FLORIDA TECHNOLOGICAL UNIVERSITY
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.

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ACCENT ON THE INDIVIDUAL and ON EXCELLENCE

Florida Technological University is an Equal Opportunity Employer, and assures equal access to educational programs and activity opportunities without regard to race, sex, age, or national origin.

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This public document was promulgated at an annual cost of $37,287.60 or $.93219 per copy to acquaint the student with the program of study and the cost of attending the university.
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Carol P. Wilson, M.B.A., Dean of Women
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Ken H. Renner, M.P.H., Director of Intramurals and Recreation.
Edward W. Stoner, M.D., Director of Student Health Service
David A. Tucker, Ph.D., Director of Developmental Center
WHERE TO GO FOR ANSWERS

AD — Administration Building
LR — Library Building
RH — Residence Hall
VC — Village Center

questions regarding place to call phone office location
Academic Matters Academic Advisor 2531 AD 165
Academic Status Registrar 2531 AD 165
Admission, Graduate or Undergraduate Admissions 2511 AD 165
Add, Drop, or Change Registrars 2531 AD 165
Courses
Books, Supplies, and Sundry Items Bookstore 2500 LIB B-3
Borrowing Books from another Library Library 2561 LIB 4th floor
Cashing a Check Cashier 2881 AD 108 & 109
Checking out Books Library 2580 LIB 1st floor Desk
Checking out Phonograph Records Library 2571 LIB 4th floor

CLEP Credits Academic Advisor 2766 V.C. 134
Clubs & Organizations Director for Student Organizations 2766 V.C. 134
Cooperative Education COOP Office 2314 AD 118
Credit by Exam Dean of College 2314 AD 118
Dead Auto Battery University Police 2421 Bld. 17
Equipment Checkout P.E. & VC Game Room 2391 P.E. 101
Extramural Programs 2312 V.C. 185
Extravagant
Extramural Office 2766 V.C. 201
Family Planning Student Health Office 2701 V.C.
Graduation: Application Registrar 2531 AD 165
Fees Cashier 2881 AD 108, 109
Cap & Gown Bookstore 2500 LIB B-3
Positions Placement Office 2361 AD 225
Course Checkout Student Advisor 2701 V.C.
Health Insurance Student Health Serv. 2701 V.C.
Help with Reading, Speech, and Hearing Developmental Center 2811 RH-C 116
Housing Housing Office 2831 V.C. Main Lobby
Illness Student Health Serv. 2701 V.C.
Identification Cards Registrar 2531 AD 165
Intramural Intramural Office 2408 V.C. 142
Junior College Relations Academic Affairs 2231 AD 350
Loans, Scholarships, Student Financial Aid 2827 AD 282
& Grants Village Center 2611 Main Desk
Lost and Found V.C. Director 2117 V.C. 198
Meeting Rooms Student Government 2191 V.C. 206
Opportunities for Student Involvement
Organizing a Club Student Affairs 2766 V.C. 134
Orientation Student Affairs 2191 V.C. 205
Paying University Bills Cashier 2881 AD 108, 109
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Placement Center Placement Office 2361 AD 225
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<td>Campus Ministry 273-0610</td>
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<td>Library 2564</td>
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<td>Admissions 2511</td>
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<td>Campus Ministry 273-0610</td>
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<td>Spiritual Counseling</td>
<td>Campus Ministry 273-0610</td>
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<td>Student Government</td>
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<td>Student Government 2191</td>
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<td>University Police 2421</td>
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<td>Transfer Credits</td>
<td>Admission Officer 2511</td>
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<td>Travel &amp; Carpool Information</td>
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<th>Contact Information</th>
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<td>2191 V.C. 206 Dean of Men 2751 AD 277</td>
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<tr>
<td>Public Information</td>
<td>2504 AD 395-F Dean of Women 2824 AD 279</td>
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INTERSTATE 4
FROM JACKSONVILLE AND DAYTONA

TRAVELING WEST on I-4, Exit Route 436 (Altamonte Springs) to FTU Blvd.
TRAVELING EAST on I-4, Exit Route 50 East to Route 520 *

From Intersection of I-4 and Hwy. 50 to Hwy. 520 .......................... 11 Miles
From Intersection of Hwy. 50 and Hwy. 520 to Campus .................... 2 Miles
From Orlando Jetport to Campus ................................................. 70 Miles
From Herndon Airport .................................................................. 2 Miles

* Alternate Routing possible via the Spessard Holland East-West Egreenway (Toll)
# ACADEMIC CALENDAR

## Summer Quarter 1976

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<tr>
<th>Date</th>
<th>Event Description</th>
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<td>MAY 20</td>
<td>Last day for receipt of regular undergraduate and graduate applications</td>
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<tr>
<td>JUNE 3</td>
<td>Last day for receipt of readmission applications</td>
</tr>
<tr>
<td>JUNE 12</td>
<td>Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date</td>
</tr>
<tr>
<td>JUNE 14-17</td>
<td>Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised</td>
</tr>
<tr>
<td>JUNE 17</td>
<td>*Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.</td>
</tr>
<tr>
<td>JUNE 21</td>
<td>Classes begin for Summer Quarter</td>
</tr>
<tr>
<td>JUNE 24</td>
<td>Last day to adjust class schedule (end of Add/Drop)</td>
</tr>
<tr>
<td>JUNE 24</td>
<td>Last day for late registration (late registration runs concurrently with Add/Drop). A $25 fee will be assessed.</td>
</tr>
<tr>
<td>JULY 5</td>
<td>Independence Day holiday</td>
</tr>
<tr>
<td>JULY 6</td>
<td>Classes resume</td>
</tr>
<tr>
<td>JULY 16</td>
<td>Deadline for withdrawal without grade penalty</td>
</tr>
<tr>
<td>AUGUST 13</td>
<td>Last day to withdraw from a course or from the University</td>
</tr>
<tr>
<td>AUGUST 13</td>
<td>Last day to change from credit to audit, if passing</td>
</tr>
<tr>
<td>AUGUST 26</td>
<td>Last day to remove an “I” earned last quarter</td>
</tr>
<tr>
<td>AUGUST 26</td>
<td>Classes end for Summer Quarter. Final exam given at discretion of instructor</td>
</tr>
<tr>
<td>AUGUST 26</td>
<td>Commencement</td>
</tr>
<tr>
<td>AUGUST 31</td>
<td>Grades due in Registrar’s Office</td>
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*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.*
Fall Quarter 1976

AUGUST 16
Last day for receipt of regular undergraduate and graduate applications

AUGUST 30
Last day for receipt of readmission applications

SEPTEMBER 13
Academic year begins

SEPTEMBER 13-16
Orientation and advisement for new freshmen and transfer students not pre-advised

SEPTEMBER 13-16
Advisement of current and former students not pre-advised

SEPTEMBER 13-16
*Registration by appointment for the following student classifications: Graduate, current undergraduate, former undergraduate, new undergraduate, post-baccalaureate and faculty and staff will register following the above appointments. Registration will close after the last appointment

SEPTEMBER 20
Classes begin for Fall Quarter

SEPTEMBER 24
Last day to adjust class schedule (end of Add/Drop)

SEPTEMBER 24
Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

SEPTEMBER 24
Last day for withdrawal with refund

OCTOBER 15
Last day to apply for graduation for Fall Quarter

OCTOBER 15
Deadline for withdrawal without grade penalty

OCTOBER 15
Last day for removing temporary student status

NOVEMBER 19
Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

NOVEMBER 19
Last day to withdraw from a course or from the University

NOVEMBER 25-26
Last day to change from credit to audit, if passing

NOVEMBER 29
Thanksgiving Holidays (University-wide)

DECEMBER 3
Classes resume

DECEMBER 3
Classes end for Fall Quarter

DECEMBER 6-9
Last day to remove an “I” earned last quarter

DECEMBER 10
Final examination period

DECEMBER 11
Commencement

DECEMBER 11
Graduate record exam (at designated examination Centers) Registration for examination must be made 4 weeks prior to this date

DECEMBER 13
Grades due in Registrar’s Office

DECEMBER 13
Christmas holidays begin (students)

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.
Winter Quarter 1977

NOVEMBER 29

Last day for receipt of regular undergraduate and graduate applications

DECEMBER 13

Last day for receipt of readmission applications

JANUARY 3

Orientation and advisement for new freshmen and transfer students not pre-advised

JANUARY 3

Advisement of current and former students not pre-advised

JANUARY 4

*Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.

JANUARY 6

Classes begin for Winter Quarter

JANUARY 11

Last day to adjust class schedule (end of Add/Drop)

JANUARY 11

Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

JANUARY 11

Last day for withdrawal with refund

JANUARY 11

Last day to apply for graduation for Winter Quarter

JANUARY 15

Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

FEBRUARY 1

Deadline for withdrawal without grade penalty

FEBRUARY 1

Last day for removing temporary student status

FEBRUARY 25

Last day to withdraw from a course or from the University

FEBRUARY 25

Last day to change from credit to audit, if passing Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

MARCH 11

Classes end for Winter Quarter

MARCH 11

Last day to remove an "I" earned last quarter

MARCH 14-17

Final examination period

MARCH 18

Commencement

MARCH 19

Grades due in Registrar's Office

* Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.
Spring Quarter 1977

FEBRUARY 21
Last day for receipt of regular undergraduate and graduate applications

MARCH 7
Last day for receipt of readmission applications

MARCH 21-24
Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised

MARCH 24
Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.

MARCH 28
Classes begin for Spring Quarter

APRIL 1
Last day to adjust class schedule (end of Add/Drop)

APRIL 1
Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

APRIL 1
Last day for withdrawal with refund

APRIL 1
Deadline for withdrawal without grade penalty

APRIL 22
Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

APRIL 23
Last day to withdraw from a course or from the University

MAY 20
Last day to change from credit to audit, if passing Memorial Day holiday

MAY 31
Classes resume

JUNE 3
Classes end for Spring Quarter

JUNE 3
Last day to remove an “I” earned last quarter

JUNE 6-9
Final examination period

JUNE 10
Commencement

JUNE 11
Grades due in Registrar’s Office

JUNE 11
Academic year ends

*Resident Center Registration and Add/ Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.
Summer Quarter 1977

MAY 19
Last day for receipt of regular undergraduate and graduate applications

JUNE 2
Last day for receipt of readmission applications

JUNE 11
Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

JUNE 13-16
Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised

JUNE 16
Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.

JUNE 20
Classes begin for Summer Quarter

JUNE 23
Last day to adjust class schedule (end of Add/Drop)

JUNE 23
Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

JULY 4
Last day for withdrawal with refund

JULY 4
Last day to apply for graduation for Summer Quarter

JULY 5
Independence Day holiday

JULY 15
Classes resume

JULY 15
Deadline for withdrawal without grade penalty

AUGUST 8-11
Last day for removing temporary student status

AUGUST 12
Student advisement for Fall Quarter

AUGUST 12
Last day to withdraw from a course or from the University

AUGUST 25
Last day to change from credit to audit, if passing

AUGUST 25
Classes end for Summer Quarter. Final exam given at discretion of instructor

AUGUST 25
Commencement

AUGUST 29
Last day to remove an "I" earned last quarter

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.
STATEMENT OF PURPOSE

Florida Technological University serves the people of Florida by providing undergraduate and graduate education in all general areas of study and in specifically selected technological and professional disciplines.

Baccalaureate degree programs are offered in business administration, education, engineering, general studies, humanities and fine arts, natural sciences, and social sciences. Master's degree programs are offered in each of the six colleges of the University. A Doctoral program is available in education through an agreement with Florida Atlantic University and in engineering through an agreement with the University of Florida.

In addition to offering a broad academic program, FTU serves as a center for research and service in east central Florida.

INSTITUTIONAL PHILOSOPHY

Florida Technological University's philosophy is based upon two tenets: ACCENT ON THE INDIVIDUAL and ACCENT ON EXCELLENCE. The University believes in the individual worth of each person and especially encourages the RESPONSIBLE INDIVIDUAL who strives for EXCELLENCE in every activity.

Research is considered an important part of advanced study and FTU provides students with opportunities for research projects and independent study. Many projects involve community service and opportunities for students to experience real situations while receiving individual guidance from faculty.

Florida Technological University, in order to serve the community better, makes higher education easily available to the citizens of east central Florida by operating off campus resident centers and by offering continuing education and special courses and conferences to the citizens of the area.

EAST CENTRAL FLORIDA AREA

FTU is located in the East Central Florida region with a population estimated at 1.3 million. The area is well endowed with a rich heritage of cultural, educational, industrial, and recreational activities. Cultural activities include a symphony orchestra, civic theatre, dinner theatres, art galleries, and museums. The beauty of the Orlando area is evidenced through its numerous parks and flower gardens. In addition to FTU, educational needs of the area are served through quality public school systems, public junior colleges, and several privately supported colleges and schools. Recreational opportunities abound in the Orlando area.

THE CAMPUS

The campus of FTU, located 13 miles east of downtown Orlando, consists of 1227 acres of land; much of which is covered with pine, palm, cypress, cedar, and oak trees. Lake Claire, covering 40 acres and Lake Lee, covering 14 acres, contribute to the natural beauty
of the campus. Since campus construction began in 1966, approximately $32 million has been invested in facilities and equipment including the library, classroom buildings, laboratories, residence halls, and student facilities. The childcare center was built with funds contributed through the Edyth Bush Charitable Foundation of Winter Park and FTU Student Government. Recreational 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 campus currently serves approximately 10,000 students and growth and progress continue with the construction of an Education Building and Gymnasium.

FTU's four two-story residence halls accommodate 414 students—198 men and 216 women. Two of the residence halls are for women and two are for men. Each suite consists of double bedrooms (a limited number of singles), common living room and bath. Each suite is equipped with functional furnishings, in keeping with the living-study area design, central, heat, air-conditioning and maid service. Each hall has laundry facilities, a vending machine room and a common social/study lounge for residents' use. For more detailed information on campus housing please write to Director of Housing, Florida Technological University, P.O. Box 25,000, Orlando, Florida 32816

RESIDENT CENTERS
Florida Technological University offers a number of upper division and graduate level courses at four off-campus Resident Center locations in Central Florida. These are the same courses as are offered on campus and carry the same credit as on-campus courses. Each center is staffed with a Center Director and full-time faculty. Contact the Resident Centers for information as to the current course and program offerings.
FTU BREvard RESIDENT CENTER
1519 Clearlake Road
Cocoa, Florida 32922
(305) 632-4127
FTU DAYTONA BEACH RESIDENT CENTER
215 South Clyde Morris Boulevard
Daytona Beach, Florida 32014
(904) 255-7423
FTU SOUTh ORLANDO RESIDENT CENTER
7300 Lake Ellenor Drive
Orlando, Florida 32809
(305) 855-0881
CONTINUING EDUCATION AND NONCREDIT ACTIVITIES

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.

The University is offering an increased 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 about Florida Technological University’s Continuing Education programs and noncredit activities may be obtained by writing to the Office of Continuing Education and Conferences, ADM 395-O, Florida Technological University, Post Office Box 25000, Orlando, Florida 32816.

COOPERATIVE EDUCATION

Co-Op is a planned, balanced, education program for students who wish to “blend theory with practice” by combining their campus education with work experience.

The Co-Op Program is based on a format under which the student ordinarily alternates between quarters of study and quarters of employment. The student will be placed with business, industry, or a governmental agency in a work training assignment related to his/her academic field of study.

For further information about the Cooperative Education Program, write to Cooperative Education Office, Florida Technological University, Post Office Box 25000, Orlando, Florida 32816, or visit Suite 118 in the Administration Building.
ACCREDITATION

The graduate and undergraduate programs of the University are accredited by the Southern Association of Colleges and Schools, the official regional accrediting agency for educational institutions in the South.

In addition to the regional accreditation agencies, there are a number of scientific, professional, and academic bodies conferring accreditation in specific disciplines and groups of disciplines. Currently, the following areas have been approved by the agencies indicated: The College of Business Administration is accredited by the American Association of Collegiate Schools of Business (AACSB); Engineering Mathematics and Computer Systems, Environmental, Electrical, Industrial, and Mechanical program options in the College of Engineering by the Engineer’s Council for Professional Engineers Development (ECPD); Medical Record Administration by the Council on Medical Education of the AMA; Respiratory Therapy by the American Registry of Inhalation Therapists (ARIT). All teacher education programs are fully accredited by the Florida State Department of Education.

FTU is listed in Report of Credit Given By Educational Institutions with an "A" Rating which 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.

Chartered in 1968, the FTU Foundation, Inc. is a non-profit, tax-exempt corporation receiving and disbursing private gifts for the betterment of the University as a whole. Its primary function is that of assisting the University financially in the student financial aid program, scholarships, and in institutional development.

Through the leadership of a 36-member Board of Directors, the Foundation encourages, solicits, receives, and administers gifts and bequests of property and funds for scientific, educational and charitable purposes. All for the advancement of Florida Technological University and its objectives.

The Foundation promotes and supports education by providing funds which are not received from public sources.

Contributions are deductible by donors as provided in Section 170 of the Internal Revenue Code.

UNIVERSITY LIBRARIES

Director: Lynn W. Walker, LR 427, Phone, 275-2564

Central to the educational programs at FTU are its libraries. They are designed to provide materials and services to support the instructional and research needs of the university. By providing a wide range of resources and materials at the undergraduate, graduate and research levels, the library helps the student to develop the habit of self-education, supports in depth the teaching program in the subject areas, and aids the individual faculty and research programs of the University.
GENERAL INFORMATION

The library is the focal point of academic activity on campus and all books are placed on open shelves to encourage browsing. The collection now numbers more than 200,000 volumes and is growing at the rate of 20,000 to 25,000 volumes annually. About 4,000 periodical, newspaper and serial publications are received regularly. The FTU Library is unique among American universities in offering not only a variety of newspapers, periodicals and educational research documents on microform, but also a complete catalog of its book collection on microfiche. Small libraries are maintained at the Resident Centers in Cocoa, Daytona Beach, and South Orlando.

The first floor of the Library Building contains an exhibit area, the circulation desk and the Instructional Media Center. The Reference collection, state and federal documents, and interlibrary loan are located on the second floor. On the third floor are found periodicals, microforms, reserve material, and the Technical Services division. The fourth floor contains the general book collection, special collections, administrative offices, and noise room with typewriters for student use. Study areas and photocopying machines for student and faculty use are located on all floors. During the school term the library operates on a full schedule of hours, including evenings and weekends. During vacation periods, a shortened schedule is maintained.

READERS SERVICES

Assistant Director: Bernard L. Foy, LR 312, Phone, 275-2485
Professional Staff: Leonie Y. Black, Elba C. Grovdahl, Phyllis J. Hudson, Elizabeth W. Lloyd, Norbert St. Clair, June S. Stillman

The Readers Services division of the Library is responsible for the circulation of books and materials, development and maintenance of the special collections, and reference services. Competent professional librarians are available at all times in the Reference Department to provide assistance and advice in the use of the library, its materials and services, and instruction in its use. Interlibrary loan service is available to administration, staff, faculty, graduate and undergraduate students.
In an effort to have library services within reach of all its students, the FTU library maintains small collections of about 2,000 books at each of the university's three resident centers, located in Cocoa, Daytona Beach and South Orlando. Subjects of the collections vary depending on the courses offered at each center.

Special services are provided for the handicapped. The microfiche catalog is made available to mobility-impaired students attending FTU and these students may check out microfiche readers for home use. Using the microfiche catalog, students can determine the books they need, and a call to the library will bring books to them at a convenient location on campus. The Florida Bureau of Blind Services has deposited talking book machines and cassette tape players in the library for the use of blind or partially-sighted students, and the library staff assists these students in reference and research projects.

**TECHNICAL SERVICES**

**Assistant Director:** John C. Sanderlin, LR 427, Phone, 275-2564  
**Professional Staff:** Karen A. Hitchcock-Mort, Mary Helen Moritz, Peter C. Rossi

The Technical Services division is in charge of the acquisition, cataloging and processing of all materials in the collection, and maintaining the card catalog. The FTU Library is a charter member of the Southeastern Library Network (SOLINET), which links some 100 libraries in the Southeast via telephone lines and interactive terminals, to a massive data base at the Ohio College Library Center (OCLC) in Columbus, Ohio. Through SOLINET, the FTU Library has access to the collections of all major libraries in the Southeast, as well as other regions which are serviced by OCLC—a total of some 600. When a library catalogs a book, the cataloging information is entered in the computer data base. When another library catalogs the same book, the cataloging information already entered by the previous library can be displayed on a terminal, and catalog cards printed automatically. The network also will show holdings for each of the libraries, making interlibrary loan between the libraries faster and more efficient, and also making it possible to avoid unnecessary duplication.

**INSTRUCTIONAL MEDIA CENTER**

**Director:** Tony M. Logan, LR 139, Phone, 275-2571  
**Media Coordinator:** Dorothy M. Kannon

The primary purpose of the Instructional Media Center is to improve instruction. In meeting both the academic and administrative needs of FTU, the Center provides audiovisual materials and equipment, as well as graphic and photographic services in an effort to bridge the gap between technology and instruction. A wide range of consultative services to aid students and faculty in the fullest possible utilization of its facilities and services is also available.

The Graphics area provides faculty members with the opportunity to have ideas and concepts visualized through the graphic artist's hands. The Photography area assists the faculty member in bringing a broader world into the classroom through the use of black and white and color photographs and slides. A professor, working in conjunction with the graphic designer and photographer has the opportunity to expand the learning experience for students by providing learning materials in the form of original art, photographs, slides, transparencies and other original instructional mediums.
The Campus Services section of Instructional Media is available to all students, faculty and staff who desire to use the media services available. A wide variety of audiovisual equipment, and a wealth of instructional materials such as films, audio tapes, records and filmstrips are available. In addition, a special room for previewing any of these audiovisual materials is available.

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.

During the last three days of each quarter, the Bookstore has a "buy-back" period for used text books. Student I.D. cards must be presented for identification.
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, student organizations, Veterans Affairs 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 upon the indicated desire to enroll at FTU. Each student receives a number of communications from members of the faculty and administration, and subsequently from the student body, containing advice on academic life, student services, and other campus activities. Information is mailed to students indicating the date on which they are to report for orientation. During orientation students meet members of the faculty and administration. They also receive instructional information to facilitate registration.

HOUSING POLICY

I. Regularly enrolled single students paying registration fees for a minimum of nine quarter hours may apply for assignment to University residential units. Priority of assignment is given to current residents and new students admitted in good standing. Any single student applicant to the University may request and submit a Housing application on which he/she requests Housing and Food Service for a specific quarter. Priority of room assignments is based on the date of receipt of the completed application in the Housing Office. Applicants should CAREFULLY READ the application before submitting it with the $25 pre-payment to the Housing Office.

II. ALL HOUSING CONTRACTS ARE FOR HOUSING AND FOOD SERVICE, combining room and board, and requiring each resident student to participate in one (1) of several available meal plans.

INTERNATIONAL STUDENT SERVICES

The Division of Student Affairs offers basic services for students from other nations. These services include pre-arrival information, assistance in locating housing, counseling on personal, financial, and
cross-cultural communication matters, referral to appropriate University and community agencies for needed services, liaison with the Immigration and Naturalization Service, and other matters that occur from time to time. Contact the Student Affairs Office, Administration Building, 2nd floor, for further information.

**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 Student Health Service is maintained on an outpatient basis for routine and emergency health needs, to promote health education, and to protect the Student Body from communicable diseases. The Service is staffed by medical doctors and registered nurses when classes are in session. Medical care in the students' living quarters is not provided. Every health fee paying student is entitled to the benefits outlined in the Health Service brochure. Except for Workman's Compensation cases, faculty and staff will be seen only for emergency first aid on a fee for service basis.

Blood is available for students, staff, faculty and their immediate families by notifying the Student Health Services of such need.

Medical records are confidential communications and will be treated as such in so far as the law permits.

In the event of an on-campus emergency, contact University Police for assistance to the Student Health Service.

**STUDENT FINANCIAL AID**

**PURPOSE**

Florida Technological University subscribes to the principle that the purpose of financial aid is to provide assistance to students who, for lack of funds, would otherwise be unable to attend college. Financial aid is awarded according to each individual's need in relation to college costs. Awards may come from one or any combination of the following: scholarships, grants, loans, and part-time employment. Our financial aid staff is dedicated to the principle that each student should receive personal attention with complete confidentiality. Every effort is made to provide financial counseling by experienced, considerate personnel.

**APPLICATION**

Each student desiring to receive student financial assistance must annually submit a separate Florida Technological University Student Financial Aid Application. For information or an application, please contact Florida Technological University's Student Financial Aid Office or your counselor's office if attending school in Florida. For your application to be considered on time, you must submit it between December 15 and May 1 for the academic year beginning the following September. All applications received after May 1 will be accepted conditionally. In addition to the FTU application, parents or guardians or the independent student must complete a financial statement. Upon completion, this statement should be mailed directly to the College Scholarship Service or the American College Testing Service. The fact that a student is married does not preclude parental support. These forms may be obtained from your high school or junior college counselor or from this office. Receipts of an award
does not automatically renew an application for subsequent years. Consideration for assistance is based on availability of funds and the parents' or student's financial condition. The amount of available funds from federal, state, and local sources is not always known, therefore, some awards are extended on a tentative basis initially. If you receive assistance from sources other than the Student Financial Aid Office, your award may be adjusted. Applicants who fail to notify this office of assistance from other sources are subject to complete withdrawal of aid.
ESTIMATED 1976-77 STUDENT BUDGETS

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* Upper level students, add $23/quarter
OUT-OF-STATE FEES: additional $37 per credit hour for lower level courses, $47 per credit hour for upper level courses
** Each additional dependent: $750

FINANCIAL ASSISTANCE PROGRAMS
Available at Florida Technological University

LOANS

FEDERALLY INSURED STUDENT LOAN PROGRAM (GUARANTEED STUDENT LOAN PROGRAM): This federally sponsored program provides insurance for long-term, low interest loans made by authorized lenders such as banks, savings and loan associations, credit unions, pension funds and insurance companies. The maximum loan available for undergraduate or vocational students is $2000 per academic year or $7500 during the undergraduate studies and $10,000 for graduate studies. Any student whose adjusted family income is less than $15,000 will automatically qualify for federal interest benefits. However, the maximum loan may never exceed the cost of education less other financial aid received. For students eligible for interest benefits, the federal government will pay to the lender the total interest due prior to the beginning of the repayment period. Applications for this loan may be obtained from the Student Financial Aid Office.

FLORIDA INSURED STUDENT LOAN PROGRAM: This combined State of Florida, federal government program provides long-term, insured loans to students who have made application through the Student Financial Aid Office and have adjusted family incomes of less than $15,000. The maximum amount of a loan for an academic year is $2000. Applicants must be U.S. citizens and must have been bona fide residents of Florida for one year. Students must be admitted to FTU in good standing and must maintain normal progress.

LAW ENFORCEMENT EDUCATIONAL LOAN PROGRAM: Applicants who are full-time in-service law enforcement officers and who are majoring in Criminal Justice, may apply for these long-term loans which carry a 7% simple interest rate per annum which are repayable over a maximum of a 10 year period. Service as a full-time officer or employment with a public funded law enforcement agency will cancel the principal amount of the loan plus interest at the rate of 25% per annum for each completed year of employment in law enforcement. The student must complete the following application forms available from the Financial Aid Office: Faculty-advisor interview certification, FTU application for financial aid, and the LEEP 3 student note.
NATIONAL DIRECT STUDENT LOAN PROGRAM: This provides a long-term, low interest (3% simple interest) program of loans to students admitted to the university who show proven financial need and remain in good standing. All recipients of this loan are required to arrange an exit interview with the University Student Loan Officer during their last quarter at the University. Payment of these funds begins twelve months after attending classes for at least half time study, and may extend over a ten year period. Assignment in the Armed Service, Peace Corps or Vista lasting up to three years, allows deferment for repayment of principal and interest.

STUDENTS REGENT FEE LOAN: This long-term, low interest (3% simple interest) loan, authorized by the Board of Regents, utilizes student fees and is administered by the Financial Aid Office. Students who have a proven financial need are eligible to apply for these funds. Repayment must begin six months after the borrower graduates or ceases to be a full-time student.

GENERAL STUDENT AID LOAN: This short-term loan (1 to 6 months) provides assistance to students who have an interim financial aid problem (i.e. Florida Insured Student Loan application in process or V.A. claim problems). Payment is to be made on the due date as stated on the loan contract.

SCHOLARSHIPS

There are basically four categories of scholarships which are processed through the Student Financial Aid Office:

COLLEGE AWARDED SCHOLARSHIPS: The individual colleges assign funds to enrolled students according to GPA or contribution to the college. Application should be made through the department and/or dean.

CONCURRENTLY AWARDED SCHOLARSHIPS: These require a student to have financial need and to be enrolled in a specific study area. Application may be made through Student Financial Aid, however, the final choice is usually made by the donor.

STUDENT FINANCIAL AID AWARDED SCHOLARSHIPS: These funds are assigned to Student Financial Aid for awarding on a general basis to students with a proven financial need. Application requires either a Parent's Confidential Statement or a Student Financial Statement.

AGENCY AWARDED OR INSTITUTIONALLY AWARDED SCHOLARSHIPS: These scholarships are awarded by various business firms and community organizations. The Student Financial Aid Office is responsible for disbursing the funds as required by the donor. Application must be made directly to the agency or institution which offers the scholarship.

GRANTS

BASIC EDUCATIONAL OPPORTUNITY GRANT PROGRAM: This federal program provides assistance to financially needy students. Under current law, the maximum awarded funds under this program cannot exceed $1400, minus the amount you and your family can contribute toward the cost of education. A minimum grant of $200 may be awarded to eligible students. Availability of the funds for the program, the family contribution and the cost of the student's educa-
tion determine the amount of the grant, which cannot exceed one-half the cost of the student's education. Application forms are available in the student Financial Aid Office.

**FLORIDA STUDENT ASSISTANCE GRANT:** This grant program, sponsored by the State of Florida, is designed to provide assistance for qualified students who show exceptional financial need. Priority in making awards from available funds is given to entering freshmen, junior college transfers, and other applicants in the order stated. A separate application and financial need analysis must be processed to the State Department of Education in Tallahassee.

**LAW ENFORCEMENT EDUCATION GRANT:** This grant program, which awards funds to in-service law enforcement officers, may provide funds up to the amount of fees each quarter. It is restricted to students who are majoring in Criminal Justice and have been accepted into the program. Students may be part-time or full-time and do not have to establish financial need as required in most other programs.

**NON-FLORIDA TUITION WAIVER:** Non-Florida residents possessing skills or abilities which comprise a positive contribution to the University environment may have their tuition waived through the Board of Regents. These funds are awarded on a quarterly basis by the individual colleges. Anyone requesting this type assistance should contact the Dean of his college in writing, and complete a general financial aid application.

**SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT PROGRAM:** Qualified students who are of exceptional financial need may receive assistance under this federally funded program. Applicants must need and agree to accept an equivalent amount of matching funds from sources such as scholarships, loans, and employment programs. Applicants must be accepted for enrollment or be in good standing as full-time undergraduate students. The recipients must be U. S. Citizens or must live in the U. S. for other than a temporary purpose, and must intend to become permanent residents. Students under this program must maintain normal progress to be considered for additional funds.

**EMPLOYMENT**

**COLLEGE WORK STUDY PROGRAM:** This federally sponsored student employment program provides funds for students who are enrolled full-time, who show evidence of exceptional financial need and who are capable of maintaining good academic standing while employed under the program. The program is designed to allow students to pay part of their educational expenses by working on campus, up to 20 hours per week, while classes are in session. Subject to availability of funds, students may work up to 40 hours per week during vacation periods and summers.

**ON-CAMPUS PART-TIME EMPLOYMENT (OPS):** This is an institutionally funded work program designed to provide part-time employment on campus, with no prerequisite of financial need. Application for this type employment may be made through the individual departments or the Student Financial Aid Office.

**PLACEMENT CENTER**

Campus interviews and employment contacts are essential aspects
of the Placement Center. The provision of these services requires the development of student personnel files and resumes, therefore, seniors are urged to register with the Placement Center three quarters prior to graduation.

All students are invited to take advantage of the career counseling services offered by the Center, and to avail themselves of off-campus, part-time and summer employment opportunities.

DEVELOPMENTAL CENTER

The Developmental Center offers a professional staff of counselors to aid students in selecting vocational-educational objectives, overcoming learning difficulties, solving problems of personal-social adjustment, developing speech or hearing skills and dealing with marital and other relationship problems. A full range of tests is available along with an occupational library, developmental reading and study skills training, 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 his relationship with others or he might seek to gain additional satisfaction from his learning experiences. Tests are often used 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

Personal development may, in part, be enhanced 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, sponsors a variety of cultural and entertainment programs which will contribute to the student's academic, recreational, and cultural activities. Additionally, ample opportunity to become a member of occupational, professional, social, and honorary organizations is provided. The student plays an important role in determining how much student organizations enhance personal development. It is the desire of the University to appeal to the interests of students and to provide opportunities for students to become acquainted with 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. The Student Senate is composed of representatives from every college and class. 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 opinions and ideas through representative legislators, a student may gain valuable experience in the democratic processes — its freedoms and responsibilities. Students interested in working with the Student Government may obtain information from any member of Student Government or from the Office of Student Affairs. Student Government offices are located in the Village Center.

OFFICES OF DEAN OF MEN AND DEAN OF WOMEN

Students are urged to take advantage of the many services and educational programs available beyond the classroom. These services and programs are provided to facilitate learning and supplement academic instruction. The Dean of Men and Dean of Women are available to help students in their attempts to become familiar with these services and activities and to become involved in educational experiences beyond the classroom. The Dean of Men and Dean of Women plan and assist in the development of University programs that provide for the personal, social, and academic adjustment of students. They counsel students for personal, academic, financial and social problems, and as necessary refer students to specialized, professional services. The Deans are the primary contact for students seeking information or assistance in non-academic areas of university operations.

CHILD CARE CENTER

The Edyth Bush Charitable Foundation, through a grant, has made possible the construction of an on-campus child care center. The child care program is designed as a student service which will enable the University to assist student parents by providing complete child care while parents attend class. The center, staffed by personnel experienced in early childhood development, is available to students in academic programs requiring internships and observations. For further information contact the Office of the Dean of Women.

OFFICE OF VETERANS' AFFAIRS

The Office of Veterans' Affairs is a “one-stop” center for students who are utilizing veterans' educational benefits in order to further their education. The Office has a professional staff augmented by student veterans to assist in providing information concerning entitlements, filing claims to the Veterans Administration, and certifying enrollment at the University. The office also provides information and referral services for personal and academic problems. All veterans
and dependents are urged to contact the office early in the process of applying for admission to FTU.

**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, art gallery, games area and lounge areas where the student may relax during his leisure moments. Offices for 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.

**CAMPUS ATHLETICS**

Intramural Sports, composed of team, dual, and individual competition on campus are organized into leagues representing students, staff, and faculty. Tournaments are conducted to determine top teams in each of a variety of activities with trophies awarded to winners. Sports in the intramural program range from flag football and 3-man basketball for male students to powderpuff football and volleyball for the women. There is a total of 18 sports for men, 12 for women, and seven that pair men and women.

Extramurals as the name implies, are a step up in the sports program. Activities are not limited to on-campus competition and are open to students only. Club teams compete regularly with teams from other campuses in and out of the State of Florida. Each sports program has a qualified coach and also serves as a basis for possible inclusion in FTU’s varsity program. For men, there are cross country, track, soccer, golf, crew, archery, weightlifting and swimming. For women, there are the sports of basketball, swimming, tennis, crew and archery. Additional information on this sports program can be obtained from the Intramural and Extramural Office.
The Intercollegiate Athletic program encompasses five men's varsity sports and two women's varsity sports. Men's teams compete in baseball, basketball, soccer, tennis and wrestling. Women compete in volleyball and softball. At least one of these sports engages in varsity competition during each quarter of the regular academic year. FTU teams compete against some of the leading institutions of the southeast region of the U.S., and have attained national ranking in NCAA Division II competition. Three athletes were honored during the 1974-75 season with Honorable Mention All America athletes in soccer and basketball and a Second Team All-America selection in baseball. FTU is a member of the new Sunshine State Conference.

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, prior to his admission, the circumstances of the case may be reviewed by the appropriate Student Affairs Committee to consider the student's eligibility for admission to the university as well as participation in extracurricular activities.

CLASSROOM RESPONSIBILITY

Students are responsible for maintaining a classroom decorum appropriate to the educational environment. When the conduct of a student or group of students varies from acceptable standards to such an extent that normal classroom procedures are interfered with, the instructor has the authority to remove the offending party from the room.
**SCHEDULE OF FEES**

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. Failure to pay fees on or before due date can result in a $25.00 late registration fee.

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 for campus, centers, and continuing education courses.

<table>
<thead>
<tr>
<th>Division</th>
<th>Resident per hr.</th>
<th>Non-Resident per hr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Division*</td>
<td>$14.00</td>
<td>$37.00</td>
</tr>
<tr>
<td>Upper Division*</td>
<td>$15.00</td>
<td>$47.00</td>
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<tr>
<td>Graduate*</td>
<td>$20.00</td>
<td>$57.00</td>
</tr>
<tr>
<td>Thesis*</td>
<td>$22.00</td>
<td>$59.00</td>
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</table>

*Lower division courses are those numbered 0-299. Upper division courses are those numbered 300-499. Graduate courses are those numbered 500-698. Thesis is course number 699.

C. Room and Board (required of student living in University residence halls) per quarter ...................... $400.00 - $450.00

Charge for late payment ...................... $15.00

D. Books and supplies (estimated) per quarter ...................... $50.00

E. Late Registration (for all 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. Student's fee ...................... $10.00

G. Reinstatement Fee (for all students whose registration has been cancelled and reinstatement has been approved) ...................... $25.00

This fee is in addition to the late registration fee.

