHART, LLEWELLYN M. (1969), A.B. (Franklin and Marshall College) — *Assistant Professor of Biological Sciences*
- ELLIS, LESLIE L. (1968), B.S., M.S., Ph.D. (University of Oklahoma) — *Dean of Graduate Studies and Research and Professor of Biological Sciences*

- ERICKSON, ERNEST E. (1969), B.E.E., M.S.E., Ph.D. (University of Florida) — *Associate Professor of Engineering*
- ESLER, WILLIAM K. (1968), B.A.Ed., M.A.Ed., Ph.D. (Kent State University) — *Associate Professor of Education*
- EVANS, RONALD D. (1968), B.S., M.N.S., M.S., Ph.D. (Arizona State University) — *Chairman, Department of Mechanical Engineering and Aerospace Sciences and Associate Professor of Engineering*
- EYFELLS, JOHANN K. (1969), B.Arch., M.F.A. (University of Florida) — *Assistant Professor of Art*
- FALCONER, DAVID R. (1969), B.A., M.S., Ph.D. (University of Texas) — *Associate Professor of Mathematical Sciences*
- FARAH, GHAZI T. (1970), B.A., Ph.D. (University of Colorado) — *Assistant Professor of Economics*
- FLICK, ROBERT G. (1968), B.S., M.A., Ph.D. (University of Florida) — *Chairman, Department of Humanities and Professor of Humanities*
- FORD, JERRY D. (1970), B.S., M.Ed. (Stephen F. Austin State University) — *Assistant Professor of Education*
- FOSTER, DERRELL V. (1970), B.S., M.S. (University of Houston) — *Instructor of Mathematical Sciences*
- FRIDAY, RICHARD (1969), B.S., M.S. (Cornell University) — *Instructor of Economics*
- GAMBRELL, CARROLL B., JR. (1967), B.S., M.S.E., Ph.D. (Purdue University) — *Vice President for Academic Affairs and Professor of Engineering*
- GAUDNEK, WALTER (1970), Diploma, M.A., Ph.D. (New York University) — *Assistant Professor of Art*
- GENNARO, ROBERT N. (1969), B.S., M.S. (New Mexico State University) — *Assistant Professor of Biological Sciences*
- GERBER, HOMER C. (1968), B.S., M.A. (University of Illinois) — *Assistant Professor of Mathematical Sciences*
- GERGLEY, GERALD R. (1970), A.A., Ed.B., Ed.M. (State University of New York) — *Instructor of Education*
- GILLILAND, CHARLES E., JR. (1969), B.S., M.S.B.A., Ph.D. (Washington University) — *Dean, College of Business Administration and Professor of Business Administration*
- GOLDSTEIN, ERNST M. (1969) Candidate Chemistry, Dipl. Ing., Ph.D. (Technical University of Berlin) — *Associate Professor of Engineering*
- GRASTY, WILLIAM K. (1968), B.S., M.A., Ph.D. (University of Texas) — *Associate Professor of Communication*
- GREEN, FREDERICK E. (1970), A.A., B.S.Ed., M.S.Ed., Ed.D. (Ball State University) — *Assistant Professor of Education*

- GREEN, HAROLD E. (1968), A.A., B.S., M.Ed., Ed.D. (University of Missouri) — *Associate Director of Education and Resident Professor of Daytona Continuing Education Center*
- GREENE, LAWRENCE R. (1970), B.A., B.L.S., M.A. (University of California) — *Assistant Professor of Humanities*
- GREENHAW, THOMAS D. (1969), A.B., M.A. (Stetson University) — *Instructor of History*
- GROVE, RICHARD S. (1969), A.B., M.A., Ph.D. (University of Missouri) — *Assistant Professor of English*
- GURNEY, DAVID W. (1970), B.A., M.A., Ph.D., (Florida State University) — *Assistant Professor of Education*
- HALL, HARRY O. (1967), B.A., M.Ed., Ed.D. (University of Florida) — *Chairman of Secondary Education and Professor of Education*
- HARDEN, RICHARD C. (1968), B.M.E., B.E.E., M.S.E., Ph.D. (University of Florida) — *FTU Professor of Engineering Courtesy Appointment; University of Florida Resident Director and Professor of Electrical Engineering, GENESYS — Orlando*
- HARROW, THOMAS L. (1970), B.S., M.Ed., Ph.D. (Florida State University) — *Assistant Professor of Education*
- * HARTMAN, J. PAUL (1968), B.S., B.S.C.E., S.M. (Harvard University) — *Assistant Professor of Engineering*
- HAUGHEE, HAROLD J. (1970), B.S., M.S. (Indiana State College) — *Assistant Professor of Education*
- HEINZER, MARTIN N. (1969), B.S., M.S., Ph.D. (Florida State University) — *Assistant Professor of Mathematical Sciences*
- HENDERSON, BILLY J. (1968), B.S., M.S., Ph.D. (University of Georgia) — *Assistant Professor of Physics*
- HERNANDEZ, DAVID E. (1968), B.S., M.S., Ed.D. (Florida State University) — *Chairman, Teaching Analysis and Associate Professor of Education*
- HENLEY, DON E. (1970), B.A., M.A. (North Texas State University) — *Assistant Professor of Biological Sciences*
- HERTEL, GEORGE R. (1968), B.S., M.S., Ph.D. (Johns Hopkins University) — *Associate Professor of Chemistry*
- HICKS, ROBERT E. (1968), B.S., M.A., Ph.D. (Ohio State University) — *Acting Chairman, Department of Economics and Finance and Associate Professor of Economics*
- HITT, FRANKLIN J. (1969), B.S., M.B.A. (Ohio State University) — *Assistant Dean, College of Business Administration and Assistant Professor of Business Administration*
- HOOVER, BASIL (1969), A.B., M.A., Ed.D. (University of Florida) — *Assistant Professor of Education*
- HOTALING, EDWARD R., JR. (1969), B.M., Ph.D. (Northwestern University) — *Assistant Professor of Humanities*