H. Student Health Fee (per quarter) ...................... $ 8.00

**CHECKS**

The University will accept personal checks for accounts due to the University. Each student is urged to make his own financial arrangements through his choice of commercial banks. The University Cashier will cash personal checks not exceeding $50.00. The University is required to collect a $5.00 Service Fee for any check, draft or order, which may be returned by the bank for any reason.
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. No refunds will be made under this policy except upon proper application.

A. Full refund up to the end of the "drop/add" period.

B. No refund after the end of the "drop/add" period, except:
   1. Involuntary call to active military service (full refund less $3.35 per hour).
   2. Death of student (full refund less $3.35 per hour).
   3. When 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, (Full refund less $3.35 hour).
   4. Cancellation of the course by the University.

PAST DUE ACCOUNTS

Any, and all, financial obligations to the University must be met by the student if "good standing" is to be maintained. Failure to meet such obligations can result in the withholding of grades and transcripts, and denial of registration and readmission to the University. The services of a professional collection agency; and recourse to the courts may also be invoked if deemed necessary by the University Comptroller. All costs of collection, including attorney's fees shall be borne by the debtor.
ADMINISTRATIVE AND ACADEMIC POLICIES

ADMISSION REQUIREMENTS

The following classes of applicants are eligible for consideration as candidates for admission to credit courses. It should be understood, however, the minimum requirements are given and that admission to the university is a selective process. The satisfaction of minimum requirements does not automatically guarantee admission.

FRESHMAN APPLICANTS (First College Attended)

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 no unfavorable character recommendations from officials of their high schools, 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 Florida High Schools who receive no unfavorable character recommendations from officials of their high schools, have grades placing them in the upper 40 percent of their graduating classes, and have acceptable test scores:

- 850 total or higher on the SAT (CEEB)—with no lower than 400 on either the verbal or math portion or
- 20 composite or higher on the ACT or
- 60% or higher on the CQT (Senior College Freshman Norms).

Graduates Possessing a State High School Equivalency Diplomas based upon General Education Development testing and who have acceptable high school records for any portion attended, have acceptable test scores (see above) and, where necessary, favorable recommendations from their schools and/or employers.

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 and possible admission on Academic Warning. It may be recommended that a student attend a Junior College to further his competency and to earn an Associate of Arts degree before reapplying to FTU.

COLLEGE TRANSFER APPLICANTS

Undergraduate students transferring from other colleges or universities into degree programs must have a minimum of 2.0 (C) GPA on all college work previously attempted and be eligible to return
to their last previously attended institutions. Should the applicant have less than 2 years (90 quarter hours or 60 semester hours) of transferable college credit, he must meet the University's freshman entrance requirements and, therefore, furnish his high school record and a satisfactory test score.

Credits in which the applicant has achieved a grade of "D" (1.0) or better are transferable. Refer to page 42 for "D" grade transfer policy.

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.

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 requirements of the University (e.g., See Undergraduate Degree Requirements, page 46 and Second Bachelor's Degree, page 56). A baccalaureate degree or higher from another accredited four-year institution satisfies the Basic Environmental Studies Program requirements.

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 Associate of Arts 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 (having a satisfactory rating by the American Association of Collegiate Registrars and Admission Officers), 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.

Regardless of where the student transfers from—a Florida Community
College, another Florida University, or another college or university outside the state, it is the student's responsibility to execute the necessary petition(s) in order to determine how his or her courses will transfer with regard to degree progress at FTU. Each College has different petition procedures but generally the petitioning should be done during the second full quarter of the student's residency at FTU in order that the accepted transfer courses are clearly understood by the student and the faculty advisor early in the student's program.

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.

*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 appeals of applicants.

**APPLICATION DEADLINE**

Applications for admission should be received 28 days prior to the first day of classes for the quarter in which the student wishes to enroll (consult calendar for exact date). Candidates whose applications have not cleared because of failure to receive supporting documents on time, may be admitted on a temporary basis after consultation with the Admissions Office. Applications for readmission and special, nondegree registrations will be accepted after this date.

**RECORDS DEADLINE — All Support Documents**

All records requested should be received not later than 15 days preceding the first day of classes, otherwise the applicant may be required to register on a temporary basis assuming it can be determined he or she appears admissible. Records of Temporary Students must be 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 Documents**

All supporting admissions documents (e.g., transcripts, health reports, and test scores not recorded on official transcripts) must be received directly from the issuing institution, physician, or testing agency. If the University finds that an applicant has made a false or fraudulent statement or a deliberate omission on his application, residency affidavit or an accompanying document or statement, that student may be denied admission. Should the student be enrolled when such fraud is discovered, he may be immediately withdrawn (with no refund), further enrollment denied, and credit earned and any degree based upon such credit invalidated. Actions for this type of offense will be handled administratively by the University Registrar's Office after notification to the alleged violator and hearing by that office.

**READMISSION**

Students not in attendance during an academic quarter (exclusive of the summer term) must submit an application for readmission and such other information as may be required, including transcripts of courses attempted in the interim.
Readmission of a disqualified student is not automatic. If a student has been disqualified or excluded, he/she must be readmitted by action of the University Admissions and Standards Committee after review of the student's total record.

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 warning or academic probation as appropriate.

**CONCURRENT ENROLLMENT**

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

**SPECIAL STUDENTS**

Qualified high school students seeking admission prior to graduating should refer to Early Admission, Non-Degree, Transient and Audit sections.

**TEMPORARY STUDENTS**

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.

**TRANSIENT STUDENTS**

FTU Students. A Florida Technological University degree-seeking student who wishes to earn credit at another college or university must obtain prior approval for specific 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 and 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 indicating the parent institution's willingness to accept the credits earned and that the student is in good standing is required. This statement protects the student and serves as a basis for admission in lieu of transcripts.

**AUDIT STUDENTS**

University Students. A 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. A course may be changed from audit to credit only during the Add/Drop Period and then only with his faculty advisor'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.

**CONTINUING EDUCATION STUDENTS**

Application, registration, and payment of fees for those taking a Con-
tinuing Education course should be completed prior to or during the first class meeting. When making application to take a Continuing Education course, checks should be attached to the Application form and given to the course instructor or forwarded to the Continuing Education Office. The regular institutional calendar will apply to Continuing Education classes.

Students who wish to add or drop a Continuing Education course must do so during the regular on-campus Add/Drop period. Following the Add/Drop period students may withdraw from a Continuing Education course by completing the standard withdrawal forms.

Students who drop a course any time during the Add/Drop period will receive a full refund of fees. After the Add/Drop period no refund of fees will be made except in instances of:

1. Involuntary call to active military duty.
2. Death of a student.
3. Illness of the student of such duration and severity as confirmed in writing by a physician that completion of the term is precluded.
4. Cancellation of the course by the university.

In the first three instances the entire per credit hour charge may be refunded except for $3.35 per credit hour which is required for collection under bond and trust obligations. Full refund of fees will be made when the university finds it necessary to cancel a course.

**NON-DEGREE STUDENTS**

An individual may enroll as a non-degree seeking student using a regular application form. Although such students do not have to meet all of the regular admission requirements of degree seekers, there must be some satisfactory basis for acceptance.

In order to change to degree-seeking status, a non-degree student must provide the academic records required of degree seekers. Where necessary, a student may establish a basis for changing to degree status by completing 24 quarter hours of work here with a 2.0 FTU GPA or above. Such students should be cautioned that no more than 45 quarter hours earned as a non-degree student can be counted towards a degree. Change of status is not automatic. Degree status must be applied for through the Admissions Office. The student's total record will then be reviewed and a decision made.

**INTERNATIONAL STUDENTS**

Undergraduate applicants should refer to the Admissions Requirements Section of this Bulletin and graduate applicants to the Graduate Studies Section. In addition, the following is required for admission:

1. International student applications, undergraduate and graduate, must be received at least three months prior to the desired term.

2. Applicants whose native language is not English must submit satisfactory scores on the Test of English as a Foreign Language (TOEFL).

3. Certified English translation of official records showing grades or marks of courses taken, range of passing and maximum marks,
and noting successful completion of schooling must be submitted.

4. Applicants must file a financial statement confirming availability of finances for each year of study.

Any additional information or records requested must be furnished before admissions can be final.

MEDICAL HISTORY REPORT

A new student must furnish a Medical History Report on the approved university health form. It must be submitted to and approved by the Student Health Service before registration will be allowed. The Medical History Report form will be mailed to the applicant with receipt for the Application for Admission.

FLORIDA RESIDENCE

For the purpose of assessing registration fees, students shall be classified as Florida and non-Florida. A Florida student is a person who shall have resided and had his domicile in the State of Florida for at least twelve (12) months immediately preceding the first day of classes of the current term.

In applying this policy “student” shall mean a person admitted to the institution. If such person is a minor, it shall mean parents, parent, or legal guardian of his or her person.

The word “minor” shall mean a person who has not attained the age of 18 and whose disabilities of minority have not been removed by reason of a marriage or by a court of competent jurisdiction.

The word “domicile” for fee-paying purposes shall denote a person’s true, fixed, and permanent home and place of habitation. It is the place where he intends to remain, and to which he expects to return when he leaves without intending to establish a new domicile elsewhere.

The word “parent” shall mean a minor’s father or mother or, if there is a guardian or legal custodian of his person, then such guardian or legal custodian.

In all applications for admission by students as citizens of Florida, the applicant, or, if a minor, his parents or legal guardian shall make and file with such application a written statement under oath that such applicant is a bonafide citizen, resident, and domiciliary of the state of Florida entitled as such to admission upon the terms and conditions prescribed for citizens, residents, and domiciliaries of the State.

A non-Florida student is a person not meeting the requirements outlined above. A non-Florida student (or if a minor, his parent or parents) after having been a resident and domiciliary of Florida for twelve months may apply for and be granted reclassification prior to the first day of classes of any subsequent term, in accordance with the provisions of the preceding paragraph. In addition, the application for reclassification must be accompanied by a certified copy of a declaration of intention to establish domicile filed with the clerk of the Circuit Court as provided by Section 222.17, Florida Statutes.

When satisfactory proof is given to the registering authority of the University it will be presumed that:

1. The spouse of any person who is classified or is eligible for classi-
fication as an in-state student is likewise entitled to classification as an in-state student.

2. A minor whose parent is a member of the armed forces and stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student, while in continuous attendance, shall not lose his residence when his parent is thereafter transferred on military orders. A member of the armed forces of the United States stationed in this state on military orders shall be entitled to classification as an in-state student while on active duty in this state pursuant to such orders.

3. No person over the age of 18 years shall be deemed to have gained residence while attending any educational institution in this State as a full-time student, as such status is defined by the Board of Regents, in the absence of a clear demonstration, that he has established domicile in the State.

4. Any student who remains in this State when his parent, having therefore been domiciled in this State, removes from this State, shall be entitled to classification as a Florida student, so long as his attendance at a school or schools in this State shall be deemed “continuous” if the person claiming continuous attendance has been enrolled at a school or schools in this State as a full-time student, as such term is defined by the Board of Regents, for a normal academic year in each calendar year, or the appropriate portion or portions of such years, thereof, since the beginning of the period for which continuous attendance is claimed. Such persons need not attend summer sessions or other intersessions beyond the normal academic year in order to render attendance “continuous.”

Any student granted status as a Florida student which status is based on a sworn statement which is false shall, upon a determination of such falsity, be subject to such disciplinary sanctions as may be imposed by the president of the university, which sanctions may include permanent expulsion from the State University System or any lesser penalty.

The following categories shall be treated as Florida residents for tuition purposes:

1. Veterans of the United States of America retired with twenty (20) years or more of active military service, including dependent members of their immediate families, who are in Florida at the time of retirement, or who move to Florida within one year following retirement and intend to make Florida their permanent home.

2. Full-time elementary, secondary, and junior college faculty members under contracts in the State of Florida.

3. Full-time faculty and career employees of the University System and members of their immediate families. (This is construed to exclude the spouses of students.)

To establish Florida residence a student applying for admission should complete the residence affidavit on the application form.

To change status from non-Florida to Florida a student must present to the Admissions Office a copy of the Declaration of Intention to Establish Domicile and the completed Residence Affidavit Form. To claim the military exception the student must furnish the Admissions
Office a copy of the military orders showing assignment to Florida. A public school official must submit a written statement from his superior as to his public school status. A University employee must submit a statement from his employer as to his employment status.

TRANSFER OF "D" GRADES

Credits earned in courses transferred with "D" grades will count toward the credits required for the baccalaureate; however, it is at the discretion of the department or college of the University offering the major as to whether courses with "D" grades in the major may satisfy requirements in the major field.

SUBSTITUTION OF COURSES

If a student has completed a course similar to one required at FTU, he may file a petition to have an exception made in meeting the FTU requirement. A petition to substitute any course or courses in the Environmental Studies Program should be directed to the Standards Committee of the college in which the student is registered. To make a substitution for requirements in a major, the student should direct his/her petition to the department in which he/she is registered.

TIME-SHORTENED DEGREE OPPORTUNITIES

Florida Technological University provides a number of options by which students may shorten the time required to complete the baccalaureate degree. These options permit the university to recognize high levels of academic achievement and acquisition of knowledge prior to or during attendance at the university. Procedures which may be used include the Early Admission Program, the College Level Examination Program (CLEP), the Advanced Placement Program (A.P.P.) and the University Course Credit by Examination.

1. Early Admission Program

Students who have demonstrated exceptional academic ability may be permitted to enroll as students at Florida Technological University any time after completion of the junior year in high school. To be considered for full-time Fall Quarter Early Admission, applicants must have:

a. Test scores near the top 15th percentile statewide or nationally (FTG - 420 or above, SAT - 1100 or above, ACT - 24 or above).
b. "A" - "B" grades in high school.
c. A recommendation from the student's high school counselor.
d. A letter of permission from parents or guardian.
e. A campus interview to ascertain the student's maturity and ability to adjust to collegiate responsibilities.

Qualified students may dual-enroll on a part-time basis, taking one or two courses while completing their high school program. An interview and letters of recommendation from parents and principal are required.

Students desiring admission prior to high school graduation should contact the Admissions Office for an appointment.

2. College Level Examination Program (CLEP)

Florida Technological University grants university credit for examinations taken under the CLEP program provided the score obtained is at the 50th percentile or above on the National Sophomore CLEP norms.

Florida Technological University will award up to 67½ quarter hours of university credit under the CLEP program. (See page 44).
3. **Advanced Placement Program (A.P.P.)**
   Students who have participated in the Advanced Placement Program in high school and received a score of three (3), four (4) or five (5) on the national examinations will receive from 4 to 8 quarter hours of college credit in each of the appropriate subject areas. Consult your high school guidance counselor or write to the Educational Testing Service, Princeton, New Jersey 08540, for additional information.

4. **University Course Credit by Examination**
   Regularly enrolled *undergraduate students at Florida Technological University may obtain credit for specific university courses through Departmental Examinations. Those who feel they have acquired the knowledge and/or skills a specific university course should contact their advisor and the chairman of the department in which the course is offered to arrange for an examination. Degree credit will be awarded for those courses successfully completed by departmental examination. Credit by examination can not be used to raise a grade in a course previously completed or to reduce the last 45 q.h. of the residency requirement. Permission to take an examination is granted by the Dean of the college in which the course is offered. Standard forms requesting university course credit by examination may be obtained from an advisor or in the department chairman's office. (See page 42).

*Excludes transient and non-degree students.

**FLORIDA TECHNOLOGICAL UNIVERSITY**

**CLEP POLICY**

CLEP credit may be earned by the following methods — CLEP general examinations, CLEP general examination subtests and CLEP subject examinations. A student may earn a maximum of 67½ quarter hours (45 semester hours) of credit through this program. Successful completion of CLEP examinations means performance at or above the 50th percentile.

Awarding CLEP credit is subject to the conditions listed below.

1. Credit may be awarded in the CLEP general examination area, CLEP general subtest area, or CLEP subject examination area provided the student: (a) has not previously received comparable college course credit in the CLEP examination area, (b) does not receive comparable college course credit in the CLEP examination area in the same quarter the examination is taken or in a subsequent quarter, (c) has not previously completed a more advanced course in the examination area, and (d) does not complete a more advanced course during the quarter in which the CLEP examination is taken.

2. Partial credit may be awarded in three of the CLEP general examination subtest areas (Humanities, Natural Sciences, Social Sciences). Partial credit may be awarded to students who have course duplication in one subtest area but not in the other subtest area (e.g., a student has completed HUM 201 but has not completed ENG 201 or another more advanced literature course). In such a situation the student would be eligible to receive credit in the literature subtest area provided that he receives a satisfactory total score and a satisfactory subtest score. The restrictions listed in Item 1 also apply to partial credit.

The following table provides information related to the CLEP general examination areas and subtest areas for which credit may be awarded. In addition, this table delineates the number of credit hours per examination, the minimum passing scaled score, the courses and other
CLEP examinations which duplicate the CLEP general examinations, and the CLEP usage. Information can be secured in the Developmental Center on CLEP subject examinations for which credit may be awarded.

It is important to note that a maximum of 67\(\frac{1}{2}\) quarter hours in any combination of extension, correspondence, CLEP, Time-Shortened Degree, and Armed Forces Service School Credits will be accepted by the University for application toward an undergraduate degree. In addition, CLEP credit cannot be used to reduce a grade point deficiency. For example, a CLEP grade can not be substituted for a grade awarded for a previously completed course.

### CLEP General Examinations, Maximum Credit Hours, Minimum Passing Scaled Scores, Courses and Examination Which Duplicate the CLEP General Examinations and Recommended CLEP Usage

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<tr>
<th>CLEP GENERAL EXAMINATION*</th>
<th>Maximum Qtr Hours</th>
<th>Minimum Passing Scaled Scores</th>
<th>Courses and Examinations which duplicate the general examination test area</th>
<th>CLEP Usage</th>
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<tbody>
<tr>
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<td>Subtest Areas</td>
<td>Gen Exam</td>
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*The minimum total score must be attained before subscores can be used for awarding credit.

**Not currently offered at Florida Technological University.
DEGREE REQUIREMENTS

UNDERGRADUATE

The requirements for a major, including the University graduation requirements, must be met by each student who receives a degree from Florida Technological University. The minimum bachelor degree requirements for all students are as follows:

A minimum of 180 academic quarter hours credit with at least a "C" average (2.0 GPA) for all course work attempted (both FTU and overall).

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. Credit by examination may not be used to satisfy this requirement.

A maximum of 67.5 quarter hours in any combination of extension, correspondence, CLEP, Time Shortened Degree and Armed Forces credits accepted by the University may be applied toward an undergraduate degree. The acceptance of credit for degree purposes is subject to review by the college standards committee and may differ from college to college. Additional quarter hour credit may be granted by examination given at FTU.

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 admission. 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 Florida community college graduate may elect to use the FTU Bulletin in force at the beginning of his most recent continuous attendance at the community college provided his attendance continues uninterrupted including his transfer to FTU.

GRADUATE

The following University-wide graduate degree requirements must be met by each student who receives a master's degree from Florida Technological University. The minimum master's degree requirements are: at least 45 quarter credit hours of graduate work, with a minimum average of "B" for all courses attempted and at least one half of the minimum required course work must be numbered 600 or higher.

Additional graduate program degree requirements are specified in this Bulletin in the section on Graduate Studies in the graduate program section of each of the individual colleges.
DEGREES OFFERED

ASSOCIATE OF ARTS DEGREE

Florida Technological University students who satisfactorily complete 90 quarter hours of acceptable college work with an FTU and overall grade point average of 2.0, may apply to the Registrar's Office for an Associate of Arts Degree. The required 90 quarter hours must include all of the basic requirements of the Environmental Studies Program and the last 30 credits must have been earned in residence at FTU.

The Associate of Arts Degree is awarded on application only, and an application should be made in the quarter in which the requirements for the degree will be satisfied or any time thereafter prior to the completion of the baccalaureate degree. Once the student has made application for the A.A. degree, the Registrar will notify the Office of Academic Affairs for verification of requirements. When the Registrar is notified of verification, the Associate of Arts Degree certificate will be forwarded to the recipient.

UNDERGRADUATE

The University offers the degrees of Bachelor of Arts, Bachelor of Engineering Technology, Bachelor of Fine Arts, Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in Engineering, and Bachelor of Science in Social Sciences. These degrees are available in the following Colleges, with major or areas of specialization as indicated:

College of Business Administration
Bachelor of Science in Business Administration (B.S.B.A.)
Majors: Accountancy, Business Administration (General), Economics, Finance, Management, Marketing

College of Education
Bachelor of Arts (B.A.)
Major: Elementary Education
Major: K-12 with specializations in Library Media Specialist, Physical Education, Visual Arts Education
Major: Secondary Education with specializations in Business Education (General), Business Education/Basic Business and Accounting, English Language Arts, Foreign Language, Mathematics, Science Education/Biology, Science Education/Chemistry, Science Education/Physics, Social Sciences, Speech, Technical/Vocational

College of Engineering
Bachelor of Science in Engineering (B.S.E.)
Bachelor Engineering Technology (B.E.T.)
Major: Engineering Technology

College of Humanities and Fine Arts
Bachelor of Arts (B.A.)
Majors: Art, Art/Film, English, Foreign Languages (Combination), French, Spanish, History, Humanities, Humanities
and Fine Arts, Music, Music Education, Philosophy, Theatre
Bachelor of Fine Arts (B.F.A.)
Major: Art

College of Natural Sciences
Bachelor of Science (B.S.)
Majors: Biological Science/Biology, Biological Science/Botany, Biological Science/Fresh Water Ecology, Biological Science/Microbiology, Biological Science/Zoology, Chemistry, Computer Science, Forensic Science, Mathematics, Medical Record Administration, Medical Technology, Physics, Radiologic Technology, Respiratory Therapy, Statistics

College of Social Sciences
Bachelor of Arts (B.A.)
Majors: Allied Legal Services, Communication, Communication/Communication Disorders, Communication/Film, Communication/Journalism, Communication/Radio-Television, Communication/Speech, Criminal Justice, Economics, Political Science, Psychology, Public Administration, Sociology, Sociology/Anthropology, Sociology/Social Work
Bachelor of Science in Social Sciences
Major: Social Sciences

Office of Academic Affairs
Bachelor of Arts (B.A.)
Major: General Studies
Bachelor of Science (B.S.)
Major: General Studies

GRADUATE
The University offers graduate degrees in the following colleges:

College of Business Administration
Master of Arts (M.A.)
Economics
Master of Business Administration (M.B.A.)
Master of Science (M.S.)
Accountancy
Management

College of Education
Master of Arts (M.A.)
Master of Education (M.Ed.)
Administration and Supervision
Elementary Education including specializations in Exceptional Child, Reading Specialist
Guidance
K-12 with specializations in Library Media Specialist, Music Education, Physical Education, Visual Arts Education
Secondary Education with specializations in Business Education, English Language Arts, Foreign Languages, Mathematics, Science, Social Sciences, Speech

College of Engineering
Master of Science (M.S.)
Master of Science in Engineering (M.S.E.)
Master of Science in Environmental Systems Management (M.S.E.S.M.)

COLLEGE OF HUMANITIES AND FINE ARTS
Master of Arts (M.A.)
English

COLLEGE OF NATURAL SCIENCES
Master of Science (M.S.)
  Biological Science
  Computer Science
  Industrial Chemistry
  Mathematical Science

College of Social Sciences
Master of Arts (M.A.)
  Communication
Master of Science (M.S.)
  Clinical Psychology
  Industrial Psychology
  School Psychology
Master of Public Policy (M.P.P.)

1 The College of Education through a cooperative program offers work leading to a Doctor of Education Degree from Florida Atlantic University. Information about applications, admission and regulations are available from the College of Education.

2 The College of Engineering through a cooperative program offers work leading to a Doctor of Philosophy: Electrical Engineering from the University of Florida.

REQUIREMENTS FOR TEACHER CERTIFICATION

Before a person can teach in the elementary and/or secondary schools in Florida he or she must be certified by the Florida Department of Education. The certification requirements in Florida include 3 basic components:

I. GENERAL PREPARATION
Courses included in this category are normally classified as general education (i.e., Environmental Studies Program) courses. A graduate with a Bachelor's degree from an accredited institution shall be considered to have met the General Preparation requirements.

II. TEACHING SPECIALIZATION
Courses included in this category are normally classified as the major area in a student's college program. However, not all college majors are included in the certification laws. Sections 7 through 36 of the Florida Requirements for Teacher Certification, January 30, 1968, describe the major areas eligible for teacher Certification and each section has an outline for any special subject requirements in the TEACHING Specialization.

III. PROFESSIONAL PREPARATION
These are two means by which students can complete a program in Professional Preparation. They are:

1. The College of Education Career Teacher Program (i.e., a
major in the College of Education).

2. The Alternate Basic Certification Program (i.e., a major in some other college).

Students at Florida Technological University may achieve teacher certification by either of the following methods:

1. Completing the College of Education Program whereby students will automatically be eligible for a Florida Teacher's Certificate.

2. Completing a degree program in another college within the University and, at the same time, satisfying all requirements needed for certification.

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:

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
W - Withdrawn .......................................... 0 grade point
I - Incompleted ........................................ 0 grade point
X - Audit (no credit) ................................. 0 grade point
S - Satisfactory (with credit)/
      Satisfactory Progress (Research, Thesis, or Dissertation) .................. 0 grade point
U - Unsatisfactory (no credit) ...................... 0 grade point
R (followed by grade)
      - Subsequently repeated (no credit) .............. 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 "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 when requirements for the removal of the "I" have been completed. Failure to complete course requirements by the end of the next successive quarter (that is, during the quarter immediately following that in which the "I" was assigned) may, at the discretion of the course instructor, result in the assignment of an "F" grade. It is the student's responsibility to arrange with the instructor for the removal of the "I" grade. The grade of "I" becomes a part of the student's permanent record if not removed by the end of the following quarter. A student may
register for a course in which an "I" was received, but no repeat "R" action will be made on his permanent record.

HONORS

It will be the policy of the University to confer baccalaureate honors recognition at graduation upon those students who attain a grade point average which is in the upper 15% of the range established by all students graduating in the same college during the previous two years. In no case will honors recognition be awarded to a student with a grade point average less than 3.0

Honors awarded will be:

- **Summa Cum Laude** for those students in the upper 5%.
- **Magna Cum Laude** for those students in the upper 10%, but not in the upper 5%.
- **Cum Laude** for those students in the upper 15%, but not in the upper 10%.

For the purposes of establishing honors criteria grade point average reference points will be established annually for each college at the end of the summer quarter. Grade point average reference points will be determined by ranking graduates of the previous two years in each college and establishing the minimum grade point averages of students ranked in the upper 5%, 10%, and 15%, respectively, in that college. These reference points will be used during the subsequent Fall, Winter, Spring, and Summer quarters to determine who will receive honors recognition at graduation.

To receive honors recognition, students must have completed a minimum of 72 quarter hours at FTU. All FTU and transfer credit (if any), including those received in the quarter of graduation, will be used to determine official honors for entry on the student's permanent academic record. The quarter of graduation will be excluded in determining honors for listing in the commencement bulletin, as it is printed before final grades are reported, and therefore a student qualifying for honors recognition at commencement may or may not qualify for honors on his academic record.

The grade point average required for honors is based on a minimum of 72 quarter hours at FTU, but will include all college credits earned toward the degree prior to the quarter in which the student is graduated.

DEAN'S LIST

The Dean's List is recognition of scholastic honors for undergraduate students who register for and complete at least 12 Quarter Hours with a 3.4 GPA and no grade less than "C" during a quarter.

REPEAT POLICY

*FTU Courses.* A student may register to repeat an FTU course at any time prior to completion of the baccalaureate degree. Both grades will be recorded on the student's official transcript but only the last grade received will be used in calculating the grade point average. The student must complete a "change of grade" request at the time he reregisters for the course.
Transfer Courses. If a transfer student takes an equivalent course at FTU which was previously completed at another institution, both grades will be utilized in calculating the student's grade point average. However, if the repeat policy of the previous institution permits students to count only the last grade received in a repeated course, a transfer student may wish to repeat the course at the original institution. Under this procedure a revised official transcript must be provided by the previous institution.

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 add-drop period, no course may be added. Approval of the student's faculty advisor 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 advisor is necessary before any course change. For withdrawal after the add-drop period, consult the withdrawal Policy.

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 BACCALAUREATE: Any student enrolled in courses, regardless of course level, who has a baccalaureate degree but has not been admitted to a graduate program.
GRADUATE: Any student enrolled in graduate courses who has been admitted to a graduate program.

Other student classifications are as follows:
AUDITOR: A student registered for any credit course who is not seeking credit.
CO-OP STUDENT: A student enrolled in the Cooperative Education Program is a full-time student during the work training quarter. There is no break in the Co-Op school calendar. The Co-Op student starts his work training quarter the day after the final day of school and continues through the day before the first day of school for the following quarter. See Veteran’s Benefits for Co-Op’s.

SPECIAL STUDENT: A student of demonstrated academic ability who does not meet the regular requirements for admission (Early Admission, non-degree, transient and auditor).

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

TRANSIENT: (1) A student registered at Florida Technological University 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.

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

VETERAN’S BENEFITS

Veteran-students eligible to receive VA educational benefits must make initial contact with the Office of Veteran’s Affairs, Student Affairs Suite, Administration Building, Phone 275-2707.

Undergraduates must carry at least twelve (12) quarter hours for full VA benefits, nine (9) quarter hours for three-fourths VA benefits and six (6) quarter hours for one-half VA benefits. Five (5) quarter hours or less will be reimbursed to the veteran at cost of instruction only. Those students with an undergraduate degree who are classified as post baccalaureate must meet the same criteria as undergraduates. Veteran-students fully accepted in a graduate degree-seeking program are required to carry nine (9) quarter hours for full benefits, seven (7) quarter hours for three-fourths, and five (5) quarter hours for one-half.

Veterans in a Co-Op status can choose to draw VA Benefits for this period of eligibility as follows:

(1) During on-campus enrollment the use of eligibility time is the same although the allowance is paid based on one-fourth, one-half, three-fourths, or full-time status. No allowance, or the use of eligibility time, occurs during the off-campus Co-Op work training quarter.

(2) A Co-Op Veteran may elect to accept eighty percent (80%) of his VA Benefit Allowance for each calendar month of a yearly basis. Although this option does not extend a veteran’s eligibility time, it does pay all benefits except twenty percent (20%) providing he is enrolled for the minimum number of credit hours to qualify for full-time benefits during his on-campus quarter.
ACADEMIC TERMS AND ACTIONS DEFINED

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter Average</td>
<td>Grade Point Average on work attempted during any given quarter.</td>
</tr>
<tr>
<td>FTU Average</td>
<td>Grade Point Average on all work attempted while in attendance at Florida Technological University.</td>
</tr>
<tr>
<td>Overall Average</td>
<td>Grade Point Average on all work attempted since entering college, including work from all previously attended institutions.</td>
</tr>
<tr>
<td>Academic Warning</td>
<td>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.</td>
</tr>
<tr>
<td>Academic Probation</td>
<td>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 or FTU GPA drop below 2.0. Academic Probation will continue until such time as the current quarter, overall, and FTU cumulative GPA's reach 2.0 or better.</td>
</tr>
<tr>
<td>Disqualified</td>
<td>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. Readmission after the mandatory one quarter out is not automatic. A disqualified student must apply for readmission. His total record will then be reviewed and action on his readmission taken by the University Admissions and Standards Committee.</td>
</tr>
<tr>
<td>Exclusion</td>
<td>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.</td>
</tr>
<tr>
<td>Appeal</td>
<td>Every student has the right to Appeal any of the preceding for 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.</td>
</tr>
<tr>
<td>Readmission</td>
<td>If a student has dropped out of the University for any reason, he must reapply on the appropriate form 28 days prior to the quarter he wishes to reenter.</td>
</tr>
</tbody>
</table>

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. Academic Actions in a previous quarter do not change as a result of an “R” (repeated course) or an “I” (incomplete course) change.

**EARNING CREDIT WHILE DISQUALIFIED OR EXCLUDED**

A student disqualified or excluded 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.

A student who attends other colleges or universities following disqualification 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 add-drop period, the student must have the approval of his faculty advisor 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 the course to be changed.

Students may not withdraw from a class or from the University or change the 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.

Forms for Withdrawal in Good Standing may be obtained at the Registrar’s Office and must be returned to the Registrar. When these are 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.

**GENERAL EDUCATION REQUIREMENTS CERTIFICATION**

An undergraduate student who has not completed requirements for the Associate of Arts degree and who wishes to transfer to another Florida state university can have his transcript stamped GENERAL
EDUCATION REQUIREMENTS MET if he has completed FTU's Basic Environmental Studies Program of 54 quarter hours with a GPA of 2.0 or better. (See page 63 for program outline). FTU will accept a similar statement on transcripts received from Florida community colleges or other institutions in the State University System in lieu of completion of the University's Basic Environmental Studies Program.

STEPS IN THE GRADUATION PROCESS
UNDERGRADUATE AND GRADUATE

A student should apply to the Registrar for graduation before registering for his final quarter of attendance and not later than the last day of the Add-Drop Period for that quarter.

Upon completion of 150 undergraduate quarter hours of course work, the student is notified to report to the Registrar's Office.

1. The student must report to the Registrar's Office to complete an Intent to Graduate Form.

2. The candidate is requested to submit the advisor's copy of the Intent to Graduate Form to his college which will initiate the necessary check sheet for graduation. At the end of the quarter that check sheet will be completed and forwarded to the Dean's office for his approval. It will then be forwarded to the Registrar's Office for inclusion in the Student's permanent folder.

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 bulletin under which the student has indicated he wishes to graduate (following the rules stated on p. 46) shall constitute a recommendation of the respective college faculty that the degree be awarded, assuming the student is in good standing in the University.

A student must complete all requirements for a baccalaureate or graduate degree no later than the date of the quarter graduation ceremony.

DOUBLE MAJORS (FTU students)

1. ONE BACHELOR'S DEGREE WITH TWO MAJORS. Any Florida Technological University student satisfying all requirements for two majors that lead to the same baccalaureate degree will have a single degree awarded, and both majors will be indicated on his permanent record. Majors offered under each degree are listed on pages 47-48. For example, a student who satisfies all requirements for a major in Political Science and for a major in History would be awarded a single Bachelor of Arts degree with the two majors indicated on his permanent record. However, if a student wishes to pursue two majors leading to different baccalaureate degrees (e.g., Psychology which leads to a Bachelor of Arts degree and Biology which leads to a Bachelor of Science degree), he must satisfy the requirements stated below for two bachelor's degrees.

2. TWO BACHELOR'S DEGREES. Any Florida Technological University student desiring to obtain two majors which lead to
different baccalaureate degrees must meet the requirements for both majors and earn a minimum of 225 quarter hours. A separate diploma will be awarded for each degree.

SECOND BACHELOR'S DEGREE (TRANSFER 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. Students holding the baccalaureate degree from an accredited institution are considered to have completed all Environmental Studies Requirements.

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

GENERAL INFORMATION

The Office of Graduate Studies consists of the Associate Vice President for Academic Affairs/Dean for Graduate Studies, an associate Dean for Graduate Studies, and a Graduate Council of appointed representatives from each college and the Faculty Senate. The Office of Graduate Studies is responsible for the establishment and subsequent monitoring of minimum University-wide standards concerning graduate admission and matriculation. It also coordinates the graduate programs of the various colleges of the University. Responsibility for the detailed operation of the various graduate degree programs is vested in the individual colleges.

A listing of graduate degree programs is shown on page 48. For particulars concerning individual graduate programs, consult the index for appropriate page referrals.

The following general information pertains primarily to masters programs. For information concerning cooperative doctoral programs, consult the respective graduate program coordinators in Education and Engineering.

ADMISSION TO GRADUATE STUDIES

APPLICATIONS

Applications for admission to graduate study may be obtained from the Registrar, or from the Dean of the College offering the program. Applications which appear to meet minimum standards for admission are referred to the Dean of the appropriate College for his recommendation. All applications should be submitted to the Admissions Office.

Applications will not be considered without complete official transcripts showing the last 90 hours of undergraduate courses taken for the baccalaureate degree and all graduate work attempted. All transcripts must be received directly from the Registrar of the institution in which the work was attempted.

REGULAR STATUS

To be eligible for consideration as a regular, degree-seeking student, the student must file official transcripts showing degrees earned (a baccalaureate degree being the minimal standard) and any credit beyond the baccalaureate degree, and must meet the following University and program minimum admission requirements:

A. University Admission Requirements

(1) Either a grade point average (GPA) of 3.0 (4.0 = A) for the last 90 quarter hours credited toward the earned Baccalaureate degree from an accredited institution, or

(2) Quantitative-verbal GRE score of 1000 or higher. Applicants to the College of Business Administration must submit an ATGSB (or GMAT) score of 450 or higher in lieu of the GRE.

B. Program Admission Requirements

The applicant must be accepted by the department or administrative unit offering the degree program to which the application
In any degree program, admission criteria above and beyond University minimums may be required. In the event enrollment in a program must be limited, additional criteria may be developed beyond those described in this catalog. Prior to submitting an application, students are expected to familiarize themselves with the program admission requirements specified in the respective degree program sections of this catalog (or in supplementary material available from the degree program).

POST-BACCALAUREATE STATUS

Students may be admitted in the post-baccalaureate category under any of three conditions:

A. Temporarily, because their file is incomplete.
B. They do not wish to pursue a degree program.
C. They do not meet the standards for regular admission (or do not maintain their grades as a degree-seeker).

Post-baccalaureate status is not a degree-earning category. Whereas a student may earn credit in any number of courses (subject to whatever limitations the respective programs or the State of Florida may impose), these hours will not necessarily lead to a degree. If a student is, however, subsequently admitted to degree status, up to 12 quarter hours of post-baccalaureate work (see Transfer of Credit) may be considered for transfer into the degree program.

If the student is placed in the post-baccalaureate category because he does not have sufficient grade point average or examination (GRE, ATGGSB or GMAT) score, admission to the regular category may be attained only by repeating the examination and making an acceptable score or by being selected for provisional status. Post-baccalaureate hours can not be used to raise an insufficient undergraduate grade point average.

PROVISIONAL STATUS

Individual programs may elect (but are not required) to admit on a provisional basis a very limited number of students who do not meet minimum University admission requirements. Provisional admission is based upon evidence of academic and professional promise. If a course work average of "B" or higher is earned upon the completion of the first 12 quarter hours of graduate program course work, provisional students may then be considered for acceptance into the degree program as regular graduate students. To apply for provisional admission, students should file an application with the appropriate graduate degree program coordinator.

GRADUATE RECORD EXAMINATION/GRADUATE MANAGEMENT ADMISSION TEST (GMAT) REQUIREMENT

Certain graduate programs require all of their applicants to submit scores on the Graduate Record Examination (GRE) or GMAT. Applicants should refer to the appropriate graduate degree program section for their particular requirements. Satisfactory scores on these examinations are determined by the College to which the application is made.

Applicants should write to the Educational Testing Service, Princeton, New Jersey 08540 or contact the FTU Developmental Center for information on the GRE or GMAT testing dates and locations.
SECOND GRADUATE DEGREE PROGRAM

A student who has completed one graduate degree program must secure the approval of the program concerned before undertaking a second graduate program. Work taken without such approval will not count toward a graduate degree.

FLORIDA RESIDENCY (See page 40)

TRANSFER OF GRADUATE CREDIT

Normally, a maximum of nine quarter credits may be transferred from institutions not within the State University System to FTU for application to a Masters program. Up to 12 quarter credits taken as an FTU post-baccalaureate or from another Florida SUS institution may be transferred at the discretion of the degree program upon a petition by the student.

INTERNATIONAL STUDENTS

Applicants from foreign countries whose native language is not English are required to submit scores on the Test of English as a Foreign Language (TOEFL) examination in addition to the GRE or ATGSB/GMAT. These examinations are offered periodically at test centers throughout the world by the Educational Testing Service. The TOEFL Bulletin of Information for Candidates, International Edition and Registration Form are available at American embassies, consulates, offices of the United States Information Service or other U.S. government agencies abroad.

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 advisor to keep him informed.

THE TRAVELING SCHOLAR PROGRAM

The University participates in a Traveling Scholar Program, enabling a graduate student to take advantage of special resources available on another campus but not available on his own campus: special course offerings, research opportunities, unique laboratories, and library collections.

A traveling scholar must receive the approval of his own graduate advisor and the appropriate faculty member at the host university, then be formally approved by the graduate deans at the respective institutions.

The scholar will be registered at the host university and pay regular fees there. He will receive a waiver of admission requirements and the application fee of the host university. Credit for work, which is guaranteed, will be recorded at the home university.

Normally, traveling scholars are limited to one quarter of off-campus study. They are not entitled to mileage or per diem payments but
the home university may, at its option, continue its financial support in the form of fellowships or graduate assistantships without any work obligation to be discharged at either university. Appropriate forms are available in the Office of Graduate Studies.

STUDENT'S COMMITTEE

It is the intent that the student's advisor or advisory committee be influential in designing a program of study for the student, providing continual guidance, and be the principal mechanism for evaluation of the student's progress.

Advisors and advisory committees will be appointed by the Dean of the College in cooperation with the Department or appropriate unit in which the student is enrolled. Advisory committees must have at least three (3) members.

STUDENT'S PROGRAM OF STUDY

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 advisor or committee and should be approved by the appropriate College Dean. A copy of the program and names of the student's advisor or committee members will be filed with the Office of Graduate Studies prior to the start of the student's second quarter.

COURSE LOADS

Graduate students applying for assistance under Public Law 89-358 (Veterans' Readjustment Benefits Act of 1966) must register for 9 credits per quarter to qualify for certification as a full-time student. Post-baccalaureates must register for 12 credits. Normally, the maximum load for graduate students is 15 quarter hours.

COURSES AND CREDITS

Courses numbered 500-599 are primarily for beginning graduate students. Courses numbered 600-699 are exclusively for graduate students. At least one half of the course requirements of the student's graduate program of study must be at the 600 level. No more than 9 hours of 400 level work may be utilized in a graduate program of study. Courses of 300 level and below may not be utilized in a graduate program of study without prior permission from the Graduate Council.

GRADES AND SCHOLARSHIP

Acceptable grades for students pursuing graduate study are A and B. A student whose GPA falls below this value will normally be dropped from the graduate program. An accumulation of more than nine (9) hours of C, D, F, I work is grounds for automatic dismissal from a degree program.

MAXIMUM HOURS

The Florida Board of Regents (BOR) has established a maximum number of hours for each degree program which a student may accumulate after entering the degree program as a Regular or Provisional graduate student. Any course work taken regardless of
applicability towards the program requirements counts toward the program maximum. See the appropriate program section for the maximum hour limit.

**RECENCY OF WORK**

Courses completed more than five years prior to the quarter in which the degree is earned may not be used toward meeting degree requirements.

**RESIDENCE REQUIREMENTS**

At least 33 credits must be earned at FTU. Residence credits may be earned through enrollment in courses offered on campus, at FTU Residence Centers or at other locations where FTU courses are taught by FTU faculty.

**REGISTRATION REQUIREMENTS**

Students must be registered in any quarter in which FTU faculty or facilities are utilized. Unless the graduate program certifies to the Office of the Registrar that no FTU resources will be utilized, a student must be registered in the quarter of graduation.

**CREDIT BY EXAMINATION — INDEPENDENT STUDY**

Credit by examination may be utilized to satisfy course requirements, but not credit hour requirements. No more than nine (9) hours of independent study credit will be accepted in the program of study.

**EXAMINATIONS**

An end-of-program (final) comprehensive examination is required of all students. This examination may consist of a thesis defense or an examination of course work material or both.

**THESIS-LANGUAGE EXAMINATIONS**

Thesis and language examination requirements are at the option of the respective degree programs.

**APPLICATION FOR DEGREE**

The student must file an Intent to Graduate form in the Office of the Registrar during the first week of the quarter in which graduation is anticipated. If the student then fails to graduate that quarter, the Intent to Graduate form must be refiled in the quarter when graduation is next anticipated.
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.

ENVIRONMENTAL STUDIES (69)

BASIC PROGRAM (54)

<table>
<thead>
<tr>
<th>Communications</th>
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<tbody>
<tr>
<td><strong>Composition</strong></td>
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<tr>
<td>ENG 101 Composition I (4)</td>
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<tr>
<td><strong>Speech</strong></td>
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<td>SPE 101 Fundamentals of Oral Communication (3)</td>
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<td><strong>Communications Options</strong></td>
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<tr>
<td>ENG 103 Exploring Literature Through Writing, ENG 202, ENG 208; or Speech course.</td>
<td>(3)</td>
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</table>

CULTURAL AND HISTORICAL FOUNDATIONS* 11-12
(Select one course from each group)

| I. HUM 201 Western Humanities Survey (4) |
| II. ART ART (3-4) Any Literature (3) |
| HIST History (4) |
| HUM Humanities (4) |
| MUS Music |
| PHIL Philosophy (4) |
| REL Religion (4) |
| THA Theatre (4) |
| III. HIST History (4) |

Mathematical Sciences 7-8
(Select any two)

| COMP Any COMP course |
| PHI 205 Formal Logic I (4) |
| MATH Any MATH course |
| STAT Any STAT course |

Social Sciences* 12-13
(Select from both I & II)

| I. ECON 201 or 202, 203 Economics Survey (3) or Principles of Economics (4,4) |
| PCL 201 or 303 Political Science (4) |
| GEOG 350 or 360 Social Geography (4) |

*See footnote on page 64.
II. PSY 201, 202
SOC 201, 202
SOC 310, 311
COM 100

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Psychology</td>
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<td>Sociology</td>
<td>(4,4)</td>
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<tr>
<td>Anthropology</td>
<td>(4,4)</td>
</tr>
<tr>
<td>Basic Communication</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Scientific Environment
(Select from at least two groups)

I. Biological Sciences (4-8)
Any BIOL, BOT, MICRO or ZOOL courses

II. Earth Sciences (4-8)
CEES 322
Any GEOL courses
GEOG 100, 301
Physical Geography

III. Physical Sciences (4-8)
Any CHEM courses
Any PHYS courses
ENGR 100, 151, 152

*After the completion of a year of foreign language, a student may substitute language for any 4 hours of credit in Cultural and Historical Foundations and 4 hours of credit in Social Sciences. The remaining hours may be used in the General Elective area of the student's major. For placement in language classes, see page 127.

ADVANCED PROGRAM (15)

Business (3)
BADM 301, 302, 371
MGMT 301

Engineering (3)
ENGR 380
ENGR 480 to 489

Education (3)
EDEL 482
EDLS 380
EDTA 480
EDTA 481
ESPE 483
EDVE 381

Electives (Upper Division) (6)
These courses must be selected from a college other than the one in which the student is registered. A General Studies student may select electives from any college.

MAJOR IN GENERAL STUDIES

PURPOSE

The General Studies curriculum is a university-wide general purpose program leading to the Bachelor of Arts in General Studies or Bachelor of Science in General Studies degree. The determination of whether the Arts or Science degree shall be awarded will be determined by the course areas selected.

The program is administered through the office of the Associate Vice President 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 accommodates students who desire a liberal, non-professional 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 may pursue the General Studies program until they can select a specific major area.

Students fulfilling the requirements for a degree in General Studies must complete either the FTU Basic Environmental Studies Program or the General Education requirement at a Florida State Junior College. In addition, 15 quarter hours of Advanced Environmental courses are required as outlined on the previous page.

The General Studies student must complete a minimum of four course area groupings in which at least three colleges are represented. A minimum of 22 quarter hours must be completed in each area with an additional 22 quarter hours to be completed in a fifth area or used to strengthen one or more of the four course area groupings. However, students choosing only four course area groupings may include a maximum of 12 quarter hours of general electives in completing their degree program.

The areas of Business Administration, Education, and Engineering may be used twice provided a specific concentration corresponding to a traditional major is chosen for one of the area course groupings. For example, two areas in Business Administration may be completed using 22 quarter hours in Accountancy and 22 quarter hours in general business courses.

In addition to the University-wide degree requirements shown on page 46 a minimum grade point average of 2.0 must be achieved in each course grouping.

### COURSE AREA GROUPINGS

**AIR FORCE ROTC**
For students who take and complete the Air Force R.O.T.C. four year or two year upper division programs.

**ALLIED HEALTH SCIENCES**
Allied Health Sciences, Medical Record Administration, Medical Technology, Nursing, Respiratory Therapy and other Health Related Professions.

**BEHAVIORAL SCIENCES**
Anthropology, Psychology, Sociology, and Social Welfare.

**BIOLOGICAL SCIENCES**
Biology, Botany, Microbiology, and Zoology.

**BUSINESS ADMINISTRATION**
Accounting, Business Administration, Economics,,+ Finance, Management, Marketing, and Quantitative Business Analysis.

**COMMUNICATIONS**
Journalism, Radio-Television, Speech and general courses in Communications.
EDUCATION* E.D.**
Business Education, Library Science, Physical Education, Teaching Analysis, Vocational Education and selected courses from Elementary and Secondary Education.

ENGINEERING ENGR.**
Selected courses from the Engineering core and departmental offerings. A maximum of 9 quarter hours from Engineering Interdisciplinary Courses may be used in the Environmental Studies and General Studies program.

FINE ARTS H.F.A.**
Art, Music, and Theatre.

HUMANITIES H.F.A.**
English, Foreign Literature, History, Humanities, Philosophy, and Religion.

LANGUAGES H.F.A.**
French, German, Italian, Russian, Spanish.

MATHEMATICAL SCIENCES N.S.**
Computer Sciences, Mathematics, and Statistics.

PHYSICAL SCIENCES N.S.**
Astronomy, Chemistry, Forensic Science, Geography (Physical), Geology, Physics, and general courses in the Earth and Space Sciences.

SOCIAL SCIENCES S.S.**
Allied Legal Services, Criminal Justice, Economics, Geography (Social), Political Science, and Public Administration.

‡This course shown in two areas.
*Consult your advisor. Many ED courses require concurrent public school practicum.
**The current six colleges are: Business Administration (B.A.); Education (ED.); Engineering (ENGR.); Humanities and Fine Arts (H.F.A.); Natural Sciences (N.S.); and Social Sciences (S.S.).
COLLEGE OF BUSINESS ADMINISTRATION

UNDERGRADUATE PROGRAMS
ACCOUNTANCY
BUSINESS ADMINISTRATION
ECONOMICS
FINANCE
MANAGEMENT
MARKETING

GRADUATE PROGRAMS
ACCOUNTANCY
BUSINESS ADMINISTRATION
ECONOMICS
MANAGEMENT
The goal of the College of Business Administration is to assist in the maximum development of the individual potential for accomplish­ment as a person and as a responsible member of society by preparing students for entry into managerial or professional positions in business and government.

Graduates of the College of Business Administration may pursue a wide variety of careers in business and industry, 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.

The degree Bachelor of Science in Business Administration with the following majors is offered by the College of Business Administration:

- Accountancy
- Business Administration
- Economics
- Finance
- Management
- Marketing

AREA REQUIREMENTS FOR GRADUATION

Program area hour requirements specified for graduation by the College of Business Administration include Basic Environmental Studies (54), Advanced Environmental Studies (15), Common Body of Knowledge (48-49), major area requirement (27-33), major area electives, and general electives.

ENVIRONMENTAL STUDIES PROGRAM (69)

The Environmental Studies Program for the College of Business Administration is similar to the general requirements for all students of the University. The College specifically recommends a number of courses for inclusion as part of the Environmental Studies Program. It is strongly suggested that students consult with an advisor in the College of Business Administration before embarking on a course of study.

Students in the College of Business Administration cannot receive credit for the following courses: BADM 301, BADM 302 and ECON 201.

COMMON BODY OF KNOWLEDGE (48-49)

The common body provides foundation courses in each of the major areas of business administration as a platform from which the student builds his major course of study.

LOWER DIVISION

- ACCY 211, 212 Financial Accounting
- or 300
- ECON 202 Microeconomics
- ECON 203 Macroeconomics

UPPER DIVISION

- ACCY 305 Managerial Accounting
BADM 303  Business Information Systems  3
BADM 324  Business Operations Management  3
BADM 371  Legal Environment of Business  3
ECON 321  Quantitative Methods and Business Decision Analysis  4
FIN 301  Finance  5
MGMT 301  Management and Organization Behavior  3
MGMT 311  Human Behavior and Interpersonal Relations  3
MKTG 301  Marketing  5
ECON 401  Managerial Economics  3
BADM 485  Business Policies  4

GRADE POINT AVERAGE REQUIREMENTS

For graduation the student must have maintained a minimum 2.0 GPA in course work taken in the College of Business Administration and a minimum 2.0 GPA in the course work in the major.

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 permission from the chairperson of their major area department.

COMMUNITY/JUNIOR COLLEGE TRANSFERS

Community/Junior College students who plan to transfer to the College of Business Administration at Florida Technological University are advised to:

1. Complete the entire university-parallel program at the Community-Junior College (the Associate of Arts Degree) including:
   A. the general education requirements prescribed by the Community-Junior College.
   B. the one-year accounting and economics sequences (sophomore year).
   C. a course in College Algebra
   D. a course in Statistics
   E. a course in Business Law

2. Avoid the following professional courses: Principles of Management, Principles of Marketing, Principles of Finance, and similar courses. These professional courses are available only as third and fourth year courses in the College of Business Administration and consequently cannot be satisfied with Community/Junior College courses.

ECON majors will take ECON 301 in lieu of ECON 401; other majors may substitute ECON 301, 311, 341, 421, 431, 441, or FIN 331; BADM majors may not substitute ECON 431.

DEPARTMENT OF ACCOUNTANCY

Chairman: C. Avery, CB 436, Phone 275-2463
Faculty: Busch, Bussman, Causey, Johnson, Marquardt, Salter, Wood

Accountancy is usually selected as a major by the student who is preparing for industrial, governmental, or public accounting, or who wishes to use accounting as general training for a career in business.
The size and nature of the organization determines the scope of the industrial accountant's 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.

The principles which underlie governmental accounting are, in general, aimed at meeting certain legal requirements, based on the public nature of the activity. These activities include the operations of governments and sub-divisions thereof, such as national and state governments, counties, cities, villages, and park and school districts.

In today's complex society, the Certified Public Accountant performs a specialized professional service which is indispensable to investors, bankers, businesses and governmental units of all sizes. As the needs of these fields have grown, the CPA's profession has broadened its dimensions to keep pace. The CPA's best known function is to audit—or, to conduct an objective examination and analysis of a company's financial statements for the purpose of expressing his independent opinion as to whether or not the statements fairly present the organization's financial position and results of operations.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: ACCOUNTANCY

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business Common Body of Knowledge (48-49 hours)
   b. ACCY 314 Introduction to Accounting Theory and Practice 3
      ACCY 315 Intermediate Accounting I 5
      ACCY 316 Intermediate Accounting II 5
      ACCY 325 Cost Accounting 4
      ACCY 425 Cost Analysis 4
      ACCY 430 Auditing 5
      ACCY 450 Federal Income Tax Accounting 5
      ACCY 475 Current Selected Topics 2

4. Restricted Electives
   Not more than 36 hours of credit in Accountancy beyond the College common body of knowledge requirement may be counted in the 180 quarter hours for graduation.

5. Electives
   Total Quarter Hours Required 180

DEPARTMENT OF BUSINESS ADMINISTRATION

Chairman: R. Reidenbach, CB 417, Phone 275-2108
Faculty: Manske, Schou, Stone

Business Administration is normally selected as a major by those students who do not wish to concentrate in a specialized or functional field within the major disciplines offered by the College of Business Administration. Instead the student is encouraged to take advantage of the opportunity to select from any of the areas which interest him, thereby making the program a highly flexible one which is also extremely broad in content.
The curriculum contains a large number of elective options which when coupled with the basic courses required of all students in the College, will give the student a breadth of understanding so as to enable him to take advantage of the multitude of opportunities found outside of a specialized field.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: BUSINESS ADMINISTRATION

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business College common body of knowledge (48-49 hours)
   b. ECON 431 Public Finance in the American Economy 4 hours
      FIN 321 Investments
      or
      FIN 331 Money and Banking 4 hours
      or
      FIN 351 Financial Institutions
      MGMT 364 Personnel Management 4 hours
      MGMT 480 Planning and Control 4 hours
      MKTG 384 Marketing Research 5 hours

4. Restricted Electives
   At least two additional courses from a minimum of two areas in the College of Business Administration.

5. Electives
   Total Quarter Hours Required 180

DEPARTMENT OF ECONOMICS

Chairman: (Acting) R. Hicks, CB 444, Phone 275-2465
Faculty: David, Klages, Raffa, Shockley, Slemmer, White, Winchester, Xander

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.

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 a variety of careers in business, industry, and government.

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

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: ECONOMICS

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business College common body of knowledge (48-49 hours)
   b. ECON 301 Intermediate Price Theory 4 hours
      ECON 311 Intermediate Money, Income and Employment Theory 4 hours
      ECON 431 Public Finance in the American Economy 3 hours
      FIN 331 Money and Banking 4 hours

4. Restricted Electives
   All economics majors will be required to take five electives beyond the major required economic courses of 301, 311, 431, and FIN 331.

   Specialization:
   Economics major may have a concentration in any economics area offering sufficient courses including quantitative courses.

   Not more than 32 quarter hours of credit in Economics beyond the College common body of knowledge requirements may be counted in the 180 quarter hours required for graduation.

5. Electives:

   Total Quarter Hours Required 180

MAJOR IN FINANCE

Contact Person:  W. Reiff, CB 443, Phone 274-2465
Faculty:  Brewer, Budina, Hitt, Millican

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 emphasizes 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 various outlets for investment funds, such as stocks and bonds, an examination of the factors affecting those outlets, and an inquiry into the elements of 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.
BACHELOR OF SCIENCE IN BUSINESS
ADMINISTRATION: FINANCE

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business College common body of knowledge (48-49 hours)
   b. FIN 321 Investments 4 hours
      FIN 351 Financial Institutions 4 hours
      FIN 361 Financial Models 4 hours

4. Restricted Electives
   (Select 4 courses)
   FIN 311 Risk and Insurance 4 hours
   FIN 331 Money and Banking 4 hours
   FIN 341 Real Estate 4 hours
   FIN 352 Commercial Bank Administration 4 hours
   FIN 421 Security Analysis 4 hours
   FIN 431 Financial Management 4 hours
   FIN 461 Portfolio Management 4 hours

   Not more than 32 quarter hours of credit in Finance beyond the College common body of knowledge may be counted in the 180 quarter hours required for graduation.

5. Electives:

Total Quarter Hours Required 180

MAJOR IN MANAGEMENT

Director of the Program: W. Callarman, CB 410, Phone 275-2378
Faculty: Berry, Bogumil, Comish, Eubanks, Gallagher, Jones, Martin, Roush, Wilkinson, Wilson

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 is important to the study of management.

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

The major concern of production management is the effective utilization of material resources. The manager specializes in the efficient utilization of the organization's resources. The design, improvement, and coordination of the business processes with other activities are primary concerns.

A student majoring in management may find a wide variety of career opportunities in business, industry, or government.
BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: MANAGEMENT

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business College common body of knowledge (48-49 hours)
   b. MGMT 364 Personnel Management 4 hours
      MGMT 401 Organization Theory 4 hours
      MGMT 402 Decision Systems Analysis 4 hours
      MGMT 424 Production Management Problems 4 hours
      MGMT 465 Industrial Relations 4 hours
      MGMT 480 Planning and Control 4 hours
      COM 311 Business and Professional Communication 4 hours

4. Restricted Electives
   ECON 331 Economics of Labor 3 hours
   FIN 431 Financial Management 4 hours
   MGMT 466 Human Relations 4 hours
   MKTG 367 Sales Management 4 hours

   Not more than 32 quarter hours of credit in Management beyond the College common body of knowledge requirement may be counted in the 180 quarter hours required for graduation.

5. Electives:

   Total Quarter Hours Required 180

MAJOR IN MARKETING

Contact Person:  E. Teeple, CB 410, Phone 275-2108
Faculty:  Fuller, McAleer, Rubin

Marketing encompasses the total system of interacting business activities designed to plan, price, promote, and distribute want-satisfying products and services to present and potential customers.

The marketing curriculum concentrates on developing the student's ability to understand, interpret, and measure market demand and to understand the blending of product differentiation, pricing strategies, promotional strategies, and physical distribution so as to optimize the efficiency of the total system and the profits of the individual firm.

Students majoring in marketing find career opportunities in the areas of advertising, sales promotion, sales management, industrial sales, purchasing, marketing research, product planning, physical distribution, and other related management positions. This type of career opportunity may be found in the manufacturing, transportation, communication, public utility, wholesale trade, retail trade, finance, insurance, real estate, construction, mining, agriculture, service or other industries. Opportunities are also available in education and government.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: MARKETING

Degree Requirements

1. University graduation requirements
   (See page 46)
2. Environmental Studies Program
   (See page 63)

3. Required Courses
   a. Business College common body of knowledge (48-49 hours)
   b. MKTG 326 Consumer Market Behavior 4 hours
      MKTG 367 Sales Management 4 hours
      MKTG 384 Marketing Research 5 hours
      MKTG 485 Marketing Policies and Strategies 4 hours

4. Restricted Electives
   Minimum of 3 courses with a maximum of one in PSY, COM area
   - BADM 444 International Business Operations 4 hours
   - MKTG 334 Marketing Models and Logistics 4 hours
   - MKTG 364 Advertising Management 4 hours
   - MKTG 469 Channels of Distribution Management 4 hours
   - MKTG 489 Current Marketing Problems 4 hours
   - PSY 300, 308, or COM 311 4 hours

   Not more than 32 quarter hours of credit in Marketing beyond the College common body of knowledge requirements may be counted in the 180 quarter hours required for graduation.

5. Electives

Total Quarter Hours Required 180

COLLEGE OF BUSINESS ADMINISTRATION GRADUATE PROGRAMS

The College of Business Administration offers curricula leading to the Master of Business Administration degree, the Master of Science in management degree, the Master of Science in accountancy degree and the Master of Arts degree in Economics. The graduate programs are conducted under the direction of a faculty committee on graduate study.

Students may start the program during any quarter. Graduate courses are available in the afternoon and evening. The day program is designed primarily for full-time students and the evening program is scheduled for part-time students.

ADMISSION REQUIREMENTS

1. University Admission Requirements
   (See pages 46 and 58)

2. College Admission Requirements
   a. General Admission: Admission is open to the student with a baccalaureate degree from an accredited college or university, with a minimum of 3.0 grade point average (based on a 4.0 system) while registered as an upper division undergraduate student and an acceptable score on the Graduate Management Admission Test (GMAT — 450 with a minimum of 23 on the verbal portion) or an acceptable score on the Graduate Record Examination (GRE — 1000) for the Master of Arts degree in Economics. Students who are deficient in one of these requirements may petition for special consideration.
Such consideration will be based on the applicant's intellectual development during the course of his previous academic career, his extracurricular activities, employment experience, and other evidences of motivation for graduate study. No previous academic training in business is required, thus the four Master degree programs are open to graduates in education, engineering, arts, science, and other fields as well as business. The applicant will not be considered for regular graduate status until his score on the GMAT or GRE, a transcript showing proof of attainment of the Bachelor's degree and the transcripts of all other colleges attended have been submitted to the Director of Admissions of the 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 cannot be accepted. It is the applicant's responsibility to make arrangements to take the GMAT or GRE and to direct the Educational Testing Service to mail the test score to the Director of Admissions, Florida Technological University.

b. Personal Interview and Enrollment: A personal interview with the Coordinator of the graduate programs, in connection with the application for admission is desirable. Personal interviews may be arranged through the Office of Graduate Programs, College of Business Administration.

Enrollment in graduate courses is limited to students who have been accepted in one of the admission categories for the MBA, MSm, Msa and MAE programs. Students who apply too late to take the Graduate Management Admission Test may be required to register for prerequisite undergraduate courses only. An exception may be made for a student ranking in the upper 10% of his undergraduate class. The College of Business Administration office must have the student's application for admission on file prior to the registration for the prerequisite courses.

UNIVERSITY GRADUATE POLICIES AND PROCEDURES


MASTER OF BUSINESS ADMINISTRATION

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

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

Degree Requirements

1. Prerequisites: The following prerequisites should be completed before a student may enroll in required/elective graduate courses. Quarter hours are shown in parentheses.
ACCY 211, 212  Financial Accounting I and II (3, 3)
or
ACCY 300  Financial Accounting (5)
or
ACCY 501  Financial Accounting Concepts (4)
BADM 371  Legal Environment of Business (3)
or
BADM 501  Business Environment and Business Law (3)
ECON 202  Principles of Microeconomics (4)
ECON 203  Principles of Macroeconomics (4)
or
ECON 501  Economic Concepts (4)

STAT 301  Fundamentals of Probability and Statistics, (4)
and
ECON 321  Business and Economic Statistics (4)
or
ECON 521  Statistics for Business and Economics (4)
FIN 301  Finance (5)
or
FIN 501  Financial Concepts (4)
MGMT 301  Management and Organizational Behavior (3)
and
BADM 324  Business Operations Management (3)
or
MGMT 501  Management and Production Concepts (4)
MKTG 301  Marketing (5)
or
MKTG 501  Marketing Concepts (4)

Students completing their last prerequisite course(s) may register for graduate courses in the same quarter with the permission of the Coordinator of the graduate program.

Prerequisite courses must have been completed with a minimum grade of "B" within the past five years at an accredited college or university. Prerequisites may be satisfied through completion of the equivalent foundation course or through credit by examination.

2. Core Courses: The following courses are required.

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ACCY 601</td>
<td>Accounting Analysis</td>
<td>3</td>
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<tr>
<td>BADM 601</td>
<td>Operations Research Models for Business</td>
<td>3</td>
</tr>
<tr>
<td>BADM 611</td>
<td>Systems Analysis for Business</td>
<td>3</td>
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<td></td>
<td>Problem Solving</td>
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<td>BADM 621</td>
<td>Business Policy and Responsibility</td>
<td>3</td>
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<td>BADM 695</td>
<td>Research Methods</td>
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<td>ECON 601</td>
<td>Economic Analysis of the Firm</td>
<td>3</td>
</tr>
<tr>
<td>ECON 621</td>
<td>Statistical Models for Business</td>
<td>3</td>
</tr>
<tr>
<td>FIN 601</td>
<td>Capital Management and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>FIN 611</td>
<td>Financial Management of Current Operations</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 601</td>
<td>Planning and Control Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 611</td>
<td>Analysis of Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 601</td>
<td>Marketing Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

36 hours

3. Restricted Electives: 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 the College of Business Administration, or, by petition, certain graduate courses
which may be open to them in other colleges and approved by the College of Business Administration. A graduate elective course may be substituted for one graduate required course in the student’s major if the student has completed a baccalaureate degree in Business Administration within the previous five years.

4. Thesis/Research Report: No thesis is required for the MBA degree. A student may petition to accomplish an independent study for three hours of elective graduate credit (BADM 694) or a major research project and written report for six hours of elective graduate credit (BADM 697-698). The research project will include the statement, exposition and resolution of a hypothesis in an area of Business Administration by means of a critical and analytical review of existing literature or through primary research.

5. Examinations: Satisfactory completion of a written comprehensive examination is required for the MBA degree. The two hours comprehensive examination on the major areas of study normally will be taken during the eighth week of the final quarter of required course work.

6. Other Requirements: None Specified.

<table>
<thead>
<tr>
<th>Total Quarter Hours Required</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BOR Maximum Hours Allowed</td>
<td>65</td>
</tr>
</tbody>
</table>

(see pages 61-62)

MASTER OF SCIENCE: ACCOUNTANCY

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

The Master of Science in accountancy stresses the development of advanced accounting skills to provide resources for decision making and problem solving in public, private and government accounting. Course work is practice oriented, emphasizing quantitative techniques and computer skills. Courses offered within the MSa core program have received approval from the State Board of Accountancy and satisfy all requirements of Rule 21A-8.03 (5th year in accountancy) and Rule 21A-13.03 (professional education).

Degree Requirements

1. Prerequisites: The following prerequisite accounting courses should be completed in addition to the prerequisites listed for the MBA program and BADM 485 Business Policies (4) or BADM 621 Business Policy and Responsibility (3) for graduate elective credit.

Prerequisite Undergraduate Accounting Courses:

- ACCY 211, 212 Financial Accounting I, II (3,3)
- or ACCY 300 Financial Accounting (5)
- ACCY 310 Systems Concepts and Management Accounting (5)
- ACCY 311, 312 Intermediate Accounting (5,5)
- ACCY 320 Cost Accounting (5)
- ACCY 410 Advanced Accounting (5)
- ACCY 430 Auditing (5)
- ACCY 450 Federal Income Tax Accounting (5)
Foundation courses must have been taken at an accredited institution with the student earning a grade of "C" or higher.

2. Core Courses: The Master of Science in accountancy is awarded upon satisfactory completion of a graduate program of 45 quarter hours: 39 hours in the core and 6 hours of graduate elective courses. The required graduate courses for the MSa program are as follows:

- ACCY 610 Contemporary Accounting Theory 5 hours
- ACCY 612 Computers and Information Systems in Accounting 5 hours
- ACCY 620 Advanced Auditing 5 hours
- ACCY 630 Cost Accounting for Management Decisions 5 hours
- ACCY 640 Taxation 5 hours
- ACCY 650 Specialized Accounting Problems 5 hours
- ACCY 695 Reserach Methods 3 hours
- or
- BADM 695
- ECON 601 Economic Analysis of the Firm 3 hours
- ECON 621 Statistical Models for Business 3 hours

39 hours

3. Restricted Electives. Six hours of graduate course work approved by the College of Business Administration.

4. Thesis: The MSa does not require a thesis. However, students wishing to do research may choose among the following options: (1) independent study; (2) a major research project and written report for 6 hours credit (BADM 697-698); or (3) a thesis for a maximum of six elective graduate credits.

5. Examinations: Satisfactory completion of a comprehensive examination is required.

6. Other Requirements: None specified.

Total Quarter Hours Required 45
BOR Maximum Hours Allowed 65
(see pages 61-62)

MASTER OF ARTS: ECONOMICS

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

The program of study for the Master of Arts Degree in Economics is designed to provide the necessary specialization in economics for those desiring careers in the academic, governmental, business, and financial communities.

Degree Requirements

1. Prerequisites: The following prerequisites should be completed before enrolling in the graduate courses. However, a graduate course may be taken if there are no undergraduate prerequisites.

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

It is desirable for the student to have completed the above undergraduate courses prior to beginning graduate work as they are prerequisites to some of the graduate courses. However, students may register in the same quarter for prerequisite and graduate courses which require no prerequisites.

Prerequisite courses must have been completed with a grade of "C" or higher within the past five years at an accredited college or university.
2. Core Courses:
   - ECON 602: Price Theory 5 hours
   - ECON 612: Macroeconomic Theory 5 hours
   - ECON 622: Statistical Analysis of Economic Data 5 hours
   - ECON 695: Research Methods 3 hours
   - or BADM 695

3. Restricted Electives: At least eighteen hours may be taken from elective courses offered by the Department of Economics. Up to nine hours of graduate credit may be accepted from other recognized programs upon approval of the Department.

4. Thesis: Required—may not exceed nine hours of graduate credit.

5. Examinations: Satisfactory completion of a comprehensive examination consisting of an oral defense of the thesis.

6. Other Requirements: None specified.

Total Quarter Hours Required 45
BOR Maximum Hours Allowed 65
(see pages 61 and 62)

MASTER OF SCIENCE IN MANAGEMENT

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

The purpose of the MSm degree is to provide students with a broad understanding of business administration in which the experience and knowledge gained from in-depth research required by the thesis in one area of management is an integral part.

Degree Requirements

1. Prerequisites: Same as for the MBA program.
   (see page 76)

2. Core Courses: In addition to the prerequisites, a minimum of 45 quarter hours of graduate study is required for the Master of Science in management degree. Required graduate courses for the MSm program are identical to the 36 hours of required course work for the MBA program.

3. Restricted Electives: None Specified.

4. Thesis: Specialization for the Master of Science in management will be achieved through the research required in an area of management to prepare a satisfactory thesis. Nine hours of credit (MGMT 699) are granted for the thesis.

5. Examinations: Satisfactory completion of a comprehensive examination consisting of an oral defense of the thesis.

6. Other Requirements: None specified.
COLLEGE OF EDUCATION

UNDERGRADUATE PROGRAMS

COMPREHENSIVE K-12
LIBRARY MEDIA
PHYSICAL EDUCATION
VISUAL ARTS

ELEMENTARY

SECONDARY
BIOLOGY
BUSINESS EDUCATION
CHEMISTRY
ENGLISH LANGUAGE ARTS
FOREIGN LANGUAGE
MATHEMATICS
PHYSICS
SOCIAL SCIENCES
SPEECH

GRADUATE PROGRAMS
ADMINISTRATION/SUPERVISION
COMPREHENSIVE K-12
ELEMENTARY
GUIDANCE
SECONDARY

DOCTORAL PROGRAMS (FTU-FAU)
ADMINISTRATION AND SUPERVISION
CURRICULUM AND INSTRUCTION
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. Programs are offered leading to the Bachelor of Arts degree, the Master of Education degree and the Master of Arts degree in Education.

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.

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.
UNDERGRADUATE CAREER TEACHER 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.

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 Phase I and Phase II; have a 2.2 average in his area of academic specialization; 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 must be submitted no later than October 1 for the Winter Quarter; January 15 for the Spring Quarter; and April 5 for the Fall Quarter.

CERTIFICATION FOR TEACHING

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. In addition, there is an "interstate" agreement with several states for those College of Education graduates who desire to teach outside of Florida. Check with the Dean, College of Education, or Florida Department of Education for information.
DEPARTMENT OF ELEMENTARY EDUCATION

Chairman: R. Martin, CB 317, Phone 275-2161, 275-2162.
Faculty: Anderson, Bird, Cox, Esler, Green, Haughee, Hynes, Merritt, Midgett, Monteleone, Olson, Palmer, Poe, Thompson

The career Elementary Education Program is planned for students interested in the development and education of young children, six through twelve years of age. Students who major in elementary education are qualified to teach grades one through six upon graduation and receipt of a Florida teaching certificate.

An elementary education major must have a broad general education (environmental studies—69 quarter hours); a specialized knowledge of content, techniques and materials needed to teach different elementary school subjects such as art, language arts, mathematics, music, physical education, science and social sciences (43 quarter hours); and pursue professional study in a cluster of courses and experiences designed to prepare prospective teachers to effectively work with young children (38 quarter hours).

Professional study includes planned laboratory activities which provide for the application and synthesis of theoretical learnings and development of teaching competencies. Laboratory experiences in Teacher Education Centers are scheduled concurrently with selected required courses during two quarters of the junior year (Phase II). The culminating field experience of a student's program is senior year student teaching (Phase III).