- HUGHES, MELVIN E. (1970), B.S., M.A. (Stetson University)
— *Instructor of History*
- HUMPHREY, ROBERT H. (1967), B.A., M.A., Ed.D. (University of Missouri) — *Dean of Continuing Education*
- HUNTER, RICHARD D. (1967), B.S., M.A. (University of Notre Dame) — *Associate Professor of Education*
- HURST, JOHN W. (1968), B.S., M.M. (University of South Carolina) — *Assistant Professor of Mathematical Sciences*
- IDOUX, JOHN P. (1970), B.A., M.S., Ph.D. (Texas A&M University) — *Assistant Professor of Chemistry*
- INGRAM, JOHN A. (1969), B.S., M.S., Ph.D. (Iowa State University) — *Associate Professor of Mathematical Sciences*
- JACKSON, LELAND H. (1968), B.A., M.A., Ph.D. (Texas Christian University) — *Chairman, Department of History and Associate Professor of History*
- JENKINS, DAVID R. (1969), B.S.C.E., M.S.E.M., Ph.D. (University of Michigan) — *Associate Professor of Engineering*
- JERVEY, WILLIAM H., JR. (1970), B.B.A., M.A., Ph.D. (University of Arizona) — *Assistant Professor of Political Science*
- JONES, ROY C., JR. (1969), B.S., M.S., Ph.D. (Western Reserve University) — *Assistant Professor of Mathematical Sciences*
- JUGE, FRANK E. (1968), B.S., Ph.D. (University of Arkansas) — *Assistant Dean, College of Natural Sciences and Associate Professor Chemistry*
- KALLINA, EDMUND F., JR. (1970), B.A., M.A., Ph.D. (Northwestern University) — *Assistant Professor of History*
- KASSIM, HUSIAN (1970), B.A., M.A., I.LLB, Ph.D (University of Bonn) — *Assistant Professor of Humanities*
- KERSTEN, ROBERT D. (1968), B.S., M.S., Ph.D. (Northwestern University) — *Dean, College of Engineering and Professor of Engineering*
- KISSEL, BERNARD C. (1968), A.S., B.A., M.A., Ph.D. (University of Michigan) — *Dean, College of Social Sciences and Professor of Communication*
- KLAGES, WALTER J. (1970), B.S., M.S., Ph.D. (University of Alabama) — *Associate Professor of Economics*
- KREBS, JOSEPH E., JR. B.B.A, M.B.A. (University of Miami) — *Assistant Professor of Business Administration*
- KRENN, HANS (1970), Ingenieur, Diploma (Akademie der Bildenden Kuenste) — *Assistant Professor of Art*
- KUHN, DAVID T. (1970), B.A., M.S., Ph.D. (Arizona State University) — *Assistant Professor of Biological Sciences*
- KUJAWA, FRANK B. (1969), B.A., Ph.D. (Johns Hopkins University) — *Assistant Professor of Geology*