BACHELOR OF ARTS: ELEMENTARY EDUCATION

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   EDEL 301 Teaching Mathematics in the Elementary School 3 hours
   EDEL 302 Mathematics Programs in the Elementary School 3 hours
   EDEL 306 Music in the Elementary School 4 hours
   EDEL 307 Literature for Children 4 hours
   EDEL 312 Reading in the Elementary School 3 hours
   EDEL 315 Teaching Science in the Elementary School 3 hours
   EDEL 317 Teaching Social Sciences in the Elementary School 3 hours
   EDEL 405 Language Arts in the Elementary School 4 hours
   EDEL 406 Art in the Elementary School 4 hours
   EDEL 407 Classroom Diagnosis and Treatment of Reading Difficulties 3 hours
   EDEL 408 Science Programs in the Elementary School 3 hours
   EDEL 409 Social Science Programs in the Elementary School 3 hours
   EDEL 415 Teaching Elementary School Health and Physical Education 3 hours
### Phase I
- EDTA 206 Human Development 3 hours
- EDTA 307 Teaching Analysis 5 hours

### Phase II
- EDEL 311 Basic Foundations of Reading 3 hours
- EDPL 320 Elementary School Student Teaching—Block A 3 hours
- EDPL 321 Elementary School Student Teaching—Block B 3 hours
- EDTA 305 Principles of Evaluation 3 hours
- EDTA 306 Variables Affecting School Learning 3 hours

### Phase III
- EDEL 316 Elementary School Curriculum 3 hours
- EDPL 421 Elementary School Student Teaching—Block C 9 hours
- EDPL 408 Teaching Strategies 3 hours

### 4. Restricted Electives (Area of Academic Concentration)
A minimum of 12 quarter hours is required in a related field of academic concentration. These courses should be used to provide supplementary teaching field concentration designed to enhance over-all proficiency and teaching skill. Elementary Education majors are advised to select courses leading to certification to teach English, mathematics, social sciences, or sciences in the junior high school, which also may increase employability in a middle school or departmentalized elementary school; or in the intellectual disabilities area of Exceptional Child Education.

### 5. Electives
Total Quarter Hours Required 180

### AREAS OF SPECIALIZATION

1. Early Childhood Education (Nursery and Kindergarten). In combination with preparation to teach grades one through six, requirements may be met for preparation/certification to teach kindergarten (9 quarter hour minimum).
   - EDEL 460 Principles and Programming in Early Childhood Education 4 hours
   - EDEL 461 Curriculum in Early Childhood Education 4 hours
   - EDEL 462 Creativity in Nursery-Kindergarten Education 4 hours

2. Exceptional Child Education (Educable Mentally Retarded). In combination with preparation to teach grades one through six, a specialization is available which is concerned with knowledge, methods, and materials essential to teach children with intellectual disabilities (EMR). Completion of the combined program qualifies a student for certification in each area.
   - EDEX 401 Introduction to Exceptional Children 4 hours
   - EDEX 402 Oral Communication Disabilities of Exceptional Children 4 hours
   - EDEX 403 Mental Retardation 4 hours
   - EDEX 404 Dimensions of Psycho-educational Appraisal 4 hours
   - EDEX 431 Teaching Mentally Retarded Students 3 hours
   - EDEX 432 Curriculum and the EMR Child 3 hours
   - ECEX 611 Homemaking and Social Learning Skills for the Mentally Retarded 3 hours

### NOTE:
Because of the extensive nature of a total program meeting requirements in two teaching areas, students usually become associated with the program in their sophomore year or earlier.
DEPARTMENT OF PHYSICAL EDUCATION

Chairman: J. Powell, CB 343, Phone 275-2595
Faculty: Clark, Cleland, Gergley, Higginbotham, Hunter, H. P. Martin, Renner, Rohter

The Physical Education program offers a comprehensive curriculum designed to certify a student to teach as a physical education specialist in grades K through 12. Areas of study are: (1) Environmental Studies—69 quarter hours; (2) General Professional Preparation—48 quarter hours; (3) Area of Specialization—46 quarter hours; and (4) Electives—17 quarter hours.

Physical Education major students will be required to successfully complete the Required Professional Courses (Phase I, II, III) as outlined on the next page. Physical Education major students in Phase II will be provided a teacher-coaching experience in Teacher Education Centers during two quarters (one quarter on an elementary level, one quarter on a middle school-junior high school level) of their junior year. The courses listed in Phase II—Developmental, will be scheduled concurrently.

In Phase III (senior year), 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.

BACHELOR OF ARTS: PHYSICAL EDUCATION

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)
3. Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ZOOL 324</td>
<td>Anatomy</td>
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<tr>
<td>EDPE 323</td>
<td>Instructional Analysis of Team Sports</td>
<td>2</td>
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<tr>
<td>EDPE 324</td>
<td>Instructional Analysis of Tennis</td>
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<tr>
<td>EDPE 325</td>
<td>Instructional Analysis of Aquatics</td>
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<td>EDPE 326</td>
<td>Instructional Analysis of Gymnastics and Tumbling</td>
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<td>EDPE 327</td>
<td>Instructional Analysis of Golf</td>
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<tr>
<td>EDPE 328</td>
<td>Instructional Analysis of Wrestling</td>
<td>2</td>
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<tr>
<td>or EDPE 329</td>
<td>Choreography of Contemporary Dance</td>
<td>2</td>
</tr>
<tr>
<td>EDPE 330</td>
<td>Instructional Analysis of Rhythms</td>
<td>2</td>
</tr>
<tr>
<td>EDPE 350</td>
<td>Coaching Theory</td>
<td>3</td>
</tr>
<tr>
<td>EDPE 360</td>
<td>School and Community Recreation</td>
<td>3</td>
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<tr>
<td>EDPE 410</td>
<td>Kinesiomechanics</td>
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</tr>
<tr>
<td>EDPE 421</td>
<td>Exercise Physiology—Cardiovascular</td>
<td>4</td>
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<td>EDPE 422</td>
<td>Exercise Physiology—Respiratory</td>
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<tr>
<td>EDPE 440</td>
<td>Rehabilitation Training Techniques</td>
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<tr>
<td>EDPE 450</td>
<td>Organization and Administration of Physical Education</td>
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Phase I

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<tr>
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<td>EDTA 307</td>
<td>Teaching Analysis</td>
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Phase II

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<tr>
<td>EDPL 320</td>
<td>Elementary School Student Teaching</td>
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</tr>
<tr>
<td>EDTA 305</td>
<td>Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>EDTA 306</td>
<td>Learning Theory</td>
<td>3</td>
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<tr>
<td>EDSE 303</td>
<td>School Programs</td>
<td>3</td>
</tr>
<tr>
<td>EDSE 380</td>
<td>Physical Education Instructional Analysis</td>
<td>4</td>
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<tr>
<td>EDSE 442</td>
<td>Teaching Reading in the Content Areas</td>
<td>3</td>
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<tr>
<td>EDPL 330</td>
<td>Secondary School Student Teaching</td>
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Phase III

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<tr>
<td>EDSE 404</td>
<td>Instructional Techniques</td>
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</tr>
<tr>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 421</td>
<td>Elementary School Student Teaching</td>
<td>9</td>
</tr>
<tr>
<td>or EDPL 430</td>
<td>Secondary School Student Teaching</td>
<td>9</td>
</tr>
</tbody>
</table>

4. Restricted Electives

None

5. Electives

17 quarter hours may be used as electives or may be utilized to work towards certification in either or both of the related areas of science or health education.

Total Quarter Hours Required: 180

AREAS OF SPECIALIZATION

1. Health Education, Health Education certification may be obtained by completing 27 quarter hours of courses which are offered through the College of Education and various other colleges within the University. For further information, see any Physical Education advisor.

DEPARTMENT OF PROFESSIONAL LABORATORY PROGRAM

Chairman: R. Rothberg, CB 323, Phone 275-2401
Faculty: Beadle, Harlacher, Harrow, Hoover, Manning, M. Miller, Sullivan
The nature of the F.T.U. program for students planning a career in teaching is considered innovative and functional because of early and continuous field experience with school children which attempts to blend theoretical consideration with the practical. Cooperative planning and articulation with school personnel in Central Florida provides the most appropriate activities in educational settings.

Practical laboratory experiences in Teacher Education Centers will be scheduled for elementary and kindergarten through twelfth grade certification majors during two quarters of the junior year — Phase II. 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. 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. 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. Applications for Junior Year Student Teaching must be submitted by the fifth week of the preceding quarter.

In Phase III, Senior Year Student Teaching, 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 primarily responsible for long range planning and instruction. A full quarter is devoted to student teaching. Concurrent enrollment in the seminar, Teaching Strategies, and either EDSE 404 or EDEL 316 is required. To be admitted to Phase III, a student must have satisfied the requirements for Phase I and Phase II; have a 2.2 average in his area of academic specialization; a 2.0 overall average; and be accepted by the office of the Professional Laboratory. An application for Phase III Student Teaching must be submitted no later than October 1 for the Winter Quarter; January 15 for the Spring Quarter; and April 5 for the Fall Quarter.

Other responsibilities of the Professional Laboratory include:

1. coordination of additional field experiences.
2. staff development of supervising teachers and others involved in the pre-service of students.
3. coordination of efforts to provide resource and in-service assistance to the schools of Central Florida.

DEPARTMENT OF SECONDARY EDUCATION

Chairman: H. Hall, CB 333, Phone 275-2286
Faculty: Armstrong, Brunbaugh, Clarke, Fowler, Gurney, Leffler, McGee, E. Miller, Olson, Paugh, Siebert, Ridenour, West

The program in Secondary Education is for prospective teachers who have an interest in working with adolescent students in a specific academic area at the middle, junior or senior high school levels. Major specializations are available in Biology, Business Education, Chemistry, English, Foreign Language, Mathematics, Physics, Social Studies, and Speech.

Students in Secondary Education have teaching laboratory experience for one quarter in the junior year at selected secondary school Teacher Education Centers. Daily attendance for four one-half-day sessions in the practical setting is used to supplement university
theory classes. A quarter of full-time student teaching is also required at the senior level. Students are encouraged to clear their working and class schedules during field experience quarter to allow them to devote full time to student teaching.

Technical/Vocational Education

The Technical/Vocational Education degree is for individuals in industrial-technical areas or selected health occupations who wish to teach their vocations in secondary or post-secondary schools. To be eligible for the degree, students must have worked full time in the occupation for at least two years and must demonstrate competence in the areas in which they wish to teach.

For the Health Occupations student, a current Florida license may be used to satisfy the teaching specialization of 45 hours. For the 45 quarter hours in the industrial-technical areas, students must demonstrate their knowledge by successfully passing the National Occupations Competency test. There is a $125 administration fee charged for the test and it is normally administered in the Fall and the Spring Quarters.

BACHELOR OF ARTS: SECONDARY EDUCATION/ BUSINESS EDUCATION/COMPREHENSIVE

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   Business
   - ACCY 211, 212 Financial Accounting 6 hours
   - BADM 371 Legal Environment of Business 3 hours
   - ECON 202 Principles of Microeconomics 4 hours
   - ECON 203 Principles of Macroeconomics 4 hours

   Business Education
   - EDBE 101 Introductory Typewriting 3 hours
   - EDBE 102, 103 Typewriting Production 6 hours
   - EDBE 201, 202, 203 Principles of Shorthand 9 hours
   - EDBE 301 Shorthand Dictation 3 hours
   - EDBE 302 Shorthand Transcription 3 hours
   - EDBE 305 Office Technology 3 hours
   - EDBE 406 Office Systems and Procedures 3 hours
   - EDVE 401 Principles of Vocational Education 4 hours
   - ENG 301 Professional Report Writing I 3 hours

   Professional Education

   Phase I
   - EDTA 206 Human Development 3 hours
   - EDTA 307 Teaching Analysis 5 hours

   Phase II
   - EDSE 305 Secondary School Curriculum 3 hours
   - EDSE 330 Business Instructional Analysis-Typing 4 hours
   - EDSE 431 Business Instructional Analysis-Shorthand 3 hours
   - EDSE 432 Business Instructional Analysis-Accounting 3 hours
   - EDTA 305 Principles of Evaluation 3 hours
   - EDTA 306 Variables Affecting School Learning 3 hours
   - EDPL 330 Secondary School Student Teaching (A) 3 hours
### Phase III
- **EDSE 404** Instructional Techniques 3 hours
- **EDPL 408** Teaching Strategies 3 hours
- **EDPL 430** Secondary School Student Teaching (C) 9 hours

4. **Restricted Electives**
- **EDSE 442** Teaching Reading in the Content Areas 3 hours

5. **Electives**
- Total Quarter Hours Required 180

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**BACHELOR OF ARTS: SECONDARY EDUCATION/BUSINESS EDUCATION/BASIC BUSINESS AND ACCOUNTING**

### Degree Requirements

1. **University graduation requirements**
   (See page 46)

2. **Environmental Studies Program**
   (See page 63)

3. **Required Courses**

   **Basic Business**
   - **ACCY 211, 212** Financial Accounting 6 hours
   - **ACCY 315, 316** Intermediate Accounting 10 hours
   - **BADM 371** Legal Environment of Business 3 hours
   - **ECON 202** Principles of Microeconomics 4 hours
   - **ECON 203** Principles of Macroeconomics 4 hours
   - **ECON 411** Comparative Economic Systems 3 hours
   - **ENG 301** Professional Report Writing 3 hours
   - **MGMT 301** Management and Organization Behavior 3 hours
   - **MKTG 301** Marketing 5 hours

   **Business Education**
   - **EDBE 101** Introductory Typewriting 3 hours
   - **EDBE 102, 103** Typewriting Production 6 hours
   - **EDBE 305** Office Technology 3 hours
   - **EDVE 401** Principles of Technical Education 4 hours

   **Professional Education**

   **Phase I**
   - **EDTA 205** Human Development 3 hours
   - **EDTA 307** Teaching Analysis 5 hours

   **Phase II**
   - **EDSE 305** Secondary School Curriculum 3 hours
   - **EDSE 330** Business Instructional Analysis I 4 hours
   - **EDSE 432** Business Instructional Analysis III 3 hours
   - **EDTA 305** Principles of Evaluation 3 hours
   - **EDTA 306** Variables Affecting School Learning 3 hours
   - **EDPL 330** Secondary School Student Teaching (A) 3 hours

   **Phase III**
   - **EDSE 404** Instructional Techniques 3 hours
   - **EDPL 408** Teaching Strategies 3 hours
   - **EDPL 430** Secondary School Student Teaching (C) 9 hours

4. **Restricted Electives**
   - **EDSE 442** Teaching Reading in the Content Areas 3 hours

5. **Electives**
   - Total Quarter Hours Required 24 hours 180
# BACHELOR OF ARTS: SECONDARY EDUCATION/ENGLISH LANGUAGE ARTS

## Degree Requirements

1. University Graduation Requirements  
   (See page 46)

2. Environmental Studies Program  
   (See page 63)

3. Required Courses

   **Composition**
   - ENG 101 Composition I  
     4 hours
   - ENG 103 Exploring Literature Through Writing  
     3 hours
   - ENG 208 Principles of Creative Writing  
     3 hours
   - ENG 307 Writing Skills  
     4 hours
   - EDSE 440 Teaching Language and Composition  
     3 hours

   **Literature**
   - ENG 202 Literary Analysis  
     3 hours
   - ENG 211, 212, 213, 214 Survey of English Literature  
     12 hours
   - ENG 311, 312 Survey of American Literature  
     9 hours
   - ENG 415 Readings in Shakespeare  
     3 hours
   - EDSE 441 Literature for Adolescents  
     3 hours

   **History and Development of Language**
   - ENG 371 Principles of Linguistics  
     3 hours
   - ENG 473 Transformational Grammar  
     3 hours

   **Reading**
   - EDSE 442 Teaching Reading in the Content Areas  
     3 hours

   **Speech**
   - SPE 101 Fundamentals of Oral Communication  
     3 hours
   - SPE 371 Speech and Human Relations  
     3 hours

   **Professional Education**

   **Phase I**
   - EDTA 206 Human Development  
     3 hours
   - EDTA 307 Teaching Analysis  
     5 hours

   **Phase II**
   - EDSE 305 Secondary School Curriculum  
     3 hours
   - EDSE 340 English Instructional Analysis  
     4 hours
   - EDTA 305 Principles of Evaluation  
     3 hours
   - EDTA 306 Variables Affecting School Learning  
     3 hours
   - EDPL 330 Secondary School Student Teaching (A)  
     3 hours

   **Phase III**
   - EDSE 404 Instructional Techniques  
     3 hours
   - EDPL 408 Teaching Strategies  
     3 hours
   - EDPL 430 Secondary School Student Teaching (C)  
     9 hours

4. Restricted Electives
   - ENG 300-400 Contemporary Literature  
     3 hours

5. Electives  
   Total Quarter Hours Required  
   180

---

# BACHELOR OF ARTS: SECONDARY EDUCATION/FOREIGN LANGUAGE

## Degree Requirements

1. University Graduation Requirements  
   (See page 46)
2. Environmental Studies Program
   (See page 63)

3. Required Courses for French or Spanish Language

101, 102, 103, 201, 202, 203
Elementary Language and Civilization
Intermediate Language and Civilization
Conversation
Composition
Survey of Literature
Phonetics and Dictation
Language as Human Behavior
12 hours
4 hours
4 hours
12 hours
4 hours
3 hours

4. Restricted Electives
   EDSE 442 Teaching Reading in the Content Areas
   FRE or SPA 300-400 Electives
   3 hours
   16 hours

5. Electives
   Total Quarter Hours Required
   10 hours
   180

BACHELOR OF ARTS:
SECONDARY EDUCATION/MATHEMATICS

Degree Requirements
1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses

Mathematics
COMP 205 Algorithmic Process
MATH 110, 111 Precalculus Mathematics
MATH 211 Analytic Geometry
MATH 271 Logic and Proof in Mathematics
MATH 315 Introduction to Number Theory
MATH 318, 319 Linear Algebra
MATH 321, 322, 323 Calculus
MATH 351, 451 Foundations of Probability and Statistics
STAT 301 Fundamentals of Probability and Statistics
EDSE 453 Mathematics Laboratory Methods
3 hours
8 hours
3 hours
4 hours
3 hours
8 hours
12 hours
7 hours
4 hours
3 hours
Professional Education

<table>
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<tr>
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<th>Course Title</th>
<th>Hours</th>
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<td>Secondary School Curriculum</td>
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<td>EDSE 350</td>
<td>Mathematics Instructional Analysis</td>
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<td>EDTA 305</td>
<td>Principles of Evaluation</td>
<td>3</td>
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<tr>
<td></td>
<td>EDTA 306</td>
<td>Variables Affecting School Learning</td>
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<tr>
<td></td>
<td>EDPL 330</td>
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<tr>
<td>III</td>
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<td>Instructional Techniques</td>
<td>3</td>
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<tr>
<td></td>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3</td>
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<tr>
<td></td>
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4. Restricted Electives

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<td>EDSE 442</td>
<td>Reading in the Content Areas</td>
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<tr>
<td>MATH 300-400</td>
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5. Electives

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BACHELOR OF ARTS: SECONDARY EDUCATION/SCIENCE EDUCATION/BIOLOGY

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses

   Biological Sciences

<table>
<thead>
<tr>
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<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
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<tr>
<td>BIOL 350</td>
<td>Principles of Ecology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 360</td>
<td>Genetics</td>
<td>4</td>
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<tr>
<td>MICR 200</td>
<td>General Microbiology</td>
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<tr>
<td>ZOOL 100</td>
<td>General Zoology</td>
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<tr>
<td>ZOOL 324</td>
<td>Human Anatomy</td>
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<tr>
<td>EDSE 361</td>
<td>Biological Laboratory Teaching</td>
<td>3</td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>Credits</td>
</tr>
<tr>
<td>----------</td>
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<td>---------</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>General Chemistry—Fundamentals</td>
<td>5 hours</td>
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<tr>
<td>CHEM 112</td>
<td>General Chemistry—Organics</td>
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<tr>
<td>CHEM 113</td>
<td>General Chemistry—Biochemistry</td>
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<td>CHEM 115</td>
<td>General Chemistry Laboratory—Organic</td>
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<tr>
<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
<td>1 hour</td>
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Professional Education

<table>
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<tr>
<th>Phase I</th>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td></td>
<td>EDTA 206</td>
<td>Human Development</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDTA 307</td>
<td>Teaching Analysis</td>
<td>5 hours</td>
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<td></td>
<td>EDSE 305</td>
<td>Secondary School Curriculum</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDSE 360</td>
<td>Science Instructional Analysis</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>EDTA 305</td>
<td>Principles of Evaluation</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDTA 306</td>
<td>Variables Affecting School Learning</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDPL 330</td>
<td>Secondary School Student Teaching (A)</td>
<td>3 hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase III</th>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EDSE 404</td>
<td>Instructional Techniques</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDPL 430</td>
<td>Secondary School Student Teaching (C)</td>
<td>9 hours</td>
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4. Restricted Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDSE 442</td>
<td>Teaching Reading in the Content Areas</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>Biological Science Electives 300-400 level</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

5. Electives

| Total Quarter Hours Required | 180 |

BACHELOR OF ARTS: SECONDARY EDUCATION/SCIENCE EDUCATION/CHEMISTRY

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 265</td>
<td>Analytical Foundations</td>
<td>2 hours</td>
</tr>
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<td>CHEM 261, 262, 263</td>
<td>Chemistry Fundamentals</td>
<td>10 hours</td>
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<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
<td>1 hour</td>
</tr>
<tr>
<td>CHEM 321, 322, 323</td>
<td>Organic Chemistry</td>
<td>10 hours</td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Organic Laboratory Techniques</td>
<td>2 hours</td>
</tr>
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<td>CHEM 351, 352</td>
<td>Analytical Chemistry</td>
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<td>EDSE 462, 463</td>
<td>Chemistry Laboratory Teaching</td>
<td>4 hours</td>
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<thead>
<tr>
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<th>Credits</th>
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<tr>
<td>MATH 110, 111</td>
<td>Precalculus Mathematics</td>
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<tr>
<td>MATH 211</td>
<td>Analytic Geometry</td>
<td>3 hours</td>
</tr>
<tr>
<td>MATH 321, 322, 323</td>
<td>Calculus</td>
<td>12 hours</td>
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Professional Education

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>EDTA 206</td>
<td>Human Development</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>EDTA 307</td>
<td>Teaching Analysis</td>
<td>5 hours</td>
</tr>
</tbody>
</table>
Phase II
EDSE 305  Secondary School Curriculum  3 hours
EDSE 360  Science Instructional Analysis  4 hours
EDTA 305  Principles of Evaluation  3 hours
EDTA 306  Variables Affecting School Learning  3 hours
EDPL 330  Secondary School Student Teaching (A)  3 hours

Phase III
EDSE 404  Instructional Techniques  3 hours
EDPL 408  Teaching Strategies  3 hours
EDPL 430  Secondary School Student Teaching (C)  9 hours

4. Restricted Electives
EDSE 442  Teaching Reading in the Content Areas  3 hours
CHEM 300-400  Electives  12 hours

5. Electives
Total Quarter Hours Required  15 hours

180

BACHELOR OF ARTS: SECONDARY EDUCATION/SCIENCE EDUCATION/PHYSICS

Degree Requirements

1. University Graduation Requirements
(See page 46)

2. Environmental Studies Program
(See page 63)

3. Required Courses

Physics
PHYS 103  Astronomy  4 hours
PHYS 211, 212, 213  General Physics  12 hours
PHYS 282, 283  Physics Laboratory  2 hours
PHYS 344  Modern Physics for Engineers  3 hours
PHYS 354  Optics and Wave Motion for Engineers  3 hours
PHYS 380  Physics of Scientific Instruments  4 hours
PHYS 382  Intermediate Physics Laboratory  4 hours
EDSE 464, 465  Physics Laboratory Teaching  4 hours

Mathematics
MATH 110, 111  Precalculus Mathematics  8 hours
MATH 211  Analytic Geometry  3 hours
MATH 321, 322, 323  Calculus  12 hours

Professional Education

Phase I
EDTA 206  Human Development  3 hours
EDTA 307  Teaching Analysis  5 hours

Phase II
EDSE 305  Secondary School Curriculum  3 hours
EDSE 360  Science Instructional Analysis  4 hours
EDTA 305  Principles of Evaluation  3 hours
EDTA 306  Variables Affecting School Learning  3 hours
EDPL 330  Secondary School Student Teaching (A)  3 hours

Phase III
EDSE 404  Instructional Techniques  3 hours
EDPL 408  Teaching Strategies  3 hours
EDPL 430  Secondary School Student Teaching (C)  9 hours
4. Restricted Electives
   EDSE 442 Teaching Reading in the Content Areas 3 hours
   PHYS 300-400 Elective 4 hours

5. Electives
   Total Quarter Hours Required 22 hours

BACHELOR OF ARTS:
SECONDARY EDUCATION/SOCIAL SCIENCES

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   Social Studies
   ECON 201 Fundamentals of Economics 3 hours
   GEOG 301 Resource Geography 3 hours
   HIST 301, 302, 303 Western Culture and Civilization 12 hours
   HIST 311, 312, 313 American History 12 hours
   PCL 201 American National Government 4 hours
   SOC 201 General Sociology 4 hours
   EDSE 471 Trends in Secondary School Social Science 3 hours

   Professional Education
   Phase I
   EDTA 206 Human Development 3 hours
   EDTA 307 Teaching Analysis 5 hours

   Phase II
   EDSE 305 Secondary School Curriculum 3 hours
   EDSE 370 Social Science Instructional Analysis 4 hours
   EDTA 305 Principles of Evaluation 3 hours
   EDTA 306 Variables Affecting School Learning 3 hours
   EDPL 330 Secondary School Student Teaching (A) 3 hours

   Phase III
   EDSE 404 Instructional Techniques 3 hours
   EDPL 408 Teaching Strategies 3 hours
   EDPL 430 Secondary School Student Teaching (C) 9 hours

4. Restricted Electives
   EDSE 442 Teaching Reading in the Content Areas 3 hours
   GEOG 300-400 Elective 4 hours
   Student must have additional credits in history, political science, and sociology with at least 12 credits in one area. 20 hours

5. Electives
   Total Quarter Hours Required 25 hours

BACHELOR OF ARTS: SECONDARY EDUCATION/SPEECH

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)
3. Required Courses

Speech and Communications

<table>
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<tr>
<td>COM 100</td>
<td>Basic Communication</td>
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<tr>
<td>COM 301</td>
<td>Communication as a Behavioral Science</td>
<td>4</td>
</tr>
<tr>
<td>COM 363</td>
<td>Group Interaction and Decision Making</td>
<td>4</td>
</tr>
<tr>
<td>SPE 101</td>
<td>Fundamentals of Oral Communication</td>
<td>3</td>
</tr>
<tr>
<td>SPE 261</td>
<td>English Phonetics and American Dialects</td>
<td>5</td>
</tr>
<tr>
<td>SPE 360</td>
<td>Argumentation and Debate</td>
<td>4</td>
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<tr>
<td>SPE 361</td>
<td>Persuasion: Motivation</td>
<td>4</td>
</tr>
<tr>
<td>SPE 366</td>
<td>Speech Composition</td>
<td>4</td>
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<tr>
<td>SPE 473</td>
<td>Directing Extracurricular Speech Activities</td>
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Professional Education

Phase I

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<tr>
<td>EDTA 307</td>
<td>Teaching Analysis</td>
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Phase II

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<td>EDSE 310</td>
<td>Speech Instructional Analysis</td>
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<td>EDTA 305</td>
<td>Principles of Evaluation</td>
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<td>EDTA 306</td>
<td>Variables Affecting School Learning</td>
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Phase III

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<tr>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 430</td>
<td>Secondary School Student Teaching (C)</td>
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4. Restricted Electives

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<tbody>
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<td>Reading in the Content Areas</td>
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<tr>
<td>COM-SPE</td>
<td>Electives taken from: COM 313, COM 463, SPE 362, SPE 371</td>
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Students must have an additional twelve credits in Drama, Journalism or Speech Pathology.

5. Electives

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<tr>
<th>Title</th>
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<td>Total Quarter Hours Required</td>
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BACHELOR OF ARTS: SECONDARY EDUCATION/TECHNICAL/VOCATIONAL

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses

Health Occupations

Students may complete a specialization in a Health Occupations area by meeting the requirements for teacher certification set forth in the Florida Accreditator Code and by submitting evidence of two years work experience at the journeyman, technician, or trained employee level.

Industrial-Technical

Students may complete a specialization in a skilled trade area by successfully passing both the written and the performance portions of the Occupations Competency Test in that area. Two years of work experience is also required.
Specific skilled trade tests are available in the following Occupational Industries:

- Automotive
- Aviation
- Building
- Drafting
- Electrical
- Electronics
- Food
- Graphic Arts
- Machine
- Metal
- Personal Service
- Wood

Professional Education

**Phase I**
- EDTA 206 Human Development 3 hours
- EDTA 307 Teaching Analysis 5 hours

**Phase II**
- EDVA 401 Philosophy and Principles of Technical Education 4 hours
- EDVE 402 Methods of Teaching Technical/Vocational Subjects 5 hours
- EDVE 421 Curriculum Planning for Vocational Education 4 hours
- EDVE 422 Evaluation of Occupational Education 4 hours
- EDVE 423 Analysis of Learning as Applied to Vocational Education 4 hours

**Phase III**
- EDLS 451 Utilization of Educational Media 4 hours
- EDSE 442 Teaching Reading in the Content Areas 3 hours
- EDPL 450 Directed Field Experience 12 hours

4. Restricted Electives None

5. Electives Total Quarter Hours Required 13 hours 180

**DEPARTMENT OF TEACHING ANALYSIS**

**Chairman:** D. Hernandez, CB 322, Phone 275-2426

**Faculty:** Barr-Johnson, Bollet, Fagan-Carr, Cornell, Craig, Dziuban, Fennell, Kysilka, Shadgett, Sulloway, Weidenheimer, Al Wood, Lex Wood

Teaching Analysis serves three basic functions with the College of Education. First, it provides courses which meet University and state certification requirements in the Foundations area. Specifically, EDTA 307, Teaching Analysis (5 QH) meets social foundations requirements and EDTA 206, Human Development (3 QH) meets psychological foundations requirements. Successful completion of these courses meets requirements of Phase I, Analysis of Teaching; which is prerequisite for entry into Phase II, Development. Second, Teaching Analysis provides three courses designed to meet Advanced Environmental Studies requirements:

- EDTA 480 Overview of Education 3 hours
- EDTA 481 Trends and the Future of Education 3 hours
- EDLS 360 Library Resources and Materials 3 hours

Third, Teaching Analysis houses two K-12 programs leading to the Bachelor of Arts Degrees in Visual Arts Education and Library/Media Specialist. Certification in Music Education is offered cooperatively with the College of Humanities and Fine Arts. Requirements are listed under the Department of Music.
BACHELOR OF ARTS: K-12/LIBRARY MEDIA SPECIALIST

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   - EDLS 301 Foundations of Librarianship 4 hours
   - EDLS 321 Organization of a Media Center 4 hours
   - EDLS 421 Administration of the Library Media Center 4 hours
   - EDLS 431 Cataloging and Classification 4 hours
   - EDLS 441 Reference Materials 4 hours
   - EDLS 451 Utilization of Educational Media 4 hours
   - EDLS 452 Preparation of Media 4 hours
   - EDLS 521 Administrative Principles in Media Centers 4 hours
   - EDLS 531 Nonbook Materials 4 hours
   - EDLS 532 Acquisition of Library Materials 4 hours
   - Literature
     - EDEL 307 Literature for Children 3 hours
     - EDSE 441 Adolescent Literature 3 hours
   - Reading
     - EDSE 442 Reading in the Secondary School 4 hours
   - Professional Preparation (38 hours)
     - Phase I—Analysis
       - EDTA 206 Human Development 3 hours
       - EDTA 307 Teaching Analysis 5 hours
     - Phase II—Development
       - EDSE 303 School Programs 3 hours
       - EDTA 305 Evaluation 4 hours
       - EDTA 306 Learning Theory 3 hours
       - EDPL 320 Student Teaching 3 hours
       - EDPL 330 Student Teaching 3 hours
     - Phase III—Application
       - EDSE 404 Instructional Techniques 3 hours
       - EDPL 408 Teaching Strategies 3 hours
       - EDPL 430 Student Teaching 9 hours

4. Restricted Electives
   Electives in supportive areas to be selected on advice of Library/Media counselor.

5. Electives
   Total Quarter Hours Required 180

BACHELOR OF ARTS: K-12/VISUAL ARTS EDUCATION

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses:
   - Production
     - ART 201 Design 3 hours
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ART 202</td>
<td>Design</td>
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<tr>
<td>ART 203</td>
<td>Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 211</td>
<td>Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART 212/311</td>
<td>Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART 304</td>
<td>Design in Advertising</td>
<td>3</td>
</tr>
<tr>
<td>ART 341</td>
<td>Photography</td>
<td>3</td>
</tr>
<tr>
<td>ART 351</td>
<td>Painting</td>
<td>3</td>
</tr>
<tr>
<td>ART 361</td>
<td>Printmaking</td>
<td>3</td>
</tr>
<tr>
<td>ART 381</td>
<td>Ceramics</td>
<td>3</td>
</tr>
<tr>
<td>ART 409</td>
<td>Fiber, Fabrics</td>
<td>3</td>
</tr>
<tr>
<td>ART 410</td>
<td>Metal, Wood</td>
<td>3</td>
</tr>
<tr>
<td>ART 435</td>
<td>Environmental Arts</td>
<td>4</td>
</tr>
</tbody>
</table>

**Criticism. Select two (2).**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 221</td>
<td>Art History</td>
<td>3</td>
</tr>
<tr>
<td>ART 222</td>
<td>Art History</td>
<td>3</td>
</tr>
<tr>
<td>ART 223</td>
<td>Art History</td>
<td>3</td>
</tr>
<tr>
<td>ART 433</td>
<td>Theory and Criticism</td>
<td>3</td>
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</table>

**Curriculum (18)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>EDVA 431</td>
<td>2-D Instructional Material</td>
<td>5</td>
</tr>
<tr>
<td>EDVA 432</td>
<td>3-D Instructional Material</td>
<td>5</td>
</tr>
<tr>
<td>EDVA 433</td>
<td>Graphics Instructional Materials</td>
<td>5</td>
</tr>
<tr>
<td>EDVA 501</td>
<td>Continuing Art Programs</td>
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</table>

**Professional Preparation**

**Phase I—Analysis**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EDTA 206</td>
<td>Human Development</td>
<td>3</td>
</tr>
<tr>
<td>EDTA 307</td>
<td>Teaching Analysis</td>
<td>5</td>
</tr>
<tr>
<td>EDVA 401</td>
<td>Elementary School Art</td>
<td>3</td>
</tr>
<tr>
<td>EDVA 402</td>
<td>Secondary School Art</td>
<td>3</td>
</tr>
</tbody>
</table>

**Phase II—Development**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDPL 320</td>
<td>Student Teaching</td>
<td>3</td>
</tr>
<tr>
<td>EDSE 303</td>
<td>School Programs</td>
<td>3</td>
</tr>
</tbody>
</table>

**Block B**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 330</td>
<td>Student Teaching</td>
<td>3</td>
</tr>
<tr>
<td>EDTA 305</td>
<td>Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>EDTA 306</td>
<td>Learning Theory</td>
<td>3</td>
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</table>

**Phase III—Application**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 430</td>
<td>Student Teaching</td>
<td>9</td>
</tr>
<tr>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3</td>
</tr>
<tr>
<td>EDSE 404</td>
<td>Instructional Techniques</td>
<td>3</td>
</tr>
</tbody>
</table>

4. **Restricted Electives**
   Must be selected with advice of Visual Arts counselor and may vary based on prerequisite deficiencies.

5. **Electives**

Total Quarter Hours Required 180

**COLLEGE OF EDUCATION**

**GRADUATE PROGRAMS**

**DEGREE: MASTER OF ARTS; MASTER OF EDUCATION**

**Program Coordinator: N. McLain, CB 303, Phone 275-2436**

The College of Education offers advanced courses for students who have a baccalaureate degree. The courses may be used to meet certificate requirements, for professional or personal updating, for transfer to other institutions (subject to the acceptance criteria of the other institution), and for meeting the requirements for the Master of Education or Master of Arts.
Certification in the specialties may be pursued independently of a degree program. The degree programs meet the requirements for the Florida Rank II, Post Graduate certificate and are designed to develop a high level of proficiency in educational personnel. The courses are grouped into three categories:

A. Core—expanding the person’s background in research, learning developmental and measurement factors.

B. Curriculum—improving the person’s skill in program planning and instructional techniques.

C. Subject field content—extending the person’s knowledge in his specialization field.

ADMISSION REQUIREMENTS

1. University Admission Requirements
   (See pages 46 and 58)

2. College or Program Admission Requirements
   For M.Ed., Course work completed for Rank III (Basic bachelor’s level)
   State of Florida Teaching Certificate.

University Graduate Policies and Procedures


Degree Requirements

1. Prerequisites: None for M.Ed.; for M.A., contact the program coordinator

2. Core Courses: 12 quarter hours including EDTA 695 Research Methods

3. Restricted Electives: None specified

4. Research Report: Required; 4 hours of credit

5. Examinations: Comprehensive examination required

6. Other Requirements: None specified

   Total Quarter Hours Required 45-54 (varies with specialty)
   BOR Maximum Hours Allowed 60

(See pages 61-62)

Areas of Specialization

Administration/Supervision
Elementary Education
Elementary Education/Exceptional Child
Elementary Education/Reading Specialist
Guidance
K-12/Library Media Specialist
K-12/Music Education
K-12/Physical Education
K-12/Visual Arts Education
Secondary Education/Business Education
Secondary Education/English Language Arts
Secondary Education/Foreign Languages
Secondary Education/Mathematics
Secondary Education/Science
Secondary Education/Social Sciences
Secondary Education/Speech

COOPERATIVE DOCTORAL PROGRAM

Florida Atlantic University in Boca Raton, Florida, offers two doctoral programs through the College of Education. One is in administration
and supervision, which is for people who are interested in decision-making positions in school organizations. The second degree, in curriculum and instruction, having an emphasis on a content subject field discipline, is designed primarily for the junior college teacher, although it could be used in other teaching situations. The subject field areas possible in curriculum and instruction are limited to the fields in which a master’s degree is already offered at either FTU of FAU.

The College of Education at Florida Technological University is joining FAU in the doctoral program to offer students an opportunity to do at least some of their work in Orlando, rather than having to move or commute to the Boca Raton area for their entire program. The degree, Doctor of Education, will be awarded by Florida Atlantic University.

Contact the College of Education Graduate Program Coordinator for further information.
COLLEGE OF ENGINEERING

UNDERGRADUATE PROGRAMS
ELECTRICAL ENGINEERING
ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS
ENVIRONMENTAL ENGINEERING
INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING
ENGINEERING TECHNOLOGY

GRADUATE PROGRAMS
ENGINEERING
ENVIRONMENTAL SYSTEMS MANAGEMENT

DOCTORAL PROGRAM (FTU-UF)
ELECTRICAL 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 additional professional education at the graduate level.

The satisfactory completion of an engineering 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 (option) 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.

Satisfactory completion of an engineering technology curriculum of 192 quarter hours, including environmental studies courses, an engineering technology core curriculum, and required and elective courses in a selected technology module of the student's choice, leads to the degree of Bachelor of Engineering Technology. Technology graduates also may seek a wide variety of careers in private practice, industry, and government. Programs of study are applications oriented and are designed to assist the student in attainment of his career objectives.

Students who wish to be admitted to full freshman standing in engineering studies in the College should present certain secondary school units in addition to the minimum University requirements. A total of 3½ 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. Typically, students who have completed the A.A. degree (or equivalent education) with calculus, chemistry, physics, engineering graphics, and a course in computer science (with FORTRAN) can complete the B.S.E. program in two additional years. 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.

Students who wish to be admitted to the engineering technology program must possess an Associate of Science (or equivalent education) degree in an appropriate engineering technology area. The engineering technology program provides junior and senior year education. Freshman and sophomore year technology education must be taken at a community college or equivalent. Typically students who have completed the A.S. degree in technology should complete the BET program in two additional years. The status of a student and the specific credits acceptable toward his degree will be determined by the Dean of the College. Provisional credits accepted for transferred course work will become final only after a student has demonstrated his ability to do satisfactory work at the University. Students from engineering programs may transfer into the engineering technology program at the junior level.

**STUDENT PERFORMANCE**

Prior to enrolling in courses at the 300 level, each student must: (1) receive approval from the office of the Dean of Engineering, and (2) secure from his advisor 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.

A student enrolled in the College as an undergraduate must fulfill all University degree requirements including the Environmental Studies Program, as well as the specialized curriculum requirements for the particular degree option being pursued. To be certified for graduation, a student must achieve a "C" grade point average (2.0) overall and in the courses in his major (option).

**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 study in the engineering curriculum are devoted to the basic sciences, mathematics and the fundamentals of engineering problem solving. 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. This program prepares the student for professional registration, and for the pursuit of graduate work in engineering. In addition, basic engineering programs are increasingly being considered as appropriate preparation for advanced study in other professional areas, e.g., law, medicine, architecture. For assistance and counsel in planning a program, each student will be assigned an advisor from the instructional staff in his chosen area of interest.

ENGINEERING CORE REQUIREMENTS

The engineering core consists of basic engineering sciences subject matter and is common to all options. Because this requirement is a substantial part of the Bachelor's degree program, it gives the student time to become adjusted and to choose a field of specialization for which he is best suited.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 302</td>
<td>Programming and Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 101</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 103</td>
<td>Creative Design</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 151, 152</td>
<td>Chemical Foundations of Engineering</td>
<td>6</td>
</tr>
<tr>
<td>MATH 211</td>
<td>Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 321, 322, 323</td>
<td>Calculus (4, 4, 4)</td>
<td>12</td>
</tr>
<tr>
<td>ENGR 211</td>
<td>Engineering Concepts</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 310</td>
<td>Engineering Analysis — Statics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 324</td>
<td>Intermediate Calculus</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 311</td>
<td>Engineering Analysis — Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 312</td>
<td>Mechanics of Materials</td>
<td>5</td>
</tr>
<tr>
<td>ENGR 320</td>
<td>Electrical Science</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 321</td>
<td>Principles of Electrical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 322</td>
<td>Electronic Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 323</td>
<td>Electrical Devices and Systems</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 331</td>
<td>Thermodynamics</td>
<td>3</td>
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<tr>
<td>ENGR 332</td>
<td>Fluid Mechanics</td>
<td>4</td>
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<tr>
<td>ENGR 341</td>
<td>Engineering Economics Analysis</td>
<td>3</td>
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<tr>
<td>ENGR 342</td>
<td>Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 351</td>
<td>Structure and Properties of Materials</td>
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</tr>
<tr>
<td>ENGR 352</td>
<td>Structure &amp; Properties of Materials II</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 361</td>
<td>Engineering and the Environment</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 371</td>
<td>Probability and Statistics for Engineers</td>
<td>3</td>
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<tr>
<td>MATH 331</td>
<td>Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 344</td>
<td>Modern Physics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 354</td>
<td>Optics and Wave Motion for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 431</td>
<td>Transport Processes</td>
<td>3</td>
</tr>
</tbody>
</table>
ACADEMIC OPTIONS

Students in the B.S.E. program must elect an option in one of the departments of the College of Engineering. Each option permits the student to build a professional specialization on the unified engineering core and environmental studies requirements. In the development of this concept, the student is enabled to implement a well-rounded, broad-based approach to engineering problem solutions within the framework of a professional specialization. It is the policy of the College to encourage its graduates to become registered Professional Engineers and to seek the Master of Science in Engineering (M.S.E.) as the appropriate educational preparation for professional practice in engineering. See page 117 for information about the M.S.E. program at FTU.

DEPARTMENT OF CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES

Chairman: J. P. Hartman, EN 410, Phone 275-2841
Faculty: Baldwin, Block, Carroll, Jenkins, Kersten, McLellan, Wanielista, Yousef, Zulfacar

The Department of Civil Engineering and Environmental Sciences offers an option in Environmental Engineering. This option is concerned primarily with the interaction of man and his environment, and the planning, design and control of systems for environmental quality management, with emphasis on the water environment.

A program of study is available within this option which enables the student to pursue an integrated series or sequence of courses in the major field which includes not only basic and fundamental courses but specialized courses as well in the fields of environmental engineering, transportation and urban systems engineering, water resources engineering and related courses in structural and geotechnical engineering. These specialized courses reflect the contemporary developments and trends in systems analysis, environmental quality management, man-environment interaction as well as several of the traditional areas of civil engineering.

Environmental engineers are responsible for research, development, planning, design and construction of the structures and processes that form the basis of our modern civilization. The Environmental Engineering option encompasses water and atmospheric resources, waste treatment and pollution control, urban planning and engineering aspects of environmental health and natural resources. The curriculum in Environmental Engineering (leading to a B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

ENG 310  Professional Report Writing  3 hours
ENGR 442  Operations Research  3 hours
ENGR 443  Engineering Administration  3 hours
Biological or Earth Science Elective  3 hours

*Includes scientific requirements and advanced program electives of the Environmental Studies
BACHELOR OF SCIENCE IN ENGINEERING: ENVIRONMENTAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Requirements
   (See page 63)

3. Engineering Core Requirements
   (See page 107)

4. Required Courses
   - GEES 401 Environmental Engineering—Chemical Foundations I 3 hours
   - GEES 402 Environmental Engineering—Chemical Foundations II 3 hours
   - GEES 411 Environmental Engineering—Water Supply 4 hours
   - GEES 412 Environmental Engineering—Wastewater 4 hours
   - GEES 414 Sanitary Systems Design 3 hours

5. Restricted Electives
   Technical Electives Courses chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration. 17 hours

6. Electives
   None

Total Quarter Hours Required 192

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES

Chairman: B. Mathews, EN 315, Phone 275-2786
Faculty: Erickson, Harden, McCarter, Patz, Petrasko, Phillips Simons, Towle, Walker

Electrical Engineers are primarily concerned with the development and utilization of devices and systems which are based on electrical phenomena. The range of application includes computer systems, electronics, control systems, electrical power utilization, communication systems, medical instrumentation, etc. The electrical engineer can find professional challenges in virtually every facet of modern technology.
The option in Electrical Engineering is designed to present the basic electrical engineering principles which are common to this broad spectrum of application. In addition, courses are offered which present in-depth studies of specific electrical engineering subdisciplines such as analog and digital computer systems, electrical networks and electronics, electromagnetic fields and microwaves, electromechanics and control, power transmission and utilization, communication and information theory, and solid state systems and devices.

Many modern scientific developments are either essentially electrical in character or depend on electrical equipment and technique. Electrical Engineering graduates will find a broad employment opportunity in the field since it enters into much of industry and service where power is utilized, intelligence transmitted, and control exercised over physical, chemical, or mechanical operations. The curriculum in Electrical Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

BACHELOR OF SCIENCE IN ENGINEERING:
ELECTRICAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Engineering Core Requirements
   (See page 107)

4. Required Courses
   EECS 321  Electrical Networks  4 hours
   EECS 322  Electrical Engineering  4 hours
   EECS 341  Electromagnetic Fields  4 hours
   EECS 411  Logical Component Design  4 hours
   ENGR 421  Linear Control Systems  4 hours

5. Restricted Electives
   Technical Elective Courses chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.

6. Electives
   None

Total Quarter Hours Required 192

ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS

Chairman: G. Schrader, EN 412, Phone 275-2236
Faculty: Klee, Lindenberg, Patz, Petrasko, Towle, Wanielista

In contemporary professional engineering practice, and in research and development activities there is an increasing need for engineers with a high degree of training and capability in the application of mathematics and computers to the modeling, simulation and solution of complex technical problems. Many of our modern industries and governmental organizations are involved in the design and analysis of highly complex equipments and systems often requiring rigorous mathematical treatment which can only be carried out effectively through the use of modern, high speed, digital/analog/hybrid com-
puter facilities. The computer has become an indispensable partner to the aerospace systems designer, the microelectronic circuit designer, the environmental systems analyst, the industrial manager, and many other professional engineering oriented activities. Thus, students majoring in Engineering Mathematics and Computer Systems will enjoy a broad spectrum of challenging opportunities.

The option is inter-disciplinary and allows considerable flexibility in tailoring programs to fit individual student interest. The curriculum in Engineering Mathematics and Computer Systems is fully accredited by the Engineers' Council for Professional development.

**BACHELOR OF SCIENCE IN ENGINEERING: ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS**

**Degree Requirements**

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Engineering Core Requirements
   (See page 107)

4. Required Courses
   - EMCS 431: Mini-Computers in Engineering Systems 4 hours
   - EMCS 432: Real Time Mini-Computer Systems 4 hours
   - EMCS 472: Engineering Applications of Computer Methods 4 hours
   - EECS 411: Logical Component Design 4 hours
   - IEMS 447: Numerical Methods in Systems Analysis 3 hours

5. Restricted Electives
   Technical Elective Courses are chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration. 15 hours

6. Electives
   None

Total Quarter Hours Required 192

**DEPARTMENT OF INDUSTRIAL ENGINEERING & MANAGEMENT SYSTEMS**

**Chairman:** G. Schrader, EN 412, Phone 275-2236

**Faculty:** Bauer, Dennis, Doering, Gambrell, Klee, Lin, Lindenber

The option in Industrial Engineering is concerned principally with the design, improvement, and installation of integrated systems of men, materials, and equipment for operations through the application of the principles of the engineering, mathematical, physical, and behavioral sciences.

The program of study available within this option enables the student to pursue an integrated series or sequence of courses in the major field which includes not only basic and fundamental courses but specialized courses as well, in the areas of management standards development, production and inventory control, project management, work analysis and design, management information systems, computer simulation, operations research, industrial facilities planning and design, and human engineering. These specialized courses, reflect the contemporary developments and trends in each of these areas with emphasis on uses of the digital computer in appropriate courses.
There is a growing tendency on the part of industry, government and institutions to select engineering personnel for managerial positions. Because of this the IEMS courses are oriented to systems management principles and concepts so as to enable the Industrial Engineering graduate to accept and succeed in these opportunities. The curriculum in Industrial Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

**BACHELOR OF SCIENCE IN ENGINEERING: INDUSTRIAL ENGINEERING**

**Degree Requirements**

1. University Graduation Requirements  
   (See page 46)

2. Environmental Studies Program  
   (See page 63)

3. Engineering Core Requirements  
   (See page 107)

4. Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEMS 301</td>
<td>Management Standards</td>
<td>4</td>
</tr>
<tr>
<td>IEMS 424</td>
<td>Management Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 461</td>
<td>Human Engineering</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 432</td>
<td>System Simulation With Digital Computers</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 447</td>
<td>Numerical Methods in Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 434</td>
<td>Industrial Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 414</td>
<td>Industrial Facilities Planning and Design</td>
<td>4</td>
</tr>
</tbody>
</table>

5. Restricted Electives

   Technical elective courses are to be chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.  
   11 hours

6. Electives

   None

   **Total Quarter Hours Required**: 192

**DEPARTMENT OF MECHANICAL ENGINEERING AND AEROSPACE SCIENCES**

**Chairman**: R. Evans, EN 115, Phone 275-2416

**Faculty**: Beck, Hagedoorn, Nimmo, Nuckolls, Rapson, Smith, Ventre, Wall

The Department of Mechanical Engineering and Aerospace Sciences is primarily concerned with dynamic physical systems such as transportation, production and energy conversion. Because such systems involve an energy source, the mechanical or aerospace engineer is concerned with the application of the basic laws of the engineering sciences to the conversion, transfer and control of the energy. When dealing with problems of this nature, the engineer must consider the economic constraints and the social implications of the solutions which he proposes.

The Mechanical Engineering option provides the student with the opportunity to pursue his educational objectives within the framework of this broad theme. Primary emphasis is given to the departmental subdisciplines of aerospace sciences, measurements systems engineering, mechanical systems design and control, energy conversion and power systems, thermal sciences and engineering acoustics.
The program is specifically designed to give the student a broad-based undergraduate engineering sciences program in order that he will have sufficient knowledge to converse with specialists in other fields of engineering and to analyze on his own the more basic problems in these fields. By judiciously selecting courses from the departmental subdisciplines, a firm foundation is laid in order that the student will obtain the theoretical tools and the design methodology to pursue successfully a career in the mechanical or aerospace engineering professions. The Curriculum in Mechanical Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

**BACHELOR OF SCIENCE IN ENGINEERING: MECHANICAL ENGINEERING**

**Degree Requirements**

1. University Graduation Requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Engineering Core Requirements
   (See page 107)

4. Required Courses
   - MEAS 341: Kinematics and Kinetics of Machines 3 hours
   - MEAS 342: Machine Design and Analysis 4 hours
   - MEAS 351: Measurement Systems 3 hours
   - MEAS 423: Vibration Analysis 4 hours
   - MEAS 482: Heat Transfer 4 hours

5. Restricted Electives
   Technical elective courses are chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration. 16 hours

6. Electives
   - None

Total Quarter Hours Required: 192

**DEPARTMENT OF ENGINEERING TECHNOLOGY**

Chairman: (Acting) H. Griffith, EN 118, Phone 275-2268
Faculty: Osborne, Skinner

The Engineering Technology Degree Program at FTU includes only the upper division (junior and senior years) and is designed primarily for the student that has completed an A.S. degree in Engineering Technology or an equivalent program at a community college. The community college two-year associate of science program is designed to provide the student with the training necessary to become an engineering technician. The upper division Bachelor of Engineering Technology program at Florida Technological University is designed to advance the engineering technician to the engineering technologist level.

The four year engineering technology graduate will provide a vital link in the engineering — fabrication/construction — facility operations chain. He will be practice and applications oriented while at the same time, possessing a broad and comprehensive education in the field. As such he will be key individual in teams of technical
specialists dealing with the environment today. Completion of the required curriculum will prepare qualified individuals to make significant contributions to society and will allow them to progress into responsible technical and management positions.

Principal areas of study in the engineering technology curriculum, building on a sound base attained through the AS degree, will include mathematics and communications. In addition, substantial additional work will be taken in the technical sciences and technical speciality. The courses will include theory and practice along with training. Hence they will provide a sound technical base for subsequent work. For assistance and counsel in planning a program, each student will be assigned an advisor to assist him in selecting the best course sequence to meet his career objectives.

The options (modules) in Engineering Technology are concerned principally with the details of design, maintenance, operation, environmental monitoring and the fabrication/construction functions. The work of the technologist is in direct support of the engineer and the emphasis is on material results and details as constructed, within the broader conceptual and systems processes of the engineer.

Four engineering technology modules (options) are offered as shown. The courses listed in each module are recommended for all students electing to pursue that option. Any deviation from the recommended course in the option must be approved by the Department Chairman and the Dean.

**Degree Requirements**

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program (See page 63)
   Basic (54 hours)
   Community College (39 hours)
   FTU (15 hours)
   Advanced (15 hours)
   'Includes algebra, trigonometry, basic science, English, speech or report writing, humanities and social sciences. At least one course each in chemistry, physics and computer science should be completed at the Community College. Credit shown is maximum transferable under this program.

3. Required Courses
   The program to be taken at the University, assuming good articulation with the Associate of Science program being transferred includes the following: Basic Science, Mathematics and Technical Sciences (included in Technology Core)
   Community College (9 hours) FTU (41 hours as shown below)

   Technical Specialty and Related Studies
   Community College (48 hours) FTU (25 hours as shown below)

   MATH 311  Applied Calculus  4 hours
   MATH 312  Applied Calculus  4 hours
   Chemistry or Physics if not taken at Community College  4 hours

   Advanced Program and Technical Electives
   ENG 310  Professional Report Writing*  3 hours
   ENT 303  Problem Analysis  4 hours
   ENT 304  Technical Economic Analysis  3 hours
   ENT 305  Applied Statics  4 hours
   ENT 306  Materials and Processes*  4 hours
   ENT 307  Applied Fluid Mechanics  4 hours
   ENT 401  Electricity and Electronics*  5 hours
ENT 402  Strength of Materials  4 hours
ENT 403  Applied Thermodynamics  4 hours
ENT  Technology Module  21 hours
(See areas of specialization)
ENT 405  Applied Dynamics  4 hours

*Typically taken at Community College

4. Restricted Electives—depends upon Module chosen  6 hours

5. Electives  6 hours

Total Quarter Hours Required (Community College 96, FTU 96)  192

AREAS OF SPECIALIZATION

1. Design Technology Module
   The specialization in Design Technology will present the student with the knowledge and skills needed for application to problems concerning specifications, calculations, and procedures involving the design, redesign, testing and operations of mechanical parts, units and assemblies. Typical community college AS Degree programs used for entrance to FTU's Design Technology specialization are Mechanical, Drafting Design, Aerospace and Air Conditioning Technologies.

   ENT 341  Contracts and Specifications  3 hours
   ENT 342  Electro-Mechanical Design  4 hours
   ENT 343  Product Design  4 hours
   ENT 441  Structural Design  4 hours
   ENT 442  Design Integration  3 hours
   ENT 443  Senior Project  3 hours

2. Electronics Technology Module
   The specialization in Electronics Technology is designed to present the electronics principles beyond the first two years of study that are essential for installation, operation, maintenance and design support or electrical/electronics equipment and facilities. Typical community college AS Degree programs used for entrance to FTU's Electronics Technology specialization are Electronic, Electrical and Instrumentation Technologies. A minimum of 20 quarter hours of basic electronics must be included in the AS Degree program.

   ENT 321  Electronics Circuits  5 hours
   ENT 322  Digital Circuits  4 hours
   ENT 421  Computer Systems  3 hours
   ENT 422  Antennas and Propagation  3 hours
   ENT 423  Feedback Control  3 hours
   ENT 424  Communications Systems  3 hours

3. Environmental Control Technology Module
   The specialization in Environmental Control Technology is designed to give the student upper level courses in water, wastewater, air pollution, solid wastes, sampling and analysis, and control processes that are essential for environmental operations control. Typical community college AS Degree programs used for entrance to FTU's Environmental Control Technology specialization are Environmental Control, Civil, and Chemical Technologies.

   ENT 331  Hydraulics/Hydrology  3 hours
   ENT 332  Water Supply Systems  3 hours
   ENT 333  Wastewater Systems  3 hours
   ENT 431  Treatment Plant Analysis and Control  3 hours
   ENT 432  Environmental Sampling and Analysis  3 hours
   ENT 433  Air Pollution Control  3 hours
   ENT 434  Solid Wastes Management  3 hours
4. Operations Technology

The module in Operations Technology is designed to present the management operations, supervisory and methods courses that are essential for operations control in the sales, service, manufacturing and construction industries. The curriculum is designed to accept a broad range of AS Degree backgrounds and develop the management and supervisory skills necessary to produce a marketable skill. AS Degree programs with emphasis on Architectural, Building Construction, Aerospace, Automotive Services, Civil, Computer, Fire Control, Drafting and Graphics, Industrial Management or Supervision, Quality Control and Surveying technologies are normally acceptable. Choose a minimum of 21 hours:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT 351</td>
<td>Work Analysis</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 352</td>
<td>Cost Estimating and Analysis</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 353</td>
<td>Computer Methods in Industry</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 451</td>
<td>Process Planning and Scheduling</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 452</td>
<td>Occupational Safety</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 453</td>
<td>Industrial Quality Control</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 454</td>
<td>Plant Maintenance Operations</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 341</td>
<td>Contracts and Specifications</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENT 343</td>
<td>Product Design</td>
<td>4 hours</td>
</tr>
<tr>
<td>ENT 441</td>
<td>Structural Design</td>
<td>4 hours</td>
</tr>
</tbody>
</table>
The College of Engineering offers the Master of Science, the Master of Science in Engineering, the Master of Science in Environmental Systems Management and the Doctor of Philosophy (jointly with the U of F) in Electrical Engineering degrees.

These programs are designed to provide for advanced professional engineering education (MSE) or specialized education in selected areas (MS or MSESM). It is the objective of the College of Engineering to produce well-qualified, competent graduates from outstanding accredited programs for the professional practice of engineering and to conduct research and service responsive to the needs of the State of Florida and the Nation.

It has long been recognized that the minimum educational qualification for entry into the engineering profession is the five-year B.S.E./M.S.E. program. This unique "professional school" program is geared to educating practitioners of the profession. The program is clearly in the interests of protecting the health, safety, and general welfare of the public and recognizes the unique statutory (Florida Statutes Chapter 471) and accreditation (Engineer's Council for Professional Development) requirements imposed on those who teach and administer the program.

**MASTER OF SCIENCE IN ENGINEERING**

Program Coordinator: D. Block, EN 212, Phone 275-2156

Advanced professional engineering competencies are achieved through the M.S.E. program. This program is intended for those who have attained an engineering bachelor's degree. Based on the very strong undergraduate, inter-departmental, college-wide engineering core plus option approach, this program leads to the M.S.E. degree, also based on an interdisciplinary approach, but at the department level. Thus the effective and efficient unified core approach is continued through the master's level.

**Admission Requirements**

1. University Admission Requirements
   (See pages 46 and 58)

2. College Admission Requirements
   a. Applicants for the M.S.E. program must have the B.S.E. or equivalent from an ECPD accredited engineering curriculum in the appropriate discipline area.
   b. Applicants for the M.S. or M.S.E.S.M. programs must present baccalaureate credentials appropriate to the specialized area of study.

**University Graduate Policies and Procedures**


**Degree Requirements**

1. Prerequisites: Engineering Bachelor's Degree or Equivalent.
2. Core Courses: At least one advanced course in each departmental sub-discipline beyond B.S.E. requirements 19 - 26 hours
3. Restricted Electives: Additional subdiscipline-specialty courses  

9 - 15 hours

Additional advanced mathematics, computer systems, natural sciences, engineering sciences, or appropriate supportive areas (beyond B.S.E. core requirements or equivalent)  

9 - 15 hours

4. Thesis or Research Report: Students must be registered in the quarter in which application for graduation is filed  

9 or 3 hours

5. Examinations: Satisfactory completion of a comprehensive examination required.

6. Other Requirements: None specified.

Total Quarter Hours Required (M.S.E. Program) 45
BOR Maximum Hours Allowed 65
(see pages 61-62)

MSE AREAS OF SPECIALIZATION

Departmental Specialization Core Course Requirements

Each student will select, with the approval of his graduate committee, departmental core courses as noted below for the professional options. Additional course work may be selected in one of the subdiscipline specialty areas to provide program depth. The student is referred to the course description section of the catalog for further information.

1. ELECTRICAL ENGINEERING OPTION: At least one course from each of five subdiscipline groupings other than the chosen specialization area.

Communications Systems
Systems Control
Digital Systems
Electromagnetic Theory
Electronic Circuits
Hybrid Systems
Optical Communication Systems
Signal and Circuit Theory

2. ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS OPTION: The core requirements for all students will be met by the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMCS 572</td>
<td>Engineering Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EMCS 573</td>
<td>Analytical Methods in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EMCS 574</td>
<td>Analytical Methods in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EECS 613</td>
<td>Computer System Design</td>
<td>3</td>
</tr>
<tr>
<td>EECS 621</td>
<td>Digital Computer Systems</td>
<td>3</td>
</tr>
<tr>
<td>EMCS 640</td>
<td>Engineering Data Reduction</td>
<td>4</td>
</tr>
</tbody>
</table>

19 hours

3. ENVIRONMENTAL ENGINEERING OPTION: The student will take the following Environmental Engineering Core and Specialty Courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEES 601</td>
<td>Unit Operations and Processes of Sanitary Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>CEES 602</td>
<td>Unit Operations and Processes of Sanitary Engineering II</td>
<td>4</td>
</tr>
<tr>
<td>CEES 603</td>
<td>Unit Operations and Processes Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CEES 604</td>
<td>Water and Wastewater Treatment Systems</td>
<td>3</td>
</tr>
<tr>
<td>CEES 615</td>
<td>Atmospheric Pollution Control</td>
<td>4</td>
</tr>
<tr>
<td>CEES 618</td>
<td>Solid Wastes Management</td>
<td>4</td>
</tr>
</tbody>
</table>

21 hours

In addition, the student will take at least one course from each of the two following areas:

1. Transportation and Urban Systems Engineering
2. Structures and Geotechnical Engineering
4. **INDUSTRIAL ENGINEERING OPTION:** The core requirements for all students will be met by the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEMS 502</td>
<td>Probability for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 503</td>
<td>Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 521</td>
<td>Engineering Reliability &amp; Qual. Assur.</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 532</td>
<td>Management Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>IEMS 602</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 612</td>
<td>System Safety</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 624</td>
<td>Operations Research</td>
<td>3</td>
</tr>
<tr>
<td>IEMS 629</td>
<td>Production and Inventory Control</td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 26 hours

5. **MECHANICAL ENGINEERING OPTION:** The core requirements for all students will be met by the courses listed.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAS 638</td>
<td>Environmental Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MEAS 680</td>
<td>Classical Thermodynamics</td>
</tr>
<tr>
<td>MEAS 642</td>
<td>Principles of Design</td>
<td>3</td>
</tr>
<tr>
<td>MEAS 643</td>
<td>Mechanical Design</td>
<td>3</td>
</tr>
<tr>
<td>MEAS 653</td>
<td>Experimental Measurements</td>
<td>3</td>
</tr>
<tr>
<td>MEAS 674</td>
<td>Mechanics of Viscous Flow</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>MEAS 671</td>
<td>Gas Dynamics</td>
</tr>
<tr>
<td>MEAS 685</td>
<td>Conduction Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MEAS 686</td>
<td>Convection Heat Transfer</td>
</tr>
<tr>
<td>or</td>
<td>MEAS 688</td>
<td>Radiation Heat Transfer</td>
</tr>
</tbody>
</table>

Total: 19-20 hours

**MASTER OF SCIENCE DEGREE**

**Program Coordinator:** D. Block, EN 212, Phone 275-2156

This graduate program is designed to provide the competent student in engineering or other selected fields an opportunity to specialize in a particular subject area within engineering. Normally this objective may be attained through the satisfactory completion of graduate-level course work and research endeavor.

**Admissions Requirements**

1. University Admission Requirements  
   (See pages 46 and 58)

2. Program Admission Requirements  
   (See page 117 for College Admission Requirements.)

**University Graduate Policies and Procedures**  
(See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies)

**Degree Requirements**

1. Prerequisites: Baccalaureate credentials appropriate to the specialized area of study.

2. Core Courses  
   24-30 hours

3. Restricted Electives: Additional advanced mathematics (beyond MATH 324), computer systems, natural sciences, engineering sciences, or appropriate supportive areas  
   12 hours

4. Thesis or Research Report:  
   9 or 3 hours
5. Examinations: Satisfactory completion of a comprehensive examination is required.

6. Other Requirements: None specified.

Total Quarter Hours Required (M.S. Program) 45
BOR Maximum Hours Allowed 65
(see pages 61-62)

MASTER OF SCIENCE IN ENVIRONMENTAL SYSTEMS MANAGEMENT DEGREE

Program Coordinator: D. Block, EN 212, Phone 275-2156

The College of Engineering offers graduate work leading to the Master of Science in Environmental Systems Management. The program is designed to provide for advanced professional and specialized education in selected areas of engineering and science related to the management and control of our natural environment.

This program provides for the preparation of engineering specialists for service in environmental related occupations by allowing concentrated study in a limited number of subdisciplines. The program is open to those who have attained the bachelor's degree in engineering or science disciplines closely related to the environmental sciences and environmental or systems engineering.

Admission Requirements

1. University Admission Requirements
   (See pages 46 and 58)

2. Program Admission Requirements
   (See page 117 for College Administration Requirements)

Degree Requirements

Degree requirements vary depending upon student interests and background. Interested students should consult the chairman of the Civil Engineering and Environmental Sciences Department.

Total Quarter Hours Required 45
BOR Maximum Hours Allowed 65
(see pages 61-62)

DOCTOR OF PHILOSOPHY DEGREE

The College of Engineering is participating in a Cooperative Doctoral program in Electrical Engineering with the University of Florida. Interested students should consult with the chairman of the Electrical Engineering and Communication Sciences Department.
COLLEGE OF
HUMANITIES AND FINE ARTS

UNDERGRADUATE PROGRAMS
ART
FILM
ENGLISH
FOREIGN LANGUAGES
FRENCH
GERMAN
ITALIAN
RUSSIAN
SPANISH
HISTORY
HUMANITIES
HUMANITIES AND FINE ARTS
MUSIC
MUSIC EDUCATION
PHILOSOPHY
THEATRE
THEATRE
FILM
GRADUATE PROGRAMS
ENGLISH
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, philosophy and theatre. Any one of these majors may be combined with a core of Business Administration courses designed to prepare a student for administrative work within his major. This Humanities and Fine Arts-Administration program is described below. Besides these majors, courses are offered in film, German, Italian, religion and Russian.

The College of Humanities and Fine Arts also offers sound preparation for subsequent study in Law. The quality of undergraduate education for the legal profession, according to the Association of American Law Schools, is grounded in three basic skills and insights: comprehension and expression in words, critical understanding of the human institutions and values with which the law deals, and creative power in thinking.

In defining a proper prelaw curriculum, the Association stresses breadth and flexibility in undergraduate prelaw education, and cites specifically History, Philosophy and English, among others, as valid academic preparation.

The College of Humanities and Fine Arts, in its seven departments, provides programs intended to develop the skills and insights fundamental to the later attainment of legal competence. History, Philosophy, English, and the major in Humanities and Fine Arts seem particularly appropriate programs of study for the student considering law school. (Contact Person: H. Smith, FA 509B, Phone 275-2600)

The College of Humanities and Fine Arts in conjunction with the College of Business Administration offers a program which combines a major in one of the areas in the College of Humanities and Fine Arts with a number of selected courses in the College of Business Administration. This combination of concentrations will prepare the student to assume an administrative position in one of the fields of the Humanities and Fine Arts and will also afford the opportunity of going on for a Master's Degree in Business. The required administration courses are in addition to the requirements for a major in one of the college's departments. (Contact Person: E. Hotaling, FA 140, Phone 275-2667)

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 skills 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.
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 in offering electives suitable to all students.


DEPARTMENT OF ART

Chairman: S. Lotz, FA 525, Phone 275-2676
Faculty: Chavda, Eyfells, Gaudnek, Ortmayer, Wellman

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 drawing, painting, printmaking, photography, graphic design, film, sculpture, and ceramics.

The Department of Art offers programs leading toward both the Bachelor of Arts (B.A.) degree and the Bachelor of Fine Arts (B.F.A.) degree.

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

BACHELOR OF ARTS: ART

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   Varies with Specialization

4. Restricted Electives
   Varies with Specialization

5. Electives
   To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.

Total Quarter Hours Required: 180

AREAS OF SPECIALIZATION

1. Art History

   Required Courses
   ART 221, 222, 223 History of Art I, II, III 9 hours

   Restricted Electives
   a) Any two:
      ART 201, 202, 203 Design Fundamentals I, II, III 6 hours
      ART 204 Film Design
   b) Any one:
      ART 231 Visual Arts Overview 4 hours
      ART 431 Developing Visual Creativity 4 hours
      PHI 341 Aesthetics 4 hours
      THA 424 Principles of Motion Picture Art 4 hours
   c) Studio Courses
      Any two studio courses 6 hours
Specialization
300 and 400 level courses in Art History 21 hours

Language and Comprehensive Examination
A satisfactory grade in a comprehensive art history examination and a reading knowledge of one foreign language are required.

Total Quarter Hours in Art courses or approved cognates — 46 hours

2. Art (Studio Areas)

Required Courses
- ART 201, 202 Design Fundamentals I, II 6 hours
- ART 211, 212 Drawing Fundamentals I, II 6 hours
- ART 221, 222, 223 History of Art I, II, III 9 hours

Restricted Electives
a.) Either
- ART 203 Design Fundamentals III or 3 hours
- ART 204 Film Design 3 hours
b.) Any one:
- ART 231 Visual Arts Overview 4 hours
- ART 431 Developing Visual Creativity 4 hours
- PHI 341 Aesthetics 4 hours
- THA 424 Principles of Motion Picture Art 4 hours
c.) Art History
- Any 300 and 400 level Art History course 3 hours
d.) Upper Division Electives in Art 14 hours

Specialization
300 and 400 level courses in one Studio Area (see Areas of Studio Specialization below) 15 hours

Portfolio Requirement
For the B.A. degree a selective portfolio of work, representing the student's accomplishment in the major Studio Specialization and acceptable to the Studio Faculty, will be submitted during the final Senior quarter.

Total Quarter Hours in Art courses or approved cognates — 60 hours

Areas of Studio Specialization: Ceramics, Drawing, Film, Graphic Design, Painting, Photography, Printmaking, Sculpture

BACHELOR OF FINE ARTS: ART

The B.F.A. degree is recommended for those students who can successfully petition for admission to ART 484 and who intend to pursue work in the Arts at the graduate level.

Degree Requirements
1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   - ART 221, 222, 223 History of Art I, II, III 9 hours
   - ART 201 6 hours
   - ART 202, 203 Design Fundamentals I, II, III 9 hours
   - ART 204 Film Design 3 hours
ART 211, 212
ART 311
ART 484

4. Restricted Electives

a.) Art History and Theory
Any 300 and 400 level Art History and Theory courses 14-15 hours

b.) Any one:
PHI 341 Aesthetics 4 hours
THA 424 Principles of Motion Picture Art 4 hours

c.) Upper Division Electives in Art Specialization
300 and 400 level courses in one Studio Area (see Areas of Studio Specialization below) 18-19 hours

5. Electives
To be selected primarily from upper level courses outside the Department, with the approval of student's advisor.

Total Quarter Hours in Art courses or approved cognates — 90 hours
Total Quarter Hours Required — 180 hours

Areas of Studio Specialization
Drawing, Graphic Design, Painting, Photography, Sculpture, Drawing and Printmaking combination, and Sculpture and Ceramics combination

*The procedure for admission to ART 484 (Senior Studio and Exhibition) requires a formal application and portfolio submission by the student to the Department Chairman and the Studio Faculty, no earlier than the first quarter of the student's senior year (upon completion of 135 quarter hours). After successfully petitioning for admission to ART 484, the student must complete no less than 45 quarter hours at FTU, of which at least 20 quarter hours must be in Art courses. A grade of C or better in ART 484 is required for graduation.

DEPARTMENT OF ENGLISH

Chairman: R. Grove, FA 432, Phone 275-2212
Faculty: Adicks, Barnes, Browne, Combs (Emeritus), Donnelly, Fetscher, McCown, Omans, Posner, Price, Schilthorst, Umphrey, Wyatt

The FTU English Department is responsible for the effective teaching of literature in English, including World Literature, as well as expository and creative writing. It serves not only the special needs of those students concentrating in literature or in writing but also the broad needs of the University by offering courses in expository writing and literature to students from other departments.

BACHELOR OF ARTS: ENGLISH

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   (See Literature Concentration or Writing Concentration below)

4. Restricted Electives
   (See Literature Concentration or Writing Concentration below)
5. Electives
To be selected primarily from upper level courses with the approval of the student's advisor.