- KYSILKA, MARCELLA L. (1969), B.S.Ed., M.Ed., Ph.D. (University of Texas) — *Assistant Professor of Education*
- LAIRD, ROBERT J. (1970), B.S., R.P.T., M.S. (Texas A&M University) — *Assistant Professor of Allied Health Sciences*
- * LEFFLER, PAUL W., JR. (1968), B.Ed., M.Ed. (Florida Atlantic University) — *Instructor of Education*
- LEVENSOHN, STEPHEN B. (1969), B.A., M.A., Ph.D. (Florida State University) — *Associate Professor of Humanities*
- LINDENBERG, KLAUS W. (1970), B.S.E., B.S., M.S. (Northwestern University) — *Assistant Professor of Engineering*
- LOTZ, STEVEN D. (1968), B.A., M.F.A. (University of Florida) — *Assistant Professor of Art*
- LYTLE, ERNEST J. (1968), B.S., M.A., Ph.D. (University of Florida) — *Professor of Mathematical Sciences*
- MADSEN, BROOKS C. (1970), B.S., M.S., Ph.D. (Ohio University) — *Assistant Professor of Chemistry*
- MAHAFFEY, JOHN D., JR. (1968), B.S., J.D. (University of Florida) — *Assistant Professor of Business Administration*
- MALLUE, HENRY E., JR. B.S.B.A., J.D. (University of Florida) — *Visiting Instructor in Business Law*
- MANN, MARSHALL J. (1968), B.A., M.A., Ph.D. (Texas A&M University) — *Assistant Professor of Biological Sciences*
- * MANESS, NORMA G. (1968), B.A., M.A. (University of Miami) — *Assistant Professor of English*
- MANNING, PATRICIA C. (1970), B.S., M.Ed. (University of Florida) — *Instructor of Education*
- MARTIN, ROBERT D. (1967), B.S., A.M., M.A., Ed.D. (Duke University) — *Chairman, Elementary Education and Professor of Education*
- MATHEWS, BRUCE E. (1969), B.E.E., M.S.E., Ph.D. (University of Florida) — *Professor of Engineering*
- MATTSON, GUY C. (1969), B.S., Ph.D. (University of Florida) — *Professor of Chemistry*
- MAYS, DAVID D. (1968), M.A., Ph.D. (Tulane University) — *Associate Professor of Theatre*
- McALEER, GORDON (1969), B.B.A., M.S. (Northern Illinois University) — *Assistant Professor of Business Administration*
- McCARTER, ED R. (1969), B.S.E.E., M.S.E.E., Ph.D. (Oklahoma State University) — *Associate Professor of Engineering*
- McCOWN, J. ROBERT, JR. (1969), B.A., M.A. (University of California) — *Assistant Professor of English*
- McGEE, WILLIAM W. (1968), B.S., M.S., Ph.D. (University of Florida) — *Associate Professor of Chemistry*

- McLAIN, J. NANNETTE (1968), B.S., M.Ed., (University of Georgia) — *Assistant Professor of Education*
- McLELLON, WALDRON M. (1969), B.S., B.C.E., M.C.E., M.S.(Physics), M.S. (Env. Engr.), Ph.D. (Rensselaer Polytechnic Institute) — *Chairman, Department of Civil Engineering and Environmental Sciences and Professor of Engineering*
- McREYNOLDS, MARY JAYNE (1970), B.S.Ed., Ed.D., (University of Florida) — *Assistant Professor of Education*
- MEESKE, MILAN D. (1970), B.A., M.A., Ed.D. (University of South Mississippi) — *Assistant Professor of Communication*
- MERRITT, KING, JR. (1970), B.B.A., M.Ed. (Mississippi College) — *Assistant Professor of Education*
- MEYER, W. BRUCE (1969), B.S., M.S. (Indiana State University) — *Instructor of Communication*
- MICARELLI, CHARLES N. (1967), B.A., M.A., Ph.D. (Boston University) — *Dean, College of Humanities and Fine Arts and Professor of Foreign Languages*
- MILLER, C. C. (1967), B.A., M.Ed., Ed.D. (Florida State University) — *Dean, College of Education and Professor of Education*
- MILLER, ERNEST E. (1968), B.S., M.S., Ed.D. (University of North Dakota) — *Chairman, Business-Vocational Education and Associate Professor of Education*
- MILLER, HARVEY A. (1970), B.S., M.S., Ph.D. (Stanford University) — *Chairman, Department of Biological Sciences and Professor of Biological Sciences*
- MYRICK, JUSTIN A. (1969), B.S.A.E., M.S.A.E. (New York University) — *Assistant Professor of Engineering*
- NEWMAN, SAMUEL L. (1970), B.E., M.B.A. (Florida State University) — *Assistant Professor of Business Administration*
- NIMMO, BRUCE G. (1970), B.M.E., M.S., Ph.D. (Stanford University) — *Assistant Professor of Engineering*
- NORMAN, EDWARD (1969), B.S., Ph.D. (Cornell University) — *Associate Professor of Mathematical Sciences*
- OELFKE, WILLIAM C. (1969), B.S., Ph.D. (Duke University) — *Assistant Professor of Physics*
- O'HARA, PATRICK J. (1969), B.S., M.S., Ph.D. (University of Miami) — *Assistant Professor of Mathematical Sciences*
- O'KEEFE, M. TIMOTHY (1968), B.A., M.A., Ph.D. (University of North Carolina) — *Assistant Professor of Communication*
- OMANS, STUART E. (1968), B.A., M.A., Ph.D. (Northwestern University) — *Assistant Professor of English*
- OSTLE, BERNARD (1967), B.A., M.A., Ph.D. (Iowa State University) — *Dean, College of Natural Sciences and Professor of Mathematical Sciences*

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- PATZ, BENJAMIN W.** (1969), B.E.E., M.E.E., Ph.D. (Carnegie-Mellon University) — *Associate Professor of Engineering*
- PAYAS, ARMANDO** (1969), J.D., B.A., M.A., Ph.D. (Florida State University) — *Assistant Professor of Foreign Languages*
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