6. Foreign Language Requirement
Proficiency in one modern foreign language must be shown in one of the following ways: passing a proficiency exam; presenting four years of high school credit in one language; completing 24 quarter hours in one language; completing 12 quarter hours in one language (in which case an additional 12 hours of upper-level English courses are required); completing 36 quarter hours in one language (in which case there is a 12 hour reduction in required upper division English electives)

Total Quarter Hours Required 180

AREA OF SPECIALIZATION

1. Literature. The following courses are required for this specialization:
   - ENG 202 Literary Analysis 3 hours
   - ENG 211 Survey of English Literature to 1625 3 hours
   - ENG 212 Survey of English Literature 1626-1798 3 hours
   - ENG 213 Survey of English Literature 1798-1914 3 hours
   - ENG 311 Survey of American Literature 1588-1865 3 hours
   - ENG 312 Survey of American Literature 1865-1914 3 hours
   - ENG 313 Survey of American Literature Since 1914 3 hours
   - ENG 314 Survey of British Literature Since 1914 3 hours

   Choose two from:
   - ENG 430 Chaucer 3 hours
   - ENG 442 Shakespeare's Studies 3 hours
   - ENG 434 Milton 3 hours

   Required:
   - 400 Level Sequence Courses 9 hours
   - Upper-division electives in English 12 hours

2. Writing. Students desiring to specialize in the area should meet the requirements:
   - ENG 202 Literary Analysis 3 hours

   Any six of:
   - ENG 201 Literature of Modern Man 4 hours
   - ENG 211 Survey of English Literature to 1625 3 hours
   - ENG 212 Survey of English Literature 1626-1798 3 hours
   - ENG 213 Survey of English Literature 1798-1914 3 hours
   - ENG 311 Survey of American Literature 1588-1865 3 hours
   - ENG 312 Survey of American Literature 1865-1914 3 hours
   - ENG 313 Survey of American Literature Since 1914 3 hours
   - ENG 314 Survey of British Literature Since 1914 3 hours
   - ENG 321 Exploring Poetry 3 hours

   Any two of the linguistics courses:
   - ENG 371 Principles of Linguistics 3 hours
   - ENG 471 Modern English Grammar 3 hours
   - ENG 572 History of the English Language 4 hours
   - ENG 473 Transformational Grammar 3 hours
   - ENG 483 Black English 3 hours

   Must include: Upper-division Literature 3-4 hours

   Any four of:
   - ENG 208 Principles of Creative Writing 3 hours
   - ENG 209 Introduction to Verse Writing 3 hours
   - ENG 210 Introduction to Fiction Writing 3 hours
   - ENG 302 Creative Writing Workshop I 3 hours
   - ENG 303 Creative Writing Workshop II 3 hours
   - ENG 304 Creative Writing Workshop III 3 hours
DEPARTMENT OF FOREIGN LANGUAGES

Chairman: A. Cervone, FA 436, Phone 275-2641
Faculty: DiPierro, Micarelli, Payas, Taylor

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 a 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 a week.

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 by the Department of Foreign Languages. The foreign language major must complete 44 quarter hours in the chosen language beyond the 100 and 200 level. Among these 44 quarter hours the student must take courses numbered 301, 303, 311, 312 and 313. (Course letter prefix is determined by the language.)

For a major in two foreign languages, a student must take the courses numbered 301, 303, 311, 312, 313, in both languages plus an additional 18 credits in his first language and an additional 9 credits in his second language.

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.

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

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses for French or Spanish Major
   101 Elementary Language & Civilization 4 hours
   102 Elementary Language & Civilization 4 hours
   103 Elementary Language & Civilization 4 hours
   201 Intermediate Language & Civilization 4 hours
   202 Intermediate Language & Civilization 4 hours
   203 Intermediate Language & Civilization 4 hours
   301 Conversation 4 hours
   303 Composition 4 hours
   311 Survey of Literature I 4 hours
   312 Survey of Literature II 4 hours
   313 Survey of Literature III 4 hours

4. Restricted Electives

5. Electives

Total Quarter Hours Required 180

BACHELOR OF ARTS: FOREIGN LANGUAGES (COMBINED)

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses for Combined Major in Foreign Languages
   301 Conversation 4 hours
   303 Composition 4 hours
   311 Survey of Literature I 4 hours
   312 Survey of Literature II 4 hours
   312 Survey of Literature III 4 hours

4. Restricted Electives
   18 credits in first language
   9 credits in second language

5. Electives

Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Russian Area Studies. Florida Technological University offers an academic program in Russian Area Studies. Five departments in the University have cooperated to provide this unique study program so that the student may more fully enjoy the varied offerings of the University. Upon successful completion of courses, the student will receive a certificate of participation.

DEPARTMENT OF HISTORY

Chairman: J. Shofner, Bldg. FA 551-B, Phone 275-2224
Faculty: Crepeau, Evans, Fetscher, Greene, Greenhaw, Kallina, Pauley, Wehr

Students majoring in history must complete a minimum of 48 hours
in history courses. At least eight quarter hours must be selected from each of three different geographical areas, such as: the United States, Europe, Asia, or Latin America.

History majors are encouraged but not required to develop a proficiency in a foreign language.

**BACHELOR OF ARTS: HISTORY**

**Degree Requirements**

1. University Graduation Requirements  
   (See page 46)
2. Environmental Studies Program  
   (See page 63)
3. Required Courses  
   None
4. Restricted Electives  
   None
5. Electives  
   To be selected with approval of the student's advisor.  
   Total Quarter Hours Required 180

**AREA OF SPECIALIZATION**

1. Russian Area Studies. The history department participates in the Russian Area program. For information consult with Professor Evans.

**DEPARTMENT OF HUMANITIES, PHILOSOPHY AND RELIGION**

**Chairman:** R. Flick, FA 415, Phone 275-2273  
**Faculty:** Jones, Kassim, Levensohn, Riley, Riser

The Department offers:

1. An interdepartmental humanities major, with three choices of concentration.
2. A philosophy major, with an optional specialization in religion.
3. Interdisciplinary courses in humanities for non-majors as well as majors, in which representative monuments in the arts, literature and philosophy are studied to reveal a unified picture of culture.
4. A variety of courses in philosophy and religion for non-majors, such as logic, ethics, aesthetics, existentialism, and comparative religions. Most courses, indeed, have no prerequisites and are open to all.
5. Innovative courses (sometimes as special topics) that relate to questions of value in contemporary civilization.

The humanities major, as well as the philosophy major, provides a rich background in the liberal arts. Both are well suited for those students who see the college experience as a means toward fulfillment and preparation for living, and not merely as preparation for earning a living. Yet a liberal education, as provided by these majors, is still considered excellent preparation, by many employers, for careers in personnel management, communications, planning, administration, labor relations, public relations, writing, editing, politics, and
civil service. A major in philosophy, emphasizing logic and ethics, is also excellent background for a career in law.

Both majors may also lead to careers in teaching. One who completes the humanities major and the necessary education courses may be certified to teach humanities in high school. With the addition of a Master's Degree he may qualify to teach in one of the many community colleges. Since philosophy is taught primarily in college, the student who plans to teach it will need to obtain an advanced degree. He will therefore be well advised to include at least a year of foreign language in his program. The humanities major requires a year of foreign language.

The hours required for majors in humanities and philosophy are sufficiently limited to allow the student to obtain a second major in most cases. This may be a wise way of using electives to increase one's options for employment.

BACHELOR OF ARTS: HUMANITIES

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses (all concentrations)
   HUM 401 The Ideal of Nature in the Arts 4 hours
   HUM 402 The Classical Ideal in the Arts 4 hours
   HUM 403 The Spiritual Ideal in the Arts 4 hours

4. Restricted Electives (Choose one of the three specializations)

SPECIALIZATION IN IDEAS

a. Two courses in literature:
   ENG 317, 318, 211-213, 311-313, 415 or FL 323, 324 6-8 hours

b. Two courses in European history:
   HIST 301, 302, 305, 306, 307, or HUM/HIST 351, 352 8 hours

c. Two courses in history of philosophy: PHI 301, 302, 303 8 hours

d. One course in religion: REL 300, 401 4 hours

e. Any course in literature, history, philosophy or religion 3-4 hours

f. One course in art history or appreciation:
   ART 221-223, 421, 433 3-4 hours

g. One course in music appreciation: MUS 312, 320 3-4 hours

h. One course in theatre history: THA 210, 310, 331-333 3-4 hours
SPECIALIZATION IN THE ARTS

a. One course in world literature: ENG 317, 318 or FL 323, 324 4 hours
b. One course in European history: (See choices above) 4 hours
c. One course in history of philosophy: PHI 301, 302, 303 4 hours
d. One course in religion: REL 300, 401 4 hours
e. Two courses in art: ART 201-204, 211, 221-223 6 hours
f. Two courses in creative writing: ENG 302-304 6 hours
g. Courses in music: MUS 104-108, 305, 312, 320 6 hours
h. Two courses in theatre: THA 180, 210, 310, 331-333 6 hours

SPECIALIZATION IN WORLD CULTURES

a. Two courses in world or European literature: ENG 317, 318 or FRE 311-313 or SPA 311-313, 316-318 8 hours
b. Two courses in Russian or Far Eastern history: HIST 435, 439, 470-472 8 hours
c. Two courses in non-Western religion: REL 315, 317, 318, 319 8 hours
d. One course in philosophy: PHI 301, 405 4 hours
e. Two courses in non-Western art: ART 321, 322, 425 6 hours
f. One course in music appreciation: MUS 312, 320 3-4 hours
g. One course in drama development: THA 341-343 4 hours

5. Electives
   May be used to obtain a second major, to complete requirements for teacher certification in Humanities in the College of Education, or to strengthen the major with cognate courses.

Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

The humanities major has three areas of emphasis, as indicated above, and the choice of "restricted electives" is determined by the concentration. The Concentration in Ideas is weighted in favor of Western literature, history, philosophy and religion, with lighter emphasis on the Arts. The Concentration in the Arts reverses this emphasis. The Specialization in World Cultures allows the grouping of courses in non-Western Culture, but without ignoring basic aspects of Western Humanities.

BACHELOR OF ARTS: PHILOSOPHY

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   PHI 221 Introduction to Philosophy 4 hours
   PHI 301 Ancient Philosophy 4 hours
   PHI 312 Existentialism 4 hours
   PHI 314 Problems in Contemporary Philosophy 4 hours
   PHI 331 Ethics 4 hours
   PHI 494 Independent Study 4 hours

4. Restricted Electives
   a. A course in critical thinking or formal logic: PHI 105 or 205 4 hours
   b. A course in modern philosophy: PHI 302 or 303 4 hours
   c. Four elective courses in philosophy or religion 16 hours

5. Electives
   To be selected with the approval of the student's advisor. May be used to obtain a major.

Total Quarter Hours Required 180
AREA OF SPECIALIZATION: RELIGION

Students may meet requirements for the Bachelor of Arts in Philosophy by completing the following alternate required courses and restricted electives.

1. Required Courses
   - PHI 105  Critical Thinking  4 hours
   - PHI 221  Introduction to Philosophy  4 hours
   - PHI 301  Ancient Philosophy  4 hours
   - PHI 331  Ethics  4 hours
   - PHI 405  Philosophy of Religion  4 hours
   - REL 401  Comparative Religion  4 hours

2. Restricted Electives
   a. Any four:
      - REL 300  The Hebrew and Christian Heritage
      - REL 315  Religions of China and Japan
      - REL 317  Hinduism
      - REL 318  Islam
      - REL 319  Ancient Near Eastern Religions
      16 hours
   b. Any two:
      - REL 321  Religion in America
      - REL 441  Modern Theology
      - REL 471  Mythology
      - REL 473  The Religious Quest
      - REL 477  Mysticism
      8 hours

DEPARTMENT OF MUSIC

Chairman:  G. Wolf, FA 105A, Phone 275-2867
Faculty:  Brodie, Eubank, Hotaling, Palmer, Stenberg, Szabo, Whisler, Wood, Wrancher
Part-time Faculty:  Boyd, Butsch, Eshenaur, Hasse, Kupfer, Marks, Micarelli

The degree of Bachelor of Arts with a major in music or music education is designed for the study of music in a liberal arts curriculum. To insure synthesis of the many musical elements into a comprehensive whole, the student is assigned to progressively organized sequences in MUSICIANSHIP and PRINCIPAL PERFORMANCE. The student's initial placement in these fundamental courses is made by the music faculty following a musicianship test and performance audition to be scheduled by the student before his first registration. Subsequent progress is determined by achievement tests and performance juries administered at specific points in his musical development. In general, the student's rate of progress in these basic sequences depends upon his own initiative.

The MUSICIANSHIP courses are designed to enhance the student's writing, analysis, and performance skills. This integrated systematic study of music aids in the development of the student's skills in sight singing, score reading, conducting, aural analysis, visual analysis, part writing, counterpoint, instrumentation, and composition. Emphasis is placed on writing and performance of music. The Musicianship courses meet six hours weekly.

The PERFORMANCE courses include experience in solo and ensemble (major performing organization and chamber music ensembles). Faculty approved junior and senior recitals are included in the requirements for these courses.

The PIANO PROFICIENCY EXAMINATION must be completed satisfactorily before the student can be admitted to MUS 404 in his major
performing medium. Enrollment in MUSIC FORUM is required each quarter for the students enrolled in PRINCIPAL PERFORMANCE.

**K-12 Certification**

Students who wish to be certified to teach in elementary and secondary schools should consider a major in Music Education. Courses leading to teacher certification are offered cooperatively with the College of Education. Those students who satisfactorily complete the Music Education program will be eligible for a Florida Rank III Teacher's Certificate. The certificate is valid for five years and is renewable. The Music Education graduate receives reciprocal certification in a number of states which have agreements with Florida.

**BACHELOR OF ARTS: MUSIC**

**Degree Requirements**

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. **Required Courses**

   **AREA OF SPECIALIZATION: MUSIC**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 100*</td>
<td>Music Forum</td>
<td>0 hour</td>
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<tr>
<td>MUS 201-202-203</td>
<td>Musicianship</td>
<td>12 hours</td>
</tr>
<tr>
<td>MUS 204**</td>
<td>Principal Performance I</td>
<td>12 hours</td>
</tr>
<tr>
<td>MUS 301-302-303</td>
<td>Musicianship</td>
<td>12 hours</td>
</tr>
<tr>
<td>MUS 304**</td>
<td>Principal Performance II</td>
<td>12 hours</td>
</tr>
<tr>
<td>MUS 401-402-403</td>
<td>Musicianship</td>
<td>12 hours</td>
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<tr>
<td>MUS 404 **</td>
<td>Principal Performance III</td>
<td>12 hours</td>
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<tr>
<td>MUS 474</td>
<td>Directed Experience</td>
<td>12 hours</td>
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<tr>
<td>MUS 484 **</td>
<td>Principal Performance IV</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

4. **Restricted Electives**

   To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.

5. **Electives**

<table>
<thead>
<tr>
<th>Total Quarter Hours Required</th>
<th>180</th>
</tr>
</thead>
</table>

**Special Non-course Requirements**

1. Piano Proficiency Requirement (before admission to MUS 404).

2. Vocal Sight-reading proficiency (before end of junior year).

3. Faculty-approved public recital, 30-minute length (during junior year).

4. Faculty-approved public recital, 45-minute length (during senior year).

   * Required during each quarter the student is registered for Principal Performance.

   ** Including a Major Performing Organization and a Chamber Music Ensemble.

**BACHELOR OF ARTS: MUSIC EDUCATION**

**Degree Requirements**

1. University graduation requirements
   (See page 46)
2. Environmental Studies Program  
   (See page 63)  

3. Required Courses  

**AREA OF SPECIALIZATION: MUSIC EDUCATION**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MUS 100*</td>
<td>Music Forum</td>
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<tr>
<td>MUS 104</td>
<td>Secondary Performance</td>
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<td>MUS 201-</td>
<td>Musicianship</td>
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<tr>
<td>MUS 202-203</td>
<td>Musicianship</td>
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<td>MUS 204**</td>
<td>Principal Performance</td>
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<td>MUS 301-</td>
<td>Musicianship</td>
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<td>MUS 302-303</td>
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<td>MUS 304**</td>
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<td>MUS 401-402</td>
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<td>MUS 403</td>
<td>Principal Performance</td>
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<tr>
<td>MUS 404**</td>
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<td>MUS 484**</td>
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**Professional Education Preparation**

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<th>Course Title</th>
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<tr>
<td>EDTA 206</td>
<td>Human Development</td>
<td>3</td>
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<td>EDTA 307</td>
<td>Teaching Analysis</td>
<td>5</td>
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<tr>
<td>EDSE 303</td>
<td>School Programs</td>
<td>3</td>
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<td>EDTA 306</td>
<td>Learning Theory</td>
<td>3</td>
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<tr>
<td>EDPL 330</td>
<td>Student Teaching</td>
<td>3</td>
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<tr>
<td>EDPL 430</td>
<td>Student Teaching</td>
<td>9</td>
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<tr>
<td>EDPL 408</td>
<td>Teaching Strategies</td>
<td>3</td>
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<tr>
<td>EDSE 404</td>
<td>Instructional Techniques</td>
<td>3</td>
</tr>
<tr>
<td>EDSE 442</td>
<td>Reading in Content Areas</td>
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**Music Education Preparation**

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<tr>
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<tbody>
<tr>
<td>EDME 401</td>
<td>Elementary School Music</td>
<td>2</td>
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<tr>
<td>EDME 402</td>
<td>Secondary School Music</td>
<td>2</td>
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<tr>
<td>EDME 403</td>
<td>Instrumental Music</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>EDME 404 Vocal Music</td>
<td>2</td>
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</tbody>
</table>

4. Electives  
   To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.  
   Total Quarter Hours Required 180  

**Special Non-course Requirements**

   Same as for Music Specialization except that only a 30-minute Senior Recital is required.  

* Required during each quarter the student is registered for Principal Performance.  
** Including a Major Performing Organization and a Chamber Music Ensemble.  
*** Credits in parentheses are recommended but not required.  

**DEPARTMENT OF THEATRE**

Chairman:  (Acting) H. Smith, FA 509B, Phone 275-2600  
Faculty:  Mays, Smith  

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

The major in Theatre consists of four programs of study, one of which will be pursued by the student upon consultation with his advisor and after the basic program has been completed.
# BACHELOR OF ARTS: THEATRE

## Degree Requirements

1. **University graduation requirements**  
   (See page 46)

2. **Environmental Studies Program**  
   (See page 63)

3. **Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>THA 180</td>
<td>Study of Theatre and Drama</td>
<td>3</td>
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<tr>
<td>THA 210</td>
<td>Cinema Survey</td>
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<td>THA 290</td>
<td>Theatre Practicum</td>
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**Program “A” Theatre History and Criticism**

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>THA 310</td>
<td>History of the Motion Picture</td>
<td>4</td>
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<tr>
<td>THA 331, 332, 333</td>
<td>History of Theatre</td>
<td>9</td>
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<tr>
<td>THA 341, 342, 343</td>
<td>Development of Drama</td>
<td>12</td>
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<tr>
<td>THA 421</td>
<td>Dramatic Theory</td>
<td>3</td>
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<tr>
<td>THA 423</td>
<td>Contemporary Theatre/Drama</td>
<td>3</td>
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<td>THA 425</td>
<td>Dramatic Criticism</td>
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<td>THA 441</td>
<td>Modern Currents in the Theatre</td>
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<td>THA 486, 487</td>
<td>American Drama</td>
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**Program “B” Technical Theatre and Design**

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<th>Course Title</th>
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<tbody>
<tr>
<td>THA 240</td>
<td>Technical Theatre Production</td>
<td>4</td>
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<tr>
<td>THA 241</td>
<td>Stage Carpentry</td>
<td>4</td>
</tr>
<tr>
<td>THA 242</td>
<td>Stage Properties</td>
<td>4</td>
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<tr>
<td>THA 350</td>
<td>Costumes: History and Theory</td>
<td>4</td>
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<tr>
<td>THA 351</td>
<td>Costume Design and Make up</td>
<td>4</td>
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<tr>
<td>THA 381</td>
<td>Scene Design</td>
<td>4</td>
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<tr>
<td>THA 382</td>
<td>Stage Lighting</td>
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<tr>
<td>THA 390</td>
<td>Theatre Practicum II</td>
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<td>THA 441</td>
<td>Modern Currents in the Theatre</td>
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<tr>
<td>THA 491</td>
<td>Special Topics</td>
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**Program “C” Acting and Directing**

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<tr>
<td>THA 240</td>
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<td>THA 242</td>
<td>Stage Properties</td>
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<tr>
<td>THA 280</td>
<td>Acting</td>
<td>4</td>
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<tr>
<td>THA 310</td>
<td>History of the Motion Picture</td>
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<tr>
<td>THA 350</td>
<td>Costumes: History and Theory</td>
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<tr>
<td>THA 351</td>
<td>Costume Design and Make up</td>
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<tr>
<td>THA 375</td>
<td>Modern Stage Movement</td>
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<td>THA 380</td>
<td>Directing I</td>
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<tr>
<td>THA 381</td>
<td>Scene Design I</td>
<td>4</td>
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<tr>
<td>THA 422</td>
<td>High School Play Directing</td>
<td>3</td>
</tr>
<tr>
<td>THA 488</td>
<td>Creative Dramatics/Children’s Theatre</td>
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<tr>
<td>THA 489</td>
<td>Performance Styles</td>
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**Program “D” Film**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>THA 180</td>
<td>Study of Theatre and Drama</td>
<td>3</td>
</tr>
<tr>
<td>THA 210</td>
<td>Cinema Survey</td>
<td>4</td>
</tr>
<tr>
<td>THA 290</td>
<td>Theatre Practicum</td>
<td>3, 3</td>
</tr>
<tr>
<td>THA 310</td>
<td>History of Motion Picture</td>
<td>4</td>
</tr>
<tr>
<td>THA 424</td>
<td>Principles of Motion Picture Art</td>
<td>4</td>
</tr>
<tr>
<td>THA 380, 480</td>
<td>Directing I, II</td>
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</tr>
<tr>
<td>or</td>
<td>THA 381, 382</td>
<td>Scene Design, Stage Lighting</td>
</tr>
<tr>
<td>ART 341</td>
<td>Photography</td>
<td>3</td>
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<tr>
<td>COM 100</td>
<td>Basic Communication</td>
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</tr>
<tr>
<td>RTV 345</td>
<td>Film for TV</td>
<td>4</td>
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</tbody>
</table>

4. **Restricted Electives**  
   None

5. **Electives**  
   Total Quarter Hours Required  
   180
COLLEGE OF HUMANITIES AND FINE ARTS
GRADUATE PROGRAMS

MASTER OF ARTS: ENGLISH

Program Coordinator: R. Adicks, FA 426, Phone 275-2212

The curriculum for the Master of Arts in English, which is ordinarily not a thesis degree, consists of courses and seminars in British, American, and world literature; linguistics; and the teaching of literature and composition. The Master of Arts program provides advanced study for persons holding a bachelor's degree in English or its equivalent. It also enables teachers holding a Rank III Florida certificate to acquire a Rank II certificate while enhancing their teaching ability and developing the knowledge and skills necessary for teaching English in college.

Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements:
   a. An undergraduate major in English, or its equivalent, with an average of B in all English courses. (Applicants without a major in English may remove any deficiencies without graduate credit.)
   b. Approval by the Graduate Committee of the Department of English.
   c. Three reference reports.

University Graduate Policies and Procedures


Degree Requirements

1. Prerequisites: ENG 501 (Linguistics) or equivalent.

2. Core Courses: These courses are required:
   ENG 610 (Literary Genres), ENG 620 (World Literature), ENG 630 (Movements in Literature), ENG 640 (Problems of Linguistics), ENG 650 (Major Author), ENG 660 (Media and Popular Literature).

3. Restricted Electives: None


5. Examinations: A comprehensive examination is required.

6. Other Requirements: Demonstration of a reading knowledge of a foreign language is required.

   Total Quarter Hours 45
   BOR maximum hours allowed 58

(see pages 61-62)
COLLEGE OF
NATURAL SCIENCES

UNDERGRADUATE PROGRAMS
BIOLOGICAL SCIENCE
  BIOLOGY
  BOTANY
  FRESH WATER ECOLOGY
  MICROBIOLOGY
  ZOOLOGY
CHEMISTRY
COMPUTER SCIENCE
FORENSIC SCIENCE
MATHEMATICS
MEDICAL RECORD ADMINISTRATION
MEDICAL TECHNOLOGY
PHYSICS
PREPROFESSIONAL
  PREDENTAL
  PREMEDICAL
  PRENURSING
  PREOPTOMETRY
  PREPHARMACY
  PREVETERINARY
RADIOLOGIC TECHNOLOGY
RESPIRATORY THERAPY
STATISTICS

GRADUATE PROGRAMS
BIOLOGICAL SCIENCE
COMPUTER SCIENCE
INDUSTRIAL CHEMISTRY
MATHEMATICAL SCIENCE
COLLEGE OF NATURAL SCIENCES

Dean: B. Ostle, AD 217, Phone 275-2691
Assistant Dean: R. Laird, Ad 215, Phone 275-2691

It is the purpose of the College of Natural Sciences to assist all students to develop their individual capabilities to the fullest. 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 an education which will develop in him a sense of personal and social responsibility; aid him in developing those qualities of mind and character necessary to intellectual advancement and to productive membership in society; arouse his intellectual interests; increase his appreciation of the sciences; bring about a progressive strengthening and refining of the powers of reasoning and judgment; and 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.

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, optometry, pharmacy, or veterinary medicine.

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

In addition to meeting all University requirements, each degree program in the College of Natural Sciences must contain:

1. ENG 310, Professional Report Writing II, and

2. courses which will introduce the student to the three major scientific disciplines within the College; i.e., physical sciences, biological and health sciences, and mathematical and computer sciences.
To satisfy the latter requirement, each student must take six courses distributed among the two scientific disciplines outside that of his major with a minimum of two courses in either discipline. (Notes: (1) Each department has identified a group of approved courses from which its majors may select in order to satisfy this College requirement. These courses will be of sufficient academic rigor to acquaint the student with both the philosophy and methodology of professionals within their disciplines. (2) With proper justification a student may be permitted to utilize courses offered outside the College of Natural Sciences to satisfy this distribution requirement by obtaining the prior approval of the Dean. Such requests must carry departmental approval before submission to the College of Natural Sciences Academic Standards Committee which will then forward them, with its recommendation, to the Dean.)

All degree programs must be approved by the major department and by the Dean of the College of Natural Sciences.

At the present time, undergraduate degree programs are available in the following areas: Biological Science (with options in Biology, Botany, Fresh Water Ecology, Microbiology and Zoology), Chemistry, Computer Science, Forensic Science, Mathematics, Medical Record Administration, Medical Technology, Physics, Radiologic Technology, Respiratory Therapy and Statistics.

Preprofessional programs are also available to prepare students for further study in schools of dentistry, medicine, 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.

Preprofessional preparation is also available to students in other health related areas such as nursing, occupational therapy, physical therapy, etc. However, the requirements of professional schools offering degrees and/or clinical training in any of these fields, although similar, vary significantly. Students desiring to take preprofessional work in any of these areas should consult with the Chairman of the Department of Allied Health Sciences prior to beginning their programs.

**GRADUATE PROGRAMS**

Graduate programs leading to a Master of Science degree are available in Biological Science, Computer Science, Industrial Chemistry, and Mathematical Science.
PROGRAM PLANNING

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

DEPARTMENT OF ALLIED HEALTH SCIENCES

Chairman: J. Bergner, BL 306, Phone: 275-2741
Faculty: Butler, Johns, Laird, Lawson, Lyste, Rogers, Tucker

The Department of Allied Health Sciences offers the Bachelor of Science degree in four fields: Medical Record Administration, Medical Technology, Radiologic Technology, and Respiratory Therapy. In addition, a series of courses is offered under the AHS designation.

Today's health care industry can best be described as dynamic, both from efforts within itself to seek new and improved health care delivery systems and from developments without, as seen in the rapid expansion of scientific knowledge and continuing medical advances. This has led to an increasingly critical need for highly trained personnel in an ever-widening variety of professional health fields. The present potential for programs of care, treatment and prevention of diseases and disability is on a scale and of a quality never before envisioned. However, this potential can be realized with the support of skilled professional personnel in the specialized health fields.

The Department of Allied Health Sciences offers the educational opportunities and clinical experience to prepare the health professional. The student must be prepared and willing to accept a multifaceted role as a member of the health care team — as administrator, planner, consultant, educator, researcher, and practitioner. Professional competence is built upon a solid grounding in the humanities, social sciences and natural sciences. The programs are designed to include not only the development of skills to assure excellence in quality of health care but such experiences and factual knowledge as will provide the basis for continuing intellectual and professional growth.

Graduates are prepared for positions in hospitals, medical and hospital laboratories, outpatient facilities, research centers, clinics and in local, state and national health agencies and departments.

The first two years of study in allied health sciences constitute a specified preprofessional program of basic education similar, but not identical, for all programs. The student then completes the professional phase of the program of his choice. Admission to study in this department does not constitute admission to the professional year(s). Such admission 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 to the department must
be made for the professional portion of the program at least six months, but no more than one year, prior to the time the student is ready for admission.

Application deadline is April 1. The student will be eligible to make application for admission if he anticipates completing 90 quarter hours of college work by the September following his application. A minimum grade point of 2.5 is normally required to be considered. Each applicant will be notified in writing as to whether or not he has been accepted.

ALLIED HEALTH SCIENCES — courses are designed in key areas of health services, including administration, community health services, health law and ethics, planning, implementation, and evaluation. Graduate level courses are available. No degree is offered at this time.

MEDICAL RECORD ADMINISTRATION — the development, maintenance and administration of systems of storage, retrieval and release of patient health information.

MEDICAL TECHNOLOGY — the identification of the nature and causes of disease through the use of precision instruments in the examination and analysis of samples of body fluids and tissues.

RADIOLOGIC TECHNOLOGY — the operation of x-ray machines as diagnostic aids of broken bones, fractured skulls, diseases of the heart and lungs, cancer of the breast, brain tumors, and many other diseases; use of radiation from x-ray machines and other sources of radioactivity for therapeutic purposes under the direction of a physician skilled in radiology.

RESPIRATORY THERAPY — the treatment, management, control and care of patients with deficiencies and abnormalities associated with the breathing process through the therapeutic use of such aids as medical gases, oxygen administering apparatus, aerosols, chest physical therapy, cardiopulmonary resuscitation and mechanical airways.

Required courses leading to the Bachelor of Science degree in Medical Record Administration, Medical Technology, Radiologic Technology, and Respiratory Therapy are identified in the course listings which follow. The degree in Medical Technology will be awarded upon completion of the University’s didactic program and an affiliated clinical program approved by the American Medical Association’s Council of Medical Education, the American Society of Clinical Pathologists and the American Society for Medical Technology. The program in Respiratory Therapy is approved by the Council on Medical Education of the American Medical Association in collaboration with the American Association for Respiratory Therapy, the American College of Chest Physicians, and the American Society of Anesthetists. The program in Medical Record Administration is approved by the Council on Medical Education of the American Medical Association in cooperation with the Education and Registration Committee of the American Medical Record Association.

Program accreditation in Radiologic Technology has been applied for and approval by the Joint Review Council is anticipated.
BACHELOR OF SCIENCE: MEDICAL RECORD ADMINISTRATION

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See pages 63-64)

3. Required Courses
   (See page 139 for college requirements)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>AHS 305</td>
<td>Medical Terminology</td>
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<tr>
<td>AHS 320</td>
<td>Health Services Organization</td>
<td>3</td>
</tr>
<tr>
<td>AHS 350</td>
<td>Health Law</td>
<td>3</td>
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<tr>
<td>AHS 410</td>
<td>Community and Public Health Service</td>
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<tr>
<td>AHS 420</td>
<td>Supervisory Management for Health Services Agencies</td>
<td>3</td>
</tr>
<tr>
<td>AHS 440, 441</td>
<td>Fundamentals of Medicine I &amp; II</td>
<td>8</td>
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<tr>
<td>AHS 486</td>
<td>History and Future of Health Care</td>
<td>3</td>
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<td>AHS 495</td>
<td>Research Methods</td>
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<td>BIOL 110</td>
<td>Basic Biology</td>
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<tr>
<td>COM 311</td>
<td>Business and Professional Communication</td>
<td>4</td>
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<tr>
<td>COMP 303</td>
<td>Computer Fundamentals for Business Application I</td>
<td>3</td>
</tr>
<tr>
<td>COMP 484</td>
<td>Health Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>ENG 310</td>
<td>Professional Report Writing II</td>
<td>3</td>
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<tr>
<td>MATH 107</td>
<td>College Algebra and Trigonometry</td>
<td>5</td>
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<tr>
<td>MGMT 301</td>
<td>Management and Organization Behavior</td>
<td>3</td>
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<tr>
<td>MGMT 311</td>
<td>Human Behavior and Interpersonal Relations</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 364</td>
<td>Personnel Management</td>
<td>4</td>
</tr>
<tr>
<td>MGMT 402</td>
<td>Decision Systems Analysis</td>
<td>4</td>
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<tr>
<td>MRA 300</td>
<td>Medical Record Administration</td>
<td>3</td>
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<tr>
<td>MRA 301</td>
<td>Evaluation of Patient Care</td>
<td>5</td>
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<tr>
<td>MRA 302</td>
<td>Coding and Indexing Procedures</td>
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<tr>
<td>MRA 370, 371</td>
<td>Directed Experience I &amp; II</td>
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<tr>
<td>MRA 403</td>
<td>Health Care Records</td>
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<td>MRA 421</td>
<td>Analysis of Medical Record Department Operations</td>
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<td>MRA 422</td>
<td>Medical Care Evaluation</td>
<td>3</td>
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<tr>
<td>MRA 472, 473</td>
<td>Directed Experience III &amp; IV</td>
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<tr>
<td>MRA 474</td>
<td>Management Affiliation</td>
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<tr>
<td>MRA 492</td>
<td>Medical Record Seminar</td>
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<td>STAT 201</td>
<td>Principles of Statistics</td>
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<td>ZOOL 324</td>
<td>Human Anatomy</td>
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<tr>
<td>ZOOL 334</td>
<td>Human Physiology</td>
<td>5</td>
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</table>

4. Restricted Electives
   None

5. Electives
   Total Quarter Hours Required 187

BACHELOR OF SCIENCE: MEDICAL TECHNOLOGY

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See pages 63-64)

3. Required Courses
   (See page 139 for college requirements)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AHS 330</td>
<td>Interpretation of Clinical Tests</td>
<td>3</td>
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143
BIOL 110 | Basic Biology | 5 hours
---|---|---
CHEM 261, 262, 263 | Chemistry Fundamentals I, II and III | 10 hours
CHEM 264 | Chemistry Fundamentals Laboratory | 1 hour
CHEM 321, 322, 323 | Organic Chemistry I, II and III | 10 hours
CHEM 341 | Clinical Biochemistry | 3 hours
CHEM 355 | Clinical Analytical Chemistry | 5 hours
ENG 310 | Professional Report Writing II | 3 hours
MEDT 340 | Techniques in Clinical Microscopy | 3 hours
MEDT 341 | Techniques in Clinical Chemistry | 4 hours
MEDT 342 | Hematology | 4 hours
MEDT 343 | Immunohematology and Coagulation | 4 hours
MEDT 401, 402, 403, 404 | Clinical Practice I, II, III and IV | 16 hours
MEDT 440 | Clinical Pathogenic Microbiology | 4 hours
MEDT 441, 442 | Advanced Clinical Chemistry I and II | 7 hours
MEDT 443 | Clinical Immunohematology | 4 hours
MEDT 444 | Advanced Hematology and Coagulation | 4 hours
MEDT 445 | Clinical Mycology | 2 hours
MEDT 446 | Clinical Parasitology | 3 hours
MEDT 447 | Clinical Serology | 3 hours
MGMT 301 | Management and Organization Behavior | 3 hours
MICR 200 | General Microbiology | 4 hours
MICR 300 | Biology of Microorganisms | 5 hours
MICR 320 | Pathogenic Microbiology | 4 hours
MICR 381 | Immunology | 3 hours
PHYS 201, 202 | College Physics I and II | 8 hours
STAT 201 | Principles of Statistics | 4 hours
ZOOL 334 | Human Physiology | 5 hours

4. Restricted Electives
   AHS 320 | Health Services Organization | 3 hours
   or
   AHS 420 | Supervisory Management for Health Services Agencies
   MATH | Two mathematics courses numbered 106 or higher are required | 7 hours

5. Electives
   Total Quarter Hours Required | None
   | 187
BACHELOR OF SCIENCE: RADIOLOGIC TECHNOLOGY

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (see pages 63-64)

3. Required Courses
   (See page 139 for College requirements)
   - AHS 301 U. S. Health Care Systems 3 hours
   - AHS 320 Health Services Organization 3 hours
   - BIOL 110 Basic Biology 5 hours
   - CHEM 111 General Chemistry (Fundamentals) 5 hours
   - CHEM 112 General Chemistry (Organic) 3 hours
   - CHEM 113 General Chemistry (Biochemistry) 3 hours
   - CHEM 115 General Chemistry Laboratory (Organic-Biochemistry) 1 hour
   - CHEM 264 Chemistry Fundamentals Laboratory 1 hour
   - COMP 303 Computer Fundamentals for Business Application I 3 hours
   - COMP 484 Health Information Systems 3 hours
   - ENG 310 Professional Report Writing II 3 hours
   - MATH 106 College Algebra 4 hours
   - MGMT 301 Management and Organization Behavior 3 hours
   - MIRC 200 General Microbiology 4 hours
   - PHYS 201, 202 College Physics I & II 8 hours
   - PHYS 380 Physics of Scientific Instruments 4 hours
   - RTE 340 Fundamentals of Radiologic Technology 3 hours
   - RTE 342 Directed Clinical Education I 3 hours
   - RTE 350 Radiographic Procedures 4 hours
   - RTE 352 Directed Clinical Education II 3 hours
   - RTE 360 Radiographic Quality Control 4 hours
   - RTE 362 Directed Clinical Education III 3 hours
   - RTE 380 Radiologic Technology Physics 4 hours
   - RTE 382 Directed Clinical Education IV 3 hours
   - RTE 440 Special Radiographic Procedures 3 hours
   - RTE 442 Directed Clinical Education V 3 hours
   - RTE 450 Therapy-Nuclear Medicine Techniques 4 hours
   - RTE 452 Directed Clinical Education VI 3 hours
   - RTE 454 Clinical Practice I 3 hours
   - RTE 460 Radiographic Education-Administration 5 hours
   - RTE 462 Directed Clinical Education VII 4 hours
   - RTE 464 Clinical Practice II 3 hours
   - RTE 480 Radiologic Technology Analysis 5 hours
   - RTE 482 Directed Clinical Education VIII 4 hours
   - RTE 484 Clinical Practice III 4 hours
   - STAT 301 Fundamentals of Probability and Statistics 4 hours
   - ZOOL 100 General Zoology 4 hours
   - ZOOL 324 Human Anatomy 5 hours
   - ZOOL 334 Human Physiology 5 hours

4. Restricted Electives
   None

5. Electives
   Total Quarter Hours Required 188

BACHELOR OF SCIENCE: RESPIRATORY THERAPY

Degree Requirements

1. University graduation requirements
   (See page 46)
2. Environmental Studies Program
   (See pages 63-64)

3. Required Courses
   (See page 139 for college requirements)

<table>
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<tr>
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<td>General Chemistry (Fundamentals)</td>
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<td>General Chemistry (Organic)</td>
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<td>CHEM 113</td>
<td>General Chemistry (Biochemistry)</td>
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<td>CHEM 115</td>
<td>General Chemistry Laboratory (Organic-Biochemistry)</td>
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<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
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<tr>
<td>ENG 310</td>
<td>Professional Report Writing II</td>
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<tr>
<td>MICR 200</td>
<td>General Microbiology</td>
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</tr>
<tr>
<td>MICR 320</td>
<td>Pathogenic Microbiology</td>
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<tr>
<td>PHYS 201, 202</td>
<td>College Physics I &amp; II</td>
<td>8</td>
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<tr>
<td>PHYS 380</td>
<td>Physics of Scientific Instruments</td>
<td>4</td>
</tr>
<tr>
<td>RTH 301, 302</td>
<td>Clinical Practice I &amp; II</td>
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<tr>
<td>RTH 330</td>
<td>Cardiopulmonary Resuscitation</td>
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<td>RTH 331</td>
<td>Cardiopulmonary Resuscitation Laboratory</td>
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<tr>
<td>RTH 340</td>
<td>Introduction to Pharmacology</td>
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<tr>
<td>RTH 350</td>
<td>Introduction to Respiratory Equipment</td>
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<td>RTH 351</td>
<td>Respiratory Equipment Laboratory</td>
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<td>RTH 352</td>
<td>Respiratory Equipment Function</td>
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<td>Respiratory Equipment Function Laboratory</td>
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<td>RTH 370</td>
<td>Pulmonary Physiology</td>
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<td>RTH 371</td>
<td>Pulmonary Physiology Laboratory</td>
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<tr>
<td>RTH 390</td>
<td>Respiratory Pathology</td>
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<td>RTH 381</td>
<td>Respiratory Pathology Laboratory</td>
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<td>RTH 401, 402, 403</td>
<td>Clinical Practice III, IV and V</td>
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<td>RTH 410</td>
<td>Pulmonary Rehabilitation</td>
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<td>RTH 420</td>
<td>Respiratory Pediatrics</td>
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<td>RTH 430</td>
<td>Cardiopulmonary Therapy</td>
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<td>RTH 431</td>
<td>Cardiopulmonary Therapy Laboratory</td>
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<tr>
<td>RTH 440, 442</td>
<td>Medical Pharmacology I and II</td>
<td>6</td>
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<tr>
<td>RTH 460</td>
<td>Medicine</td>
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<tr>
<td>RTH 461</td>
<td>Selected Topics in Respiratory Therapy</td>
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<td>RTH 462</td>
<td>Pulmonary Function Studies</td>
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<tr>
<td>RTH 463</td>
<td>Pulmonary Function Laboratory</td>
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<td>STAT 201</td>
<td>Principles of Statistics</td>
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<td>ZOOL 100</td>
<td>General Zoology</td>
<td>4</td>
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<td>ZOOL 324</td>
<td>Human Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>ZOOL 334</td>
<td>Human Physiology</td>
<td>5</td>
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</tbody>
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4. Restricted Electives
   AHS To be selected in consultation with the student's advisor 6 hours
   MATH Two mathematics courses numbered 106 or higher are required 8 hours

5. Electives
   Total Quarter Hours Required 187

DEPARTMENT OF BIOLOGICAL SCIENCES

Chairman: D. Vickers, BL 211, Phone 275-2141
Faculty: Charba, Ehrhart, Ellis, Gennaro, Koevenig, Kuhn, Miller, Osborne, Snelson, Stout, Sweeney, Sweet, Taylor, Washington, White, Whittier, Wodzinski.

The Department of Biological Sciences offers a Bachelor of Science in Biological Science with options in biology, botany, fresh water
ecology, microbiology, and zoology, as well as the Master of Science in Biological Science.

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. 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 freshwater ecology, the study of the environment of inland waters; or microbiology, the study of bacteria and viruses; or zoology, the study of animals. Through the judicious selection of electives in consultation with a faculty advisor, a subspecialty, such as physiology, may be emphasized in one or more of the options outlined above.

**BACHELOR OF SCIENCE: BIOLOGICAL SCIENCE**

**Degree Requirements**

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   (See page 139 for college requirements)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
<td>5 hours</td>
</tr>
<tr>
<td>BIOL 332</td>
<td>Cell Physiology</td>
<td>5 hours</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MICR 430</td>
<td>Microbial Physiology</td>
<td>4 hours</td>
</tr>
<tr>
<td>BIOL 350</td>
<td>Principles of Ecology</td>
<td>4 hours</td>
</tr>
<tr>
<td>BIOL 360</td>
<td>Genetics</td>
<td>4 hours</td>
</tr>
<tr>
<td>BOT 100</td>
<td>General Botany</td>
<td>4 hours</td>
</tr>
<tr>
<td>CHEM 261,</td>
<td>Chemistry Fundamentals I, II</td>
<td>10 hours</td>
</tr>
<tr>
<td>262, 263</td>
<td>and III</td>
<td></td>
</tr>
<tr>
<td>CHEM 264</td>
<td>Chemistry Fundamentals Lab.</td>
<td>1 hour</td>
</tr>
<tr>
<td>CHEM 265</td>
<td>Analytical Fundamentals</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHEM 321,</td>
<td>Organic Chemistry I, II and</td>
<td>10 hours</td>
</tr>
<tr>
<td>322, 323</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Organic Laboratory Techniques</td>
<td>2 hours</td>
</tr>
<tr>
<td>ENG 310</td>
<td>Professional Report Writing II</td>
<td>3 hours</td>
</tr>
<tr>
<td>MICR 200</td>
<td>General Microbiology</td>
<td>4 hours</td>
</tr>
<tr>
<td>PHYS 201,</td>
<td>College Physics I and II</td>
<td>8 hours</td>
</tr>
<tr>
<td>202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Fundamentals of Probability</td>
<td>4 hours</td>
</tr>
<tr>
<td>&amp; Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZOOL 100</td>
<td>General Zoology</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

4. Restricted Electives
   (See specialization requirements listed below.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH</td>
<td>To be selected in consultation with advisor from courses numbered 106 or above.</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

5. Electives
   Number of hours varies with the specialization.

   Total Quarter Hours Required 187

**AREAS OF SPECIALIZATION**

(Students desiring to specialize in the areas identified below shall include the following courses in completing degree requirements.)

1. Biology

   BOT To be selected in consultation with advisor from courses numbered 300 or above. 4 hours
CHEM 351, 352 Analytical Chemistry I, II or CHEM 441, 442 Biochemistry I, II 6 hours

ZOOLO To be selected in consultation with advisor from courses numbered 300 or above 4 hours

Biological Sciences BIOL, BOT, MICR or ZOOL courses selected in consultation with the student's advisor 16 hours

2. Botany

BIOL 455 Community Ecology 4 hours
BOT 320 Comparative Morphology of Plants 4-5 hours
or BOT 325 Plant Anatomy 5 hours
BOT 345 Plant Taxonomy 4 hours
BOT 430 Plant Physiology 8 hours

CHEM 351, 352 Analytical Chemistry I, II or CHEM 441, 442 Biochemistry I, II 6 hours

Biological Sciences BIOL, BOT, MICR or ZOOL courses approved by the student's advisor 6 hours

3. Freshwater Ecology

BIOL 450 Limnology 5 hours
BIOL 451 Freshwater Systems 5 hours
BOT 441 Freshwater Algae 4 hours
COMP 102 Computer Programming 3 hours
ZOOL 442 Invertebrate Zoology 5 hours
ZOOL 445 Ichthyology 4 hours
Biological Sciences BIOL, BOT, CHEM, MICR or ZOOL courses approved by the student's advisor 8 hours

4. Microbiology

CHEM 351, 352 Analytical Chemistry I, II or CHEM 441, 442 Biochemistry I, II 6 hours
MICR 300 Biology of Microorganisms 5 hours
MICR 320 Pathogenic Microbiology 4 hours
MICR 381 Immunology 3 hours
MICR 382 Serology 3 hours
MICR 430 Microbial Physiology 4 hours
MICR 422 Microbiology of Water and Waste 4 hours
or MICR 451 Microbial Ecology 4 hours
MICR 410 Diagnostic Microbiology or 4 hours
MICR 440 Determinative Microbiology

5. Zoology

BIOL 463 Organic Evolution 3 hours
ZOOL 326, 327 Comparative Vertebrate Anatomy I, II 8 hours
ZOOL 340 Vertebrate Zoology 4 hours
ZOOL 430 Animal Physiology 5 hours
ZOOL 442 Invertebrate Zoology 5 hours
ZOOL Courses numbered 300 or above approved by the student's advisor 8 hours
The Department of Chemistry offers a Bachelor of Science in Chemistry, Bachelor of Science in Forensic Science, and the Master of Science in Industrial 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 a career. Completion of this program, accredited by the American Chemical Society, provides access to a number of career opportunities in industry, government service, or education. Positions may entail basic or applied research, product development or control, sales, management or teaching. The program may lead to further study at the graduate level in analytical, biological, inorganic, organic, physical, or industrial chemistry or in related scientific areas. With appropriate choice of electives it also constitutes excellent preparation for the professional schools of dentistry, medicine, pharmacy, or veterinary medicine.

BACHELOR OF SCIENCE: CHEMISTRY

Degree Requirements

1. University graduation requirements (see page 46)

2. Environmental Studies Program (see page 63)

3. Required Courses
   (See page 139 for college requirements)
   CHEM 261, 262, 263 Chemistry Fundamentals I, II and III 10 hours
CHEM 264 Chemistry Fundamentals Laboratory 1 hour
CHEM 265 Analytical Fundamentals 2 hours
CHEM 321, 322, 323 Organic Chemistry I, II, and III 10 hours
CHEM 324, 325 Organic Laboratory Techniques I and II 4 hours
CHEM 351, 352 Analytical Chemistry I and II 6 hours
CHEM 361, 362, 363 Physical Chemistry I, II, and III 11 hours
CHEM 364, 365 Physical Chemistry Laboratory I and II 4 hours
CHEM 431 Inorganic Chemistry 4 hours
CHEM 451 Advanced Analytical Laboratory Technique 5 hours
CHEM 497 Undergraduate Research 6 hours
ENG 310 Professional Report Writing II 3 hours
MATH 211 Analytic Geometry 3 hours
MATH 321, 322, 323 Calculus I, II, and III 12 hours
MATH 324 Intermediate Calculus 4 hours
PHYS 211, 212, 213 General Physics, I, II, and III 12 hours
PHYS 282, 283 General Physics Laboratory I and II 2 hours
STAT 301 Fundamentals of Probability and Statistics 4 hours

4. Restricted Electives
   a. Biological Sciences 12 hours
   b. COMP 102 Computer Programming 3 hours
      or COMP 302 Programming and Numerical Methods 3 hours
   c. PHYS 380 Physics of Scientific Instruments 4 hours
      or PHYS 381 Physics Laboratory — Electronics 4 hours
   d. Any three
      CHEM 421 Advanced Organic Chemistry I 3 hours
      CHEM 422 Advanced Organic Chemistry II 3 hours
      CHEM 441 Biochemistry I 3 hours
      CHEM 442 Biochemistry II 3 hours
      CHEM 450 Analytical Methods Development 3 hours
      CHEM 461 Advanced Physical Chemistry 3 hours
      CHEM 471 Nuclear and Radiochemistry 3 hours
      CHEM 475 Concepts in Industrial Chemistry 3 hours

5. Electives
   Two years of German is recommended for those students intending to pursue graduate studies.
   Total Quarter Hours Required 189

FORENSIC SCIENCE PROGRAM

Forensic science is the profession which serves the scientific needs of the justice system. Within the forensic science profession there are several subspecialties. The Forensic Science program at FTU has been specifically designed to provide the student with an educational background in two subspecialties: Criminalistics or Civilistics.

The principal job of the forensic scientist is to scientifically examine physical evidence gathered at the scene of a suspect criminal action or in connection with a civil action involving two or more parties. The criminalist may work on physical evidence such as blood, hairs, fibers, or pharmaceutical and clandestine drug preparations. The civilist may work on suspect air and water pollution samples, patent medicine formulations, or faulty equipment suspect of being in violation of consumer protection standards. Regardless of the type of physical evidence examined, once the examination has been com-
pleted the forensic scientist must be prepared to present his findings in the courtroom. Normally, the criminalist will testify in a court of criminal law; the civilist in a court of civil law.

The scientific tools which the forensic scientist uses to examine physical evidence may be chemical, instrumental, botanical, morphological, microscopic, complex, simple, or just plain common-sensical. Regardless of the type of physical evidence submitted, the forensic scientist uses the tools best suited to provide the information necessary to make a valuation for court presentation. Through an educational program such as this one the student learns how to use these tools in the personal valuation process so important to the job of the forensic scientist.

BACHELOR OF SCIENCE: FORENSIC SCIENCE

Degree Requirements

1. University graduation requirements
   (see page 46)

2. Environmental Studies Program
   (see page 63)

3. Required Courses
   (see page 139 for college requirements)
   - BIOL 110 Basic Biology 5 hours
   - BOT 100 General Botany 4 hours
   - CHEM 261, 262, 263 Chemistry Fundamentals I, II and III 10 hours
   - CHEM 264 Chemistry Fundamentals Laboratory 1 hour
   - CHEM 265 Analytical Fundamentals 2 hours
   - CHEM 321, 322, 323 Organic Chemistry I, II, and III 10 hours
   - CHEM 324 Organic Laboratory Techniques I 2 hours
   - CHEM 351, 352 Analytical Chemistry I and II 6 hours
   - COED 300 Cooperative Education, Junior Year 0 hours
   - COMP 102 Computer Programming 3 hours
   - ENG 310 Professional Reporting Writing II 3 hours
   - FSC 301 Criminalistics I 4 hours
   - FSC 356 Forensic Analysis Techniques 4 hours
   - FSC 470 Forensic Science Internship 8 hours
   - LES 376 Criminal Law and the Paraprofessional 4 hours
   - MATH 107 College Algebra & Trigonometry 5 hours
   - MATH 320 Concepts of Calculus 4 hours
   - MICR 200 General Microbiology 4 hours
   - PHYS 201, 202 College Physics I and II 8 hours
   - PHYS 380 Physics of Scientific Instruments 4 hours
   - STAT 301 Fundamentals of Probability & Statistics 4 hours

4. Restricted Electives
   Depending upon the area of specialization (Civilistic or Criminalistic), a student will select in consultation with his/her advisor, 36 or 37 hours of course work from science, forensic science, criminal justice, or allied legal services.

5. Electives
   Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Civilistics. Students desiring to specialize in this area will be required to take the following additional course work:
   - FSC 305 Civilistics 4 hours
   - LES 301 Law & Society 4 hours
   They will be required to complete 37 hours of restricted elective course work from the previously mentioned areas.
2. Criminalistics. Students desiring to specialize in this area will be required to take the following additional course work:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRJ 301</td>
<td>Criminal Law in Action</td>
<td>4</td>
</tr>
<tr>
<td>FSC 302</td>
<td>Criminalistics II</td>
<td>4</td>
</tr>
</tbody>
</table>

They will be required to complete 36 hours of restricted elective course work from the previously mentioned areas.

DEPARTMENT OF MATHEMATICAL SCIENCES

Chairman: T. Frederick, FA 461-B, Phone 275-2341
Faculty: Andrews, Anthony, Armstrong, Barr, Brigham, Caron, A. Dutton, R. Dutton, Gerber, Heinzer, Hurst, Ingram, Jones, Lang, Norman, O'Hara, Ostle, Pettofrezzo, Rautenstrauch, Rhein, Rodriguez, Salzmann, Sherwood, Somerville, Taylor, Wagner

The Department of Mathematical Sciences offers courses and programs leading to Bachelor of Science degrees in Computer Science, Mathematics and Statistics. Emphasis is placed on the dual nature of the mathematical sciences; theoretical on the one hand and practical on the other. The department also offers work leading to a Master of Science in Computer Science and a Master of Science in Mathematical Science. (See pages 153-155 for the M.S. in Computer Science and see pages 155-156 for the M.S. in Mathematical Science.)

Courses in the mathematical sciences at Florida Technological University are designed to serve (1) those who want to become professional computer scientists, mathematicians or statisticians; (2) those who want to prepare for, or undertake, graduate work in the mathematical sciences or related fields; (3) those who need to use the mathematical sciences as tools in their specialty areas; (4) those who intend to teach mathematical sciences in secondary schools, colleges and universities.

The Department of Mathematical Sciences facilities includes a Varian-73 computer for the exclusive "hands-on" use of undergraduate students, graduate students and faculty who are participating in the mathematical sciences programs via course work and/or research. The Varian-73 minicomputer has 24K (K=1024) 16-bit words of core memory and 256 words of writable control storage for microprogram-
ming. Input/output (I/O) peripheral device equipment consists of two magnetic disc units, two magnetic cassette type units, two teletype terminals, a card reader and a line printer. A card punch and graphics equipment are scheduled to be added in the near future. In addition, 22 desk calculators, three of which are programmable, are available.

All mathematical sciences majors also have access through the Central Florida Regional Data Center (CFRDC) to the main computer, an IBM 360 model 75 with one megabyte of fast core and two megabytes of slower core. Students have remote batch access to this system through Data 100 I/O equipment located in the computer center. Interactive processing may be done through one of the ten IBM 2741 terminals, a Textronic graphic terminal or one of two IBM 1050 terminals.

**BACHELOR OF SCIENCE: COMPUTER SCIENCE**

**Degree Requirements**

1. University graduation requirements  
   (See page 46)

2. Environmental Studies Program  
   (See page 63)

3. Required Courses  
   (See page 139 for college requirements)
   - COMP 205-206 Algorithmic Processes I, II  
     6 hours  
   - COMP 305 Assembly Language Programming Laboratory  
     4 hours  
   - COMP 306 Computers and Programming  
     4 hours  
   - COMP 307 Algorithmic Processes III  
     3 hours  
   - COMP 405 Data Structures  
     4 hours  
   - EECS 311 Introduction to Digital Circuits  
     4 hours  
   - MATH 321, 322, 323 Calculus I, II, III  
     12 hours  
   - PHYS 211, 212 General Physics I, II  
     8 hours  
   - PHYS 282 General Physics Laboratory I  
     1 hour

4. Restricted Electives
   - STAT 341 Mathematical Statistics I  
     4 hours  
   - or
   - STAT 401 Statistical Methods I  
     4 hours  
   - and a minimum of 42 quarter hours of courses selected from one of the four areas of specialization.

5. Electives
   The number of hours varies with the specialization.
   **Total Quarter Hours Required**  
   180

**AREAS OF SPECIALIZATION**

1. General Computer Science. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

   **Group A** (All courses listed)
   - COMP 331 Discrete Structures in Computer Science  
     4 hours  
   - COMP 361 Numerical Calculus  
     4 hours  
   - COMP 401 Computer Organization I  
     4 hours  
   - COMP 411 Systems Programming I  
     4 hours  
   - MATH 324 Intermediate Calculus  
     4 hours

   **Group B** (A minimum of 16 hours)
   - COMP 387 Computer Programming with Business Applications  
     3 hours  
   - COMP 388 Advanced COBOL  
     3 hours
COMP 408 Programming Languages I 4 hours
COMP 521 Compiler Structure I 3 hours
ENGR 442 Operations Research 3 hours
IEMS 432 Systems Simulation with Digital Computers 3 hours
MATH 317 Matrices 4-8 hours
or
MATH 318, 319 Linear Algebra I, II 4 hours
MATH 331 Differential Equations 4 hours
or
MATH 431 Ordinary Differential Equations I 4 hours
STAT 341, 342 Mathematical Statistics I, II 8 hours
STAT 401, 402 Statistical Methods I, II 8 hours

Group C
COMP, MATH or STAT courses numbered 400 or above.

2. Programming and Systems. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)
COMP 401 Computer Organization I 4 hours
COMP 408 Programming Languages I 4 hours
COMP 411 Systems Programming I 4 hours
STAT 401, 402 Statistical Methods I and II 8 hours

Group B (A minimum of 17 hours)
COMP 331 Discrete Structures in Computer Science 4 hours
COMP 361 Numerical Calculus 4 hours
COMP 387 Computer Programming with Business Applications 3 hours
COMP 388 Advanced COBOL 3 hours
COMP 481 Computer Processing of Statistical Data 4 hours
COMP 521, 522 Compiler Structure I, II 6 hours
EMCS 431 Mini-Computers in Engineering 3 hours
IEMS 432 System Simulation with Digital Computers 3 hours
MATH 317 Matrices 4-8 hours
or
MATH 318, 319 Linear Algebra I, II 4 hours
MATH 324 Intermediate Calculus 4 hours
MATH 331 Differential Equations 4 hours
or
MATH 431 Ordinary Differential Equations I 4 hours

Group C
COMP, MATH or STAT courses numbered 400 or above.

3. Scientific Applications Programming. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)
COMP 331 Discrete Structures in Computer Science 4 hours
COMP 361 Numerical Calculus 4 hours
MATH 317 Matrices 4-8 hours
or
MATH 318, 319 Linear Algebra I, II 4 hours
MATH 324 Intermediate Calculus 4 hours
MATH 331 Differential Equations 4 hours
or
MATH 431 Ordinary Differential Equations I 4 hours

Group B (A minimum of 14 hours)
COMP 401 Computer Organization I 4 hours
COMP 408 Programming Languages I 4 hours
COMP 411 Systems Programming I 4 hours
COMP 561 Numerical Analysis I 4 hours
ENGR 442 Operations Research 3 hours
IEMS 432  System Simulation with Digital Computers  3 hours
STAT 341, 342  Mathematical Statistics I, II  8 hours
STAT 401, 402  Statistical Methods I, II  8 hours

**Group C**

COMP, MATH OR STAT courses numbered 400 or above.

4. Business Applications Programming. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

**Group A** (All courses listed)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 387</td>
<td>Computer Programming with Business Applications</td>
<td>3</td>
</tr>
<tr>
<td>COMP 388</td>
<td>Advanced COBOL</td>
<td>3</td>
</tr>
<tr>
<td>COMP 487, 488, 489</td>
<td>Computer Processing of Business Data I, II, III</td>
<td>9</td>
</tr>
</tbody>
</table>

**Group B** (A minimum of 21 hours with at least 3 courses selected from [1] and at least 2 courses from [2])

1. **Group A**

- COMP 401  Computer Organization I  4 hours
- COMP 408  Programming Languages I  4 hours
- COMP 411  Systems Programming I  4 hours
- COMP 481  Computer Processing of Statistical Data  4 hours
- MATH 317  Matrices  4-8 hours
- MATH 318, 319  Linear Algebra I, II  8 hours
- STAT 341, 342  Mathematical Statistics I, II  8 hours
- STAT 401, 402  Statistical Methods I, II  8 hours

2. **Group B**

- ACCY 300  Financial Accounting  5 hours
- ACCY 310  System Concepts and Management Accounting  5 hours
- FIN 301  Finance  5 hours
- MGMT 301  Management and Organization Behavior  3 hours
- MGMT 311  Human Behavior and Interpersonal Relationships  3 hours
- MKTG 301  Marketing  5 hours

**Group C**

COMP, MATH or STAT courses numbered 400 or above.

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**BACHELOR OF SCIENCE: MATHEMATICS**

**Degree Requirements**

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   (See page 139 for college requirements)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 211</td>
<td>Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 271</td>
<td>Logic and Proof in Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 318, 319</td>
<td>Linear Algebra I, II</td>
<td>8</td>
</tr>
<tr>
<td>MATH 321, 322, 323</td>
<td>Calculus I, II, III</td>
<td>12</td>
</tr>
<tr>
<td>MATH 324</td>
<td>Intermediate Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 421, 422, 423</td>
<td>Introduction to Analysis I, II, III</td>
<td>12</td>
</tr>
<tr>
<td>MATH 431</td>
<td>Ordinary Differential Equations I</td>
<td>4</td>
</tr>
</tbody>
</table>

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155
4. Restricted Electives

**Group A (All courses listed)**
- COMP 205, 206: Algorithmic Processes I, II
- or
- COMP 301: Computing Processes
- or
- MATH 411: Algebraic Structures I
- or
- MATH 461: Topology I

**Group B (A minimum of 12 hours)**
- COMP 331: Discrete Structures in Computer Science
- COMP 361: Numerical Calculus
- COMP 481: Computer Processing of Statistical Data
- COMP 561: Numerical Analysis I
- COMP 565: Scientific Applications Concepts
- EMCS 460: Optimum Seeking Methods
- ENGR 421: Linear Control Systems
- ENGR 442: Operations Research
- MATH: Courses numbered 300 or above except
- STAT: the following: MATH 301, 311, 312, 320, 331, 351, 420, 428, 429

5. Electives

The number of hours varies with the restricted electives chosen.

Total Quarter Hours Required: 180

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**BACHELOR OF SCIENCE: STATISTICS**

**Degree Requirements**

1. University graduation requirements

(See page 46)

2. Environmental Studies Program

(See page 63)

3. Required Courses

(See page 139 for college requirements)

- COMP 205, 206: Algorithmic Processes I, II  6 hours
- COMP 361: Numerical Calculus  4 hours
- COMP 481: Computer Processing of Statistical Data  4 hours
- MATH 211: Analytic Geometry  3 hours
- MATH 271: Logic and Proof in Mathematics  4 hours
- MATH 311: Matrices  4 hours
- MATH 321, 322, 323: Calculus I, II, III  12 hours
- MATH 324: Intermediate Calculus  4 hours
- PHYS 211, 212, 213: General Physics I, II, III  12 hours
- PHYS 282, 283: General Physics Laboratory I, II  2 hours
- STAT 301: Fundamentals of Probability and Statistics  4 hours
- STAT 332: Statistical Quality Control  3 hours
- STAT 341, 342: Mathematical Statistics I, II  8 hours
- STAT 401, 402: Statistical Methods I, II  8 hours
- STAT 411: Experimental Design  3 hours
- STAT 415: Regression Analysis  4 hours
- STAT 421: Survey Design  3 hours
4. **Restricted Electives** (A minimum of 16 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 331</td>
<td>Discrete Structures in Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>COMP 551</td>
<td>Numerical Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>COMP 565</td>
<td>Scientific Applications Concepts</td>
<td>4</td>
</tr>
<tr>
<td>EMCS 460</td>
<td>Optimum Seeking Methods</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 421</td>
<td>Linear Control Systems</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 442</td>
<td>Operations Research</td>
<td>3</td>
</tr>
<tr>
<td>MATH</td>
<td>Courses numbered 300 or above except</td>
<td></td>
</tr>
<tr>
<td>STAT</td>
<td>the following: MATH 301, 311, 312, 320, 331, 351, 420, 428, 429</td>
<td></td>
</tr>
</tbody>
</table>

5. **Electives**

The number of hours varies with restricted electives chosen.

**Total Quarter Hours Required** 180

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**DEPARTMENT OF PHYSICS**

**Chairman:** J. Noon, EN 312, Phone 275-2325

**Faculty:** Bates, Boilemon, Bolte, Brennan, Henderson, Katzin, Oelfke

The Department of Physics offers the Bachelor of Science degree in physics.

Physics is a basic science fundamental to many different fields of endeavor and the courses offered are designed to reflect this. Physics majors who wish to prepare for an interdisciplinary type of career may use electives to study other areas of science in depth. In general, programs of electives related to possible future careers, should be planned before the beginning of the sophomore year and no later than the junior year. Transfer students, however, will be advised on arrival in this regard.

A complete physics program requires both lecture and laboratory courses. In lectures a wide range of physical phenomena, theoretical explanations and analysis techniques are discussed. In laboratory work, students make observations and measurements and analyze data obtained. At the upper division, independent investigation and the use of modern scientific instrumentation (such as lasers, lock-in amplifiers, multichannel analyzers, nuclear counters, oscilloscopes, radiation detectors, spectrometers and vacuum leak sensors) are emphasized. Students planning graduate study should consult their faculty advisors about increased course content in upper level physics courses. Planning to allow a double major will be encouraged where appropriate. A number of elective 400 level courses will be offered on an alternate year basis; in addition extra courses (e.g., advanced mechanics or quantum mechanics, gravitation, relativity, lasers, plasma physics, electromagnetic theory, elementary particles, nonlinear optics; and laboratory work in lasers, nonlinear optics, millimeter waves, and solar energy) will be provided on demand for individual students using either special topics, independent study or personalized instruction modes. General courses such as astronomy, physical science, physics in society, or physics of science fiction cannot be included to satisfy requirements for the major, although an interdisciplinary course such as biophysics could be appropriate.

Research interests of the faculty include astrophysics, atmospheric electricity, biophysics, computing, instrumentation, lasers, mathematical modelling, nuclear physics, optics, plasmas, radio-astronomy, solar energy.
BACHELOR OF SCIENCE: PHYSICS

Degree Requirements

1. University graduation requirements
   (See page 46)

2. Environmental Studies Program
   (See page 63)

3. Required Courses
   The courses listed, or departmentally approved equivalents, are required in the physics curriculum.
   (see page 139 for college requirements)

   - BIOL 110 Basic Biology 5 hours
   - CHEM 261, 262, 263 Chemistry Fundamentals I 10 hours
   - CHEM 264 Chemistry Fundamentals Laboratory 1 hour
   - CHEM 265 Analytical Fundamentals 2 hours
   - COMP 302 Programming and Numerical Methods 3 hours
   - ENG 310 Professional Report Writing II 3 hours
   - MATH 211 Analytic Geometry 3 hours
   - MATH 321, 322, 323 Calculus I, II, III 12 hours
   - MATH 324 Intermediate Calculus 4 hours
   - MATH 331 Differential Equations 4 hours
   - PHYS 211, 212, 213 General Physics I, II, and III 12 hours
   - PHYS 282, 283 General Physics Laboratory I & II 2 hours
   - PHYS 311, 312, 313 Intermediate Physics I, II, III 12 hours
   - PHYS 314, 315 Intermediate Physics IV & V 8 hours
   - PHYS 343 Computer Methods in Physics I 4 hours
   - PHYS 344 Modern Physics 3 hours
   - PHYS 354 Optics and Wave Motion 3 hours
   - PHYS 380 Physics of Scientific Instruments 4 hours
   - PHYS 381 Physics Laboratory - Electronics 4 hours
   - PHYS 382 Intermediate Physics Laboratory I 4 hours
   - PHYS 492 Physics Seminar 1 hour
   - STAT 335 Probability & Statistics for Engineers 3 hours

4. Restricted Electives
   Upper division PHYS courses or those to be used in partial fulfillment of the requirements of a double major. 9 hours
   A second course in Biological Sciences is required. 3 to 5 hours

5. Electives
   A plan for use of electives must be approved no later than the junior year by a departmental committee 13 to 15 hours
   Total Quarter Hours Required 180

PREPROFESSIONAL PROGRAMS

Preprofessional Coordinator:  R. Laird, AD 215, Phone 275-2691

The Office of the Preprofessional Coordinator has been created to operate as a service to all students preparing for and seeking admission to professional schools of dentistry, medicine, optometry, pharmacy and veterinary medicine. The services afforded the student through this office are numerous and range from simple advising and counseling in preprofessional matters to providing a compiled preprofessional evaluation of the student upon his request to each professional school to which he desires to apply. Upon entering the preprofessional program at Florida Technological University, each student
will be assigned to a preprofessional advisor within the academic department of his major. Each student is urged to take full advantage of the services available through this office. Additionally, every preprofessional student should register his intent to pursue preparation for admission to a health-professions school with the Office of the Preprofessional Coordinator. Finally, all preprofessional students are strongly encouraged to affiliate with and participate in the activities of the Preprofessional Medical Society (VC 208).

PREMEDICAL, PREDENTAL AND PREVETERINARY PROGRAMS

Although many professional schools accept students who have satisfactorily completed three years of college and possess excellent credentials, a large and growing number require the completion of the baccalaureate degree. In any event, the applicant with given credentials and in possession of the baccalaureate degree by the time of anticipated admission will find himself in a much more competitive position for a place in a professional school than a comparable applicant not in possession of the degree. For this reason each predental, premedical and preveterinary student is urged to choose a degree-granting program for a major since majors such as "premed" do not lead to the awarding of a degree. Also, each student is encouraged to pursue a degree program to prepare himself for an alternate career in the event he is denied a place in a professional school. The prospective preprofessional student may select as his major any degree-granting program offered at Florida Technological University; however, those degree programs within the College of Natural Sciences will lend themselves most easily to the preprofessional preparation due to the nature and content of their curricula. While satisfying his degree requirements, the student will find in his curriculum many courses that are also admission requirements to most professional schools. In addition he will find in his curriculum adequate elective hours which will permit him to obtain other courses required for admission to a professional school but not specifically contained within the curriculum of his degree program.

If the predental or premedical student completes all the courses listed in Table I, he will have satisfied the minimum specific course requirements for admission to all dental schools and to most medical schools as listed in the current editions of Admission Requirements of U.S. and Canadian Dental Schools, published by the American Association of Dental Schools, and Medical School Admission Requirements in the U.S.A. and Canada, published by the Association of American Medical Colleges. Each student is urged to consult these publications (available in the University Bookstore) to determine the specific admission requirements of the professional schools to which he is planning to make application.

The preveterinary student must complete all the courses listed in Table II in order to meet the minimum admission requirements for the University of Florida College of Veterinary Medicine. Information regarding specific application procedures to schools of veterinary medicine may be obtained from the Office of the Preprofessional Coordinator.

Those students who successfully gain admission to a professional school after the completion of the junior year of a degree program within the College of Natural Sciences at Florida Technological Uni-
University may apply for a Bachelor of Science degree after successfully completing the first year of study (not less than 45 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 should 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 will be conferred.

TABLE I.
**PREDENTAL, PREMEDICAL REQUIREMENTS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 332</td>
<td>Cell Physiology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 360</td>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 261, 262, 263</td>
<td>Chemistry Fundamentals I, II, III</td>
<td>10</td>
</tr>
<tr>
<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 265</td>
<td>Analytical Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 321, 322, 323</td>
<td>Organic Chemistry I, II, III</td>
<td>10</td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Organic Laboratory Techniques I</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 351, 352</td>
<td>Analytical Chemistry I, II</td>
<td>6</td>
</tr>
<tr>
<td>CHEM 361</td>
<td>Physical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>ENG 101</td>
<td>Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENG 103</td>
<td>Exploring Literature Through Writing</td>
<td>3</td>
</tr>
<tr>
<td>ENG 310</td>
<td>Professional Report Writing I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 321, 322, 323</td>
<td>Calculus I, II, III</td>
<td>12</td>
</tr>
<tr>
<td>MICR 200</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 201, 202</td>
<td>College Physics I, II</td>
<td>8</td>
</tr>
<tr>
<td>PHYS 380</td>
<td>Physics of Scientific Instruments</td>
<td>4</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Fundamentals of Probability and Statistics</td>
<td>4</td>
</tr>
<tr>
<td>ZOOL 100</td>
<td>General Zoology</td>
<td>4</td>
</tr>
<tr>
<td>ZOOL 322</td>
<td>Vertebrate Histology</td>
<td>4</td>
</tr>
<tr>
<td>ZOOL 326, 327</td>
<td>Comparative Vertebrate Anatomy</td>
<td>8</td>
</tr>
<tr>
<td>ZOOL 423</td>
<td>Embryology</td>
<td>5</td>
</tr>
</tbody>
</table>

Foreign Language

Electives

1 Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.

2 Proficiency in Russian, German, French, Spanish or another foreign language approved by the student's advisor can be demonstrated by examination or by successful completion of 12 credits of the language.

3 Electives should include courses applicable to the student's chosen major and professional goal as well as other courses, selected in consultation with the student's advisor, to complete the Environmental Studies Program. If, after completing all courses required for admission to the professional school and satisfying the degree requirements of the major, the student still has elective hours available, consideration should be given to the following courses: ACCY 211, 212; AHS 305, 320, 350; MGMT 301, 364; PSY 303, 310, 315, 372, 403; SOC 347, 348, 405, 406, 407.

TABLE II.
**PREVETERINARY REQUIREMENTS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 360</td>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BOT 100</td>
<td>General Botany</td>
<td>4</td>
</tr>
</tbody>
</table>
CHEM 261, 262, 263 Chemistry Fundamentals I, II, III 10 hours
CHEM 264 Chemistry Fundamentals Laboratory 1 hour
CHEM 265 Analytical Fundamentals 2 hours
CHEM 321, 322, 323 Organic Chemistry I, II, III 10 hours
CHEM 324 Organic Laboratory Techniques I 2 hours
CHEM 351 Analytical Chemistry 3 hours
ENG 101 Composition 4 hours
ENG 103 Exploring Literature Through Writing or 3 hours
ENG 208 Principles of Creative Writing 3 hours
ENG 310 Professional Report Writing II 3 hours

Cultural and Historical Foundations

C & H Group I (Landmarks in Western Humanities)
C & H Group II (Literature; HUM; ART 231; or MUS 320 only)
C & H Group III (HIST 201, 202, 203, 311, 312, 313)

MATH 211 Analytic Geometry 3 hours
MATH 320 Concepts of Calculus 4 hours
MICR 200 General Microbiology 4 hours
MICR 300 Biology of Microorganisms 5 hours
PHYS 201, 202 College Physics I, II 8 hours
PHYS 380 Physics of Scientific Instruments 4 hours
Social Sciences Any courses from Social Sciences Gp I & II except COM 100 12 hours
STAT 301 Fundamentals of Probability and Statistics 4 hours
ZOOL 100 General Zoology 4 hours
Animal Science Courses 2 10 hours

1 Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.
2 The animal science courses must be taken as a transient student at an approved institution.

PREOPTOMETRY AND PREPHARMACY PROGRAMS

Although not required to pursue a degree-granting program to satisfy admission requirements to professional schools, preoptometry and prepharmacy students are strongly urged to do so. Lists of courses designed to satisfy minimum admission requirements to professional schools of optometry and pharmacy are shown in Tables III and IV, respectively.

TABLE III.
PREOPTOMETRY REQUIREMENTS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
<td>5</td>
</tr>
<tr>
<td>BOT 100</td>
<td>General Botany</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 261,</td>
<td>Chemistry Fundamentals I, II, III</td>
<td>10</td>
</tr>
<tr>
<td>262, 263</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 265</td>
<td>Analytical Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 321,</td>
<td>Organic Chemistry I, II, III</td>
<td>10</td>
</tr>
<tr>
<td>322, 323</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Organic Laboratory Techniques I</td>
<td>2</td>
</tr>
<tr>
<td>ENG 101</td>
<td>Composition</td>
<td>4</td>
</tr>
<tr>
<td>ENG 103</td>
<td>Exploring Literature Through Writing</td>
<td>3</td>
</tr>
<tr>
<td>ENG 310</td>
<td>Professional Report Writing II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 211</td>
<td>Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 320</td>
<td>Concepts of Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MICR 200</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>MICR 210</td>
<td>Culture Media and Reagents</td>
<td>2</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>PHYS 201, 202</td>
<td>College Physics I, II</td>
<td>8 hours</td>
</tr>
<tr>
<td>PHYS 380</td>
<td>Physics of Scientific Instruments</td>
<td>4 hours</td>
</tr>
<tr>
<td>ZOOL 100</td>
<td>General Zoology</td>
<td>4 hours</td>
</tr>
<tr>
<td>Electives²</td>
<td></td>
<td>27 hours</td>
</tr>
</tbody>
</table>

**TABLE IV.**

**PREPHARMACY REQUIREMENTS**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110</td>
<td>Basic Biology</td>
<td>5 hours</td>
</tr>
<tr>
<td>BOT 100</td>
<td>General Botany</td>
<td>4 hours</td>
</tr>
<tr>
<td>CHEM 261, 262, 263</td>
<td>Chemistry Fundamentals I, II, III</td>
<td>10 hours</td>
</tr>
<tr>
<td>CHEM 264</td>
<td>Chemistry Fundamentals Laboratory</td>
<td>1 hour</td>
</tr>
<tr>
<td>CHEM 265</td>
<td>Analytical Fundamentals</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHEM 321, 322, 323</td>
<td>Organic Chemistry I, II, III</td>
<td>10 hours</td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Organic Laboratory Techniques I</td>
<td>2 hours</td>
</tr>
<tr>
<td>ENG 101</td>
<td>Composition</td>
<td>4 hours</td>
</tr>
<tr>
<td>ENG 103</td>
<td>Exploring Literature Through Writing</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENG 310</td>
<td>Professional Report Writing II</td>
<td>3 hours</td>
</tr>
<tr>
<td>MATH 211¹</td>
<td>Analytic Geometry</td>
<td>3 hours</td>
</tr>
<tr>
<td>MATH 320</td>
<td>Concepts of Calculus</td>
<td>4 hours</td>
</tr>
<tr>
<td>MCR 200</td>
<td>General Microbiology</td>
<td>4 hours</td>
</tr>
<tr>
<td>PHYS 201, 202</td>
<td>College Physics I, II</td>
<td>8 hours</td>
</tr>
<tr>
<td>PHYS 380</td>
<td>Physics of Scientific Instruments</td>
<td>4 hours</td>
</tr>
<tr>
<td>ZOOL 100</td>
<td>General Zoology</td>
<td>4 hours</td>
</tr>
<tr>
<td>Electives³</td>
<td></td>
<td>29 hours</td>
</tr>
</tbody>
</table>

¹Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.

²Approved electives may include: ACCY 211, 212, AHS 305, 320, 350, 440, 441; HIST 311, 312, 313; MGMT 301, 364; PSY 201, 202; SOC 201, 202; and other courses selected in consultation with the student's advisor to complete the Basic Program of the Environmental Studies Program.

³Approved electives may include: ACCY 211, 212; AHS 305, 320, 350, 440, 441; CHEM 351, 352; MGMT 301, 364; MCR 200, 300; STAT 301; and other courses selected in consultation with the student's advisor to complete the Basic Program of the Environmental Studies Program.
COLLEGE OF NATURAL SCIENCES
GRADUATE PROGRAMS

Graduate programs leading to a Master of Science degree are available in Biological Science, Computer Science, Industrial Chemistry, and Mathematical Science.

MASTER OF SCIENCE: BIOLOGICAL SCIENCE

Program Coordinator:  J. Koevenig, BL 202, Phone 275-2141

The Department of Biological Sciences offers graduate work with research and courses in biology, botany, freshwater ecology, microbiology and zoology under three options: (1) Biological Sciences Thesis, (2) Biological Sciences Nonthesis, and (3) Microbiology Thesis. A majority of the graduate level courses are offered in late afternoon or evening to better serve the working student.

Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements.
   Admission is based on the applicant's potential to achieve academic success and become a productive scholar, teacher or research investigator in the Biological Sciences as determined by: letters of recommendation; past research and academic records; GRE verbal and quantitative scores; and applicant's statement of immediate and long range goals. Personal interviews are helpful but are not required. Applicants need not have an undergraduate degree in the Biological Sciences but are expected to have the equivalent of 12 quarter hours credit in biology, 4 in botany, 8 in organic chemistry, 4 in microbiology, 4 in zoology, plus basic college mathematics and statistics.

University Graduate Policies and Procedures


Degree Requirements

1. Prerequisites

2. Core Courses: The following courses are required.
   - BIOL 618  Field Methods for Biology  3 hours
   - BIOL 619  Laboratory Methods for Biology  3 hours
   - BIOL 620  Molecular Biology  3 hours
   - BIOL 560  Genetic Mechanisms  5 hours
   or
   - BIOL 653  Population Ecology
   - BIOL 692  Graduate Seminar  3 hours

3. Restricted Electives: Varies with option (see Area of Specialization).

4. Thesis/Research report: Varies with option (see Area of Specialization. 9-3 hours.

5. Examinations: Final oral over (a) course work and (b) thesis or research report.
6. Other Requirements: None specified.

Total Quarter Hours Required

<table>
<thead>
<tr>
<th>Thesis Option</th>
<th>Nonthesis Option</th>
<th>BOR Maximum Hours Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>54</td>
<td>65</td>
</tr>
</tbody>
</table>

(see pages 61-62)

AREAS OF SPECIALIZATION (OPTIONS)

Students must select one of the following three options.

1. Biological Sciences Thesis Option

Required courses beyond core:

- BIOL 560 Genetic Mechanisms
- or
- BIOL 653 Population Ecology
- BIOL 563 Evolutionary Biology
- BIOL 632 Organismal Physiology
- BIOL 699 Biology Thesis

Restricted electives: additional coursework acceptable to the student's graduate committee.

2. Biological Sciences Nonthesis Option

Required courses beyond core:

- BIOL 560 Genetic Mechanisms
- or
- BIOL 653 Population Ecology
- BIOL 563 Evolutionary Biology
- BIOL 675 Contemporary Studies in Environmental Biology
- BOT 549 Plant Biosystematics
- BOT 647 Field Botany
- MICR 524 Infectious Process
- ZOOL 647 Field Zoology
- BIOL 698 Biology Research Report

Restricted electives: additional coursework acceptable to the student's graduate committee.

3. Microbiology Thesis Option

Required courses beyond core:

- MICR 524 Infectious Process
- MICR 570 Virology
- MICR 581 Applied Microbiology
- MICR 633 Microbial Metabolism
- MICR 699 Microbiology Thesis

Restricted electives: additional coursework acceptable to the student's graduate committee.

MASTER OF SCIENCE: INDUSTRIAL CHEMISTRY

Program Coordinator: G. Mattson, SC 329, Phone 275-2209

The Department of Chemistry offers graduate work leading to the Master of Science in Industrial Chemistry. This program is aimed particularly at preparing a student for a career in the chemical industry or in related industries which utilize chemical processing techniques. The primary emphasis is upon chemistry and the application of the theoretical principles of chemistry to the development of products and processes.
ADMISSION REQUIREMENTS

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   a. Baccalaureate degree from an accredited institution
   b. Departmental evaluation based upon
      (1) Transcripts
      (2) Letters of recommendation
      (3) Proficiency examinations (Results are used to aid in
          planning the student’s program of study. Deficiencies
          may require remedial course work.)

University Graduate Policies and Procedures

   see page 58 and the current FTU Policy and Procedure

Degree Requirements

1. Prerequisites:

2. Core Courses: The following courses are required.
   
   CHOICE 501, 502, 503
   CHOICE 504, 505, 506
   CHOICE 507, 508, 509
   CHEM 671
   CHEM 672
   CHEM 673
   CHEM 674
   6 hours
   6 hours
   6 hours
   3 hours
   3 hours
   3 hours
   2 hours

   3. Restricted electives: Selected courses in business, computer science, 
      engineering and statistics in keeping with student’s particular needs, 
      interests and background and as approved by the advisory committee.

4. Research: The following courses are required.
   
   CHEM 697 Research
   CHEM 698 Research Report
   Total Quarter Hours Required 45
   BOR Maximum Hours Allowed 65
   (see pages 61-62)

5. Examinations: Satisfactory completion of a comprehensive examination is 
   required.

6. Other requirements: None specified.

MASTER OF SCIENCE: COMPUTER SCIENCE

Program Coordinator: R. Dutton, FA 411, Phone 275-2341

The Department of Mathematical Sciences offers a degree in Computer Science with an emphasis on the areas of systems program-
ming, computer organization and architecture, and information 
organization and retrieval. The hands-on use of our computer science 
laboratory is strongly encouraged. A majority of the graduate level 
courses are offered in the evening to better serve the working student.

Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)
2. Program Admission Requirements

An undergraduate degree in computer science is not required but, before a transfer from the initial post-baccalaureate state to regular graduate status is granted, the student must exhibit, to the satisfaction of the Graduate Committee in Computer Science, a thorough understanding of the materials covered in COMP 401, 405, 408 and 411.

University Graduate Policies and Procedures


Degree Requirements

1. Prerequisites: See admission requirements above.

2. Core Courses: The following courses are required.
   - COMP 601 Computer Organization II  4 hours
   - COMP 611 Systems Programming II  4 hours
   - COMP 617 Information Organization and Retrieval  4 hours

3. Restricted Electives:
   a. Area of specialization (see below)  6-7 hours
   b. Other (varies with area of specialization)  17-21 hours

4. Thesis or Research Report  9-6 hours

5. Examinations:
   a. Written comprehensive examination over the core courses
   b. Oral defense of thesis or research project

6. Other Requirements: None specified.

Total Quarter Hours Required  45
BOR Maximum Hours Allowed  63
(see pages 61-62)

AREAS OF SPECIALIZATION

1. Information Systems
   - COMP 655 Information Analysis  3 hours
   - COMP 656 Information System Design  3 hours

2. Numerical Mathematics
   - COMP 661 Numerical Analysis II  4 hours
   - IEMS 624 Operations Research I  3 hours

MASTER OF SCIENCE: MATHEMATICAL SCIENCE

Program Coordinator: E. Norman, FA 452, Phone 275-2341

The masters program in Mathematical Science is designed primarily to prepare students wishing to seek employment in industry, government or education, rather than those desiring to obtain the Ph.D. degree in mathematics. The program is structured so as to develop mathematical scientists who can use the techniques of mathematics, statistics and computer science in the formulation and analysis of mathematical models in the physical, biological and social sciences, as well as in engineering and business. Graduates of the program will be required to demonstrate proficiency in a core of material comprising about 80 percent of the program. This core will emphasize methods of mathematical analysis, applied probability and statistics, and computer analysis. Most of the graduate level courses are offered in the evening to better serve the working student.
Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   An undergraduate degree in any of the mathematical sciences is not required. However, before a transfer from the initial post-baccalaureate status to regular graduate status is granted, the Graduate Committee in Mathematical Science must be satisfied that the student is proficient in the materials covered in standard undergraduate courses in calculus (MATH 321, 322, 323, 324), differential equations (MATH 431), linear algebra (MATH 318, 319), mathematical statistics (STAT 341, 342), and computer science (COMP 205, 206).

University Graduate Policies and Procedures


Degree Requirements

1. Prerequisites

2. Core Courses: The following courses are required.
   - MATH 521 Advanced Calculus I 3 hours
   - MATH 525 Techniques of Complex Variables 4 hours
   - MATH 621 Advanced Calculus II 3 hours
   - MATH 625, 626 Methods of Mathematical Analysis I, II 6 hours
   - STAT 501 Statistical Analysis 3 hours
   - STAT 547 Applied Probability 3 hours
   - STAT 601 Multivariate Statistical Methods 3 hours
   - STAT 647 Probability and Statistics 3 hours

3. Restricted Electives
   - Group A (2 courses) 8-14 hours
     - COMP 503 Hardware Concepts 4 hours
     - COMP 511 Software Concepts 4 hours
     - COMP 561 Numerical Analysis I 4 hours
     - COMP 565 Scientific Applications Concepts 4 hours
     - COMP 607 Philosophy of Programming 3 hours
   - Group B
     - MATH, STAT or COMP courses numbered 500 or above. Graduate courses outside the department may be used if approved by the student’s committee. 0-7 hours

4. Thesis or Research Report 9-3 hours

5. Examinations
   a. A written and/or an oral comprehensive examination over the core courses will be administered by the student’s advisory committee. The form and nature of the examination(s) are at the discretion of the advisory committee.
   b. An oral defense of the thesis will be required of those students who elect to write a thesis.

6. Other requirements: None specified.
   - Total Quarter Hours Required 45
   - BOR Maximum Hours Allowed 63
     (see pages 61-62)
COLLEGE OF SOCIAL SCIENCES

UNDERGRADUATE PROGRAMS
AEROSPACE STUDIES
ALLIED LEGAL SERVICES
COMMUNICATION
COMMUNICATIVE DISORDERS
FILM
JOURNALISM
RADIO-TELEVISION
SPEECH
CRIMINAL JUSTICE
ECONOMICS
POLITICAL SCIENCE
PSYCHOLOGY
PUBLIC ADMINISTRATION
SOCIAL SCIENCES
SOCIOLOGY
ANTHROPOLOGY
SOCIAL WORK

GRADUATE PROGRAMS
COMMUNICATION
PUBLIC POLICY
CLINICAL PSYCHOLOGY
INDUSTRIAL PSYCHOLOGY
SCHOOL PSYCHOLOGY
In keeping with the aims of Florida Technological University, the College of Social Sciences provides 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 with majors in the following areas: Allied Legal Services, Communication (Communicative Disorders, Film, Journalism, Radio-Television, and Speech), Criminal Justice, Economics, Political Science, Psychology, Public Administration, Sociology (Anthropology, Social Work), and Social Sciences. The College also awards the Masters Degree in Communication, Psychology, and Public Policy.

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 as an undergraduate 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 at least 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.

**AEROSPACE STUDIES**

**Chairman:** B. Whisenant, AD 243, Phone, 275-2264  
**Faculty:** Barucky, Nicosia, Williams

The Department of Aerospace Studies provides pre-commissioning education for qualified students who desire to serve as commissioned officers in the active duty Air Force. The department offers both a two-year and a four-year commissioning program, each with its own special advantages. The two-year commissioning program allows junior college transfer students and other students with two academic years remaining in either undergraduate or graduate status to obtain an Air Force commission while completing their studies. The four-year program provides on-campus study during the freshman through senior years. Both programs offer scholarships for selected students. Such scholarships include full tuition, fees, required text books, and $100 per month. The Aerospace Studies curriculum is divided into two phases: (1) the General Military Course and (2) the Professional Officer Course. Students are invited to write or visit the Department of Aerospace Studies to obtain additional information.
1. General Military Course
The General Military Course consists of the freshman and sophomore courses for students in the four-year AFROTC program. These courses deal with the Air Force in the contemporary world through a study of the total structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. The courses include the study of the development of air power from balloons and dirigibles through the peaceful employment of US air power in relief missions and civic action programs in the late 1960’s and also the air war in Vietnam.

2. Professional Officer Course
The Professional Officer Course consists of Aerospace Studies courses offered during the junior and senior years. It must be completed by all students who seek a commission through the Air Force ROTC. Course continuity is designed to prepare selected college students to serve as active duty Air Force officers upon graduation and commissioning. The curriculum is devoted to a critical analysis of the role of the Armed Forces as an integral element of contemporary American society (AS 300) and to the theory and application of general concepts of leadership and management in Air Force situations (AS 400). Special emphasis is placed on the development of communicative skills.

REQUISITES FOR ADMISSION TO THE PROFESSIONAL OFFICER COURSE
1. Be at least 17 years of age at the time of acceptance.
2. Be able to complete the Professional Officer Course and graduate from University prior to reaching age 26 years and 6 months if entering Flight Training or before age 30 if entering non-flying category.
3. Pass the Air Force Officer Qualifying Test and physical examination.
4. For those students enrolled in the four-year AFROTC program, complete the General Military Course or its equivalent, or have acceptable prior military service. Veterans and students with previous ROTC training are invited to write or visit the Department of Aerospace Studies to discuss their status.
5. For those students desiring entry into two-year AFROTC program, complete the application and testing process preferably prior to April 1 of the year preceding the one in which they wish to enroll in the Professional Officers Course; complete a six-week Field Training encampment prior to enrollment in the Professional Officers Course.
6. Selection by the Professor of Aerospace Studies and acceptance by the University.
7. Execute a written agreement with the government to complete the Professional Officer Course and accept an Air Force commission.
8. Enlist in the Air Force Reserve for a period of six years (terminated upon entering Air Force as a commissioned officer).

AIR FORCE ROTC COLLEGE SCHOLARSHIP PROGRAM
The ROTC Vitalization Act of 1964 established military scholarships for selected cadets in the four-year AFROTC program. In 1972, scholarships were extended to selected students entering the two-year AFROTC program. Such scholarships provide for full tuition, fees and required text books. In addition, recipients of these scholarships
receive $100 per month. Recipients of scholarships are nominated by a committee composed of AFROTC officers and university faculty. Final selection is made at AFROTC Headquarters, Maxwell AFB, Alabama. Usually if required standards are maintained, the scholarships continue through the selectee's senior year.

**MONETARY ALLOWANCE**

Cadets enrolled in the Professional Officer Course receive a monetary allowance of $100 per month.

**SUMMER TRAINING: TWO-YEAR PROGRAM**

Students must complete the six-week Field Training course before they can formally enroll in the Professional Officer Course. This course is conducted at an Air Force base. It includes military training, physical conditioning, and a modified version of the General Military Course. Students who complete the six-week Field Training receive approximately $445.

**SUMMER TRAINING: FOUR-YEAR PROGRAM**

Cadets enrolled in the four-year AFROTC program are required to attend a four-week Field Training course at an Air Force base. Normally, cadets must attend this program at the end of the General Military course. Summer Field Training provides a better understanding of the United States Air Force mission, increases the cadet's proficiency in junior officer training area, and stresses the importance of physical conditioning. Cadets who complete the four-week Field Training course receive approximately $330.

**FLIGHT INSTRUCTION PROGRAM**

Cadets in the Professional Officer Course who are qualified for and seek pilot training in the United States Air Force receive twenty-five clock hours of civilian flight instruction and approximately 40 hours of ground school. This instruction may qualify the cadet for a private pilot's license.

**OFFICER COMMISSIONS**

Cadets who complete the Professional Officer Course are appointed Second Lieutenants in the United States Air Force Reserve. As reserve officers, they incur an obligated active duty tour of four years (non-flying) or six years (flying). During this period of active service, they are encouraged to and may remain on active duty indefinitely. They are given the opportunity during this period to obtain a regular commission in the United States Air Force.

**MAJOR**

A student taking the Air Force ROTC program may major in any discipline he desires. A major is not offered by this department. Courses offered by AFROTC may be found in "Course Descriptions" under the prefix AFR.
The Department of Communication offers programs both in general communication and in specialization areas within the discipline of communication. Specialization programs are available in Communicative Disorders, Film, Journalism, Radio-Television, and Speech. Successful completion of programs leads to a Bachelor of Arts degree with a major in Communication.

Any student contemplating graduate studies should be aware of special requirements in some graduate schools, such as foreign languages, statistics, and computer programming.

An internship program is available to qualified students. This program earns elective credit only and cannot be applied to the major requirement of 54 hours.

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

**BACHELOR OF ARTS: COMMUNICATION**

**Degree Requirements**

1. University Requirements  
   (See page 46)

2. Environmental Studies Program  
   (See pages 63-64)

3. Required Courses  
   a. Fifty-four (54) quarter hours of Communication Department course offerings.
   b. COM 301 Communication as a Behavioral Science 4 hours
   c. Additional required courses vary with specialization

4. Restricted Electives  
   Vary with specialization

5. Electives  
   Total Quarter Hours Required 180

**AREAS OF SPECIALIZATION**

1. General Communication  
   A General Communication specialization requires a minimum of 35-36 quarter hours of course work offered. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas in the Communication Department. The following are required courses:

   Communication Theory  
   COM 363 Group Interaction and Decision Making 4 hours  
   COM 410 Social Responsibilities of the Mass Media 4 hours  
   COM 411 Legal Responsibilities of the Mass Media 4 hours  
   COM 462 Attitudes and Communication 4 hours

   In addition, required hours must be selected from each of the following areas:

   History (4 Hours)  
   RTV 355 Foundation of Broadcasting 4 hours  
   JRN 330 History of American Journalism 4 hours  
   COM 468 Evolution of Communication Theory 4 hours
Motivation (7-8 Hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>JRN 433</td>
<td>Propaganda and Psychological Warfare</td>
<td>4</td>
</tr>
<tr>
<td>JRN 440</td>
<td>Public Relations</td>
<td>4</td>
</tr>
<tr>
<td>JRN 464</td>
<td>Principles of Advertising</td>
<td>4</td>
</tr>
<tr>
<td>RTV 452</td>
<td>Broadcast Criticism</td>
<td>4</td>
</tr>
<tr>
<td>SPE 361</td>
<td>Persuasion-Motivation</td>
<td>4</td>
</tr>
<tr>
<td>SPE 371</td>
<td>Speech and Human Relations</td>
<td>4</td>
</tr>
</tbody>
</table>

Research (8 Hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 400</td>
<td>Opinion and the Mass Media</td>
<td>4</td>
</tr>
<tr>
<td>COM 313</td>
<td>Interpersonal Communication</td>
<td>4</td>
</tr>
<tr>
<td>COM 460</td>
<td>Group Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>COM 463</td>
<td>Studies in Listening</td>
<td>4</td>
</tr>
</tbody>
</table>

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

2. Communicative Disorders

A Communicative Disorders specialization requires the following required course list. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas other than Communicative Disorders in the Communication Department. Required courses are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 320</td>
<td>Introduction to Communicative Disorders</td>
<td>4</td>
</tr>
<tr>
<td>COM 321</td>
<td>Biolinguistics</td>
<td>4</td>
</tr>
<tr>
<td>COM 377</td>
<td>Differential Diagnosis in Communicative Disorders</td>
<td>4</td>
</tr>
<tr>
<td>COM 401</td>
<td>Communicative Disorders: Articulation</td>
<td>4</td>
</tr>
<tr>
<td>COM 402</td>
<td>Communicative Disorders: Language</td>
<td>4</td>
</tr>
<tr>
<td>COM 403</td>
<td>Voice Disorders</td>
<td>4</td>
</tr>
<tr>
<td>COM 404</td>
<td>Communicative Disorders Stuttering</td>
<td>4</td>
</tr>
<tr>
<td>COM 405</td>
<td>Clinical Methods in Communicative Disorders</td>
<td>4</td>
</tr>
<tr>
<td>COM 445</td>
<td>Basic Audiology</td>
<td>4</td>
</tr>
<tr>
<td>COM 450</td>
<td>Aural Habilitation</td>
<td>4</td>
</tr>
<tr>
<td>SPE 261</td>
<td>English Phonetics and American Dialects</td>
<td>5</td>
</tr>
<tr>
<td>SPE 364</td>
<td>Physical Bases of Speech and Hearing</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Film

A Film Specialization requires 36 quarter hours in Radio-Television-Film, including those listed on the required course list. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas other than Film offered by the Communication Department. Required courses are:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTV 355</td>
<td>Foundations of Broadcasting</td>
<td>4</td>
</tr>
<tr>
<td>RTV 337</td>
<td>Broadcast Techniques</td>
<td>4</td>
</tr>
<tr>
<td>COM/THA 310</td>
<td>History of Motion Picture</td>
<td>4</td>
</tr>
<tr>
<td>JRN 323</td>
<td>Press Photography I</td>
<td>4</td>
</tr>
<tr>
<td>RTV 345</td>
<td>Film for Television</td>
<td>4</td>
</tr>
<tr>
<td>RTV 445</td>
<td>Television Film Production</td>
<td>4</td>
</tr>
<tr>
<td>RTV 447</td>
<td>Television Film Documentary</td>
<td>4</td>
</tr>
<tr>
<td>COM 411</td>
<td>Legal Responsibilities of the Mass Media</td>
<td>4</td>
</tr>
</tbody>
</table>

Recommended Courses: JRN 319, RTV 340, RTV 341, THA 424, ART 204, ART 342

4. Journalism

Students selecting a Journalism specialization may select one of three sequences for emphasis: News-Editorial, Advertising, or Public Relations. In addition to the 36 quarter hours in Journalism, including the following required course list, students must receive credit for two other JRN prefix courses of their choice, and for a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Journalism offered by the Communication Department. Required courses are:

...
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>JRN 319</td>
<td>Basic Reporting</td>
<td>4</td>
</tr>
<tr>
<td>JRN 321</td>
<td>Copy Editing</td>
<td>4</td>
</tr>
<tr>
<td>JRN 322*</td>
<td>Advanced Editing</td>
<td>4</td>
</tr>
<tr>
<td>JRN 422*</td>
<td>Public Affairs Reporting</td>
<td>4</td>
</tr>
<tr>
<td>JRN 330</td>
<td>History of American Journalism</td>
<td>4</td>
</tr>
<tr>
<td>JRN 431</td>
<td>International Communication and the Foreign Press</td>
<td>4</td>
</tr>
<tr>
<td>JRN 464</td>
<td>Principles of Advertising</td>
<td>4</td>
</tr>
<tr>
<td>COM 411</td>
<td>Legal Responsibilities of the Mass Media</td>
<td>4</td>
</tr>
</tbody>
</table>

*Students in advertising sequence may substitute JRN 465 (Advertising Media) and JRN 466 (Advertising Copy) for JRN 322 and JRN 422.

5. Radio-Television
A Radio-Television specialization requires a minimum of 36 quarter hours in Radio-Television, completion of the following required course list, plus a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Radio-Television. Other recommended courses are: COM 310, SOC 325, and PSY 308. The required courses are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTV 355</td>
<td>Foundations of Broadcasting</td>
<td>4</td>
</tr>
<tr>
<td>RTV 446</td>
<td>Radio-Television and Society</td>
<td>4</td>
</tr>
<tr>
<td>COM 411</td>
<td>Legal Responsibilities of the Mass Media</td>
<td>4</td>
</tr>
<tr>
<td>RTV 448</td>
<td>Broadcast Regulations</td>
<td>4</td>
</tr>
<tr>
<td>RTV 452</td>
<td>Broadcast Criticism</td>
<td>4</td>
</tr>
</tbody>
</table>

In addition the student must select one of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTV 340</td>
<td>Audio Production</td>
<td>4</td>
</tr>
<tr>
<td>RTV 341</td>
<td>Television Production</td>
<td>4</td>
</tr>
<tr>
<td>RTV 345</td>
<td>Film for Television</td>
<td>4</td>
</tr>
</tbody>
</table>

6. Speech Communication
A Speech Communication specialization requires a minimum of 36 quarter hours in Speech including those appearing on the required course list. Additionally, a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Speech offered by the Communication Department. Required courses are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPE 261</td>
<td>English Phonetics and American Dialect</td>
<td>5</td>
</tr>
<tr>
<td>SPE 360</td>
<td>Argumentation and Debate</td>
<td>4</td>
</tr>
<tr>
<td>COM 363</td>
<td>Group Interaction and Decision-Making</td>
<td>4</td>
</tr>
<tr>
<td>SPE 366</td>
<td>Speech Composition</td>
<td>4</td>
</tr>
<tr>
<td>SPE 371</td>
<td>Speech and Human Relations</td>
<td>4</td>
</tr>
<tr>
<td>SPE 362</td>
<td>Platform Speaking</td>
<td>4</td>
</tr>
</tbody>
</table>

In addition, required hours must be selected from each of the following areas:

<table>
<thead>
<tr>
<th>Area</th>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal and Organizational Communication (3-4 Hours)</td>
<td>COM 313 Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COM 312 Leadership Through Oral Communication</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>SPE 361 Persuasion: Motivation</td>
<td>4</td>
</tr>
<tr>
<td>Experimental (4 Hours)</td>
<td>COM 460 Group Dynamics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>COM 462 Attitudes and Communication</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>COM 463 Studies in Listening</td>
<td>4</td>
</tr>
<tr>
<td>History and Criticism (4-5 hours)</td>
<td>COM 568 Evolution of Communication Theory</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>COM 472 Rhetoric of Social and Political Action</td>
<td>4</td>
</tr>
</tbody>
</table>

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

Contact Person:  J. Rollins, AD243, Phone: 275-2293

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 economics courses are offered and administered by the College of Business Administration, they are available to students majoring in economics in the College of Social Sciences. Successful completion of this program leads to the Bachelor of Arts degree with a major in Economics.

BACHELOR OF ARTS: ECONOMICS

Degree Requirements

1. University graduation requirements
   (see page 46)

2. Environmental Studies Program
   (see pages 63-64)

3. Required Courses:
   - ECON 202 Principles of Microeconomics 4 hours
   - ECON 203 Principles of Macroeconomics 4 hours
   - ECON 301 Intermediate Price Theory 4 hours
   - ECON 311 Intermediate Money, Income, and Employment Theory 4 hours
   - ECON 321 Quantitative Methods and Business Decision Analysis 4 hours
   - ECON 431 Public Finance in the American Economy 4 hours
   - ENG 301 Professional Report Writing I 4 hours
   - ENG 302 Professional Report Writing II 4 hours
   - FIN 331 Money and Banking 4 hours

4. Restricted Electives
   a) ACCY 300 Financial Accounting 5 hours
   or
   ACCY 211 Financial Accounting I 3 hours
   and
   ACCY 212 Financial Accounting II 3 hours
   b) Five courses in ECON
   c) 36 quarter hours beyond Environmental Studies requirements from Behavioral Sciences, Mathematics, and the Social Sciences.

5. Electives

Total Quarter Hours Required 180

DEPARTMENT OF POLITICAL SCIENCE

Chairman:  H. Kennedy, SC232A, Phone 275-2608
Faculty:  Bledsoe, Handberg, Jervey, M. Jones, Lilie, Smyth, Stern, Whisler

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.

Specializations are available in American Institutions and Public Policy, International Politics, Comparative Politics, Political Theory and Methodology. Successful completion of any concentration leads to the Bachelor of Arts degree with a major in Political Science.
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 to pursue a career in international fields acquire a working knowledge of a foreign language.

BACHELOR OF ARTS: POLITICAL SCIENCE

Degree Requirements

1. University Regulations
   (see page 46)

2. Environmental Studies Program
   (see pages 63-64)

3. Required Courses
   PCL 201 American National Government 4 hours
   PCL 302 Scope and Methods of Political Science 4 hours
   or
   PCL 303 Principles of Political Science 4 hours

4. Restricted Electives
   40 quarter hours in PCL including a minimum of five courses at the 400 level. Some 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 advisor.

5. Electives
   Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

The following courses offer a guide to the areas of concentration available in the department.

1. American Institutions and Public Policy
   PCL 300 State Government
   PCL 302 Scope and Methods
   PCL 303 Principles of Political Science
   PCL 305 Political Parties and Processes
   PCL 306 Interest Groups and Political Movements
   PCL 308 The American Presidency
   PCL 310 Congress and the Legislative Process
   PCL 312 Minorities in American Politics
   PCL 315 Public Opinion
   PCL 316 Electoral Behavior
   PCL 413 Metropolitan Politics
   PCL 417 Policy Problems of Metropolitan Areas
   PCL 418 The Politics of Planning for Urban Communities
   PCL 424 Political Sociology
   PCL 425 Political Party Behavior
   PCL 447 Political Socialization
   PCL 450 American Public Policy
   PCL 471 American Constitutional Law
   PCL 473 American Constitutional Law
   PCL 475 Judicial Behavior
   PCL 490 Series

2. International Politics
   PCL 321 International Relations
   PCL 322 World Political Geography
   PCL 323 Contemporary International Politics
   PCL 420 Contemporary International Politics of Asia
   PCL 421 International Politics of the Middle East
PRE-LAW: POLITICAL SCIENCE

While no specific major is prescribed for admission to law school, many pre-law students elect to major in political science. These individuals must conform to all requirements for the Bachelor of Arts in Political Science degree as well as complete the following required core courses for the Political Science — Pre-Law emphasis:

- PCL 201 American National Government 4 hours
- PCL 302 Scope and Methods of Political Science 4 hours
  or
- PCL 303 Principles of Political Science 4 hours
- PCL 471, 473, 432, 433 Any one 4 hours
- PCL 475 Judicial Behavior 4 hours

**TOTAL 16 hours**

Students are encouraged to work closely with the pre-law advisor in planning their programs. By judicious use of electives, the student not only builds a firm foundation for law school entry, but in addition, acquires a broad vocational training which can result in career options upon graduation.

RUSSIAN AREA STUDIES: POLITICAL SCIENCE

The Department of Political Science in conjunction with the Departments of History, Sociology, Economics, and Foreign Languages offer an interdisciplinary program in Russian Area Studies. A certificate of participation is awarded upon successful completion of prescribed courses. Any student with any major may earn the certificate. For further information, contact Dr. Henry Kennedy, SC232, phone 275-2608.
The Department of Public Service Administration incorporates three related major programs: Allied Legal Services, Criminal Justice, and Public Administration. These programs share a common concern with the institutions and processes by which political and social decisions are made operational, and a common goal of preparing students to assume duties and responsibilities as professionals dedicated to service of the public.

ALLIED LEGAL SERVICES

Students in this program offered by the Department of Public Service Administration are trained as para-legal professionals to serve as supplemental staff in law offices and public agencies. It is intended to produce a mature, highly motivated aide capable of moving into the fact gathering, research and compilation phases of legal practice. The graduate would be expected to work under the general direction of an attorney and to be familiar with basic legal procedures and terminology and skilled in the rapid and accurate acquisition, recording, and the reporting of essential data. He also would be expected to undertake interviewing and investigative functions. In addition, it is expected that the instruction received will impart respect for the law and an understanding of its role in our government and society and will produce a graduate of high ethical standards.

The program at present stresses the area of private legal relations, the aspect of the law considered by attorneys to offer the greatest promise for useful para-professional contribution to legal practice. However, an increasing number of para-legals are practicing in public agencies. This course of study also is suited to the needs of these para-legal practitioners.

The content of the LES courses and concentrates on the mutual legal rights and obligations of the parties involved in the respective matters. Other aspects of those relations — e.g., the economic, social or environmental — are covered in the supporting courses offered by other departments and colleges of the University. Successful completion of the program leads to the degree of Bachelor of Arts with a major in Allied Legal Services.

BACHELOR OF ARTS: ALLIED LEGAL SERVICES

1. University requirements
   (see page 46)

2. Environmental Studies Program
   (see pages 63-64)

3. Required Courses:
   
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LES 302</td>
<td>Legal Investigation</td>
<td>4</td>
</tr>
<tr>
<td>LES 304</td>
<td>Law and the Paraprofessional</td>
<td>4</td>
</tr>
<tr>
<td>LES 305</td>
<td>Litigation and Trial Practice</td>
<td>4</td>
</tr>
<tr>
<td>LES 374</td>
<td>Property Law</td>
<td>4</td>
</tr>
<tr>
<td>LES 442</td>
<td>Domestic Relations</td>
<td>4</td>
</tr>
<tr>
<td>BADM 371</td>
<td>Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BADM 372</td>
<td>Business Law</td>
<td>3</td>
</tr>
</tbody>
</table>
4. Restricted Electives  
   a) 10 quarter hours of LES coursework  
   b) 12 quarter hours in allied fields which may include accounting, business, economics, public administration, etc. with advisors consent.

5. Electives  

**CRIMINAL JUSTICE**

A professional career in the field of Criminal Justice offers a special challenge in a contemporary society that is dynamic, heterogeneous and mobile, and places a high value upon individual freedom. Today, more than ever before, the various criminal justice sub-fields offer a special challenge that is both demanding and rewarding.

A criminal justice career enables young men and women to serve their country and their community in an extraordinarily interesting, active and complex field. The program of study is designed to assist the student to attain specific professional career objectives as well as to provide him with a general background in the social and administrative sciences.

The program offers three specific areas of specialization: law enforcement, corrections, and justice administration. Study options for either service or administrative careers are available in law enforcement or corrections and the justice administration concentration offers study options for either court service work or justice system policy and planning. The satisfactory completion of the curriculum leads to the degree of Bachelor of Arts with a major in Criminal Justice.

**BACHELOR OF ARTS: CRIMINAL JUSTICE**

1. University Graduation Requirements  
   (see page 46)

2. Environmental Studies Program  
   (see pages 63-64)

3. Required Courses:  
   - CRJ 201 Introduction  
   - CRJ 302 Administration of Justice  
   - CRJ 310 The Correctional and Penal System  
   - PAD 350 Public Administration

4. Restricted Electives  
   a) 33 quarter hours of CRJ courses  
   b) 26 quarter hours of Allied Supporting courses to be selected with and approved by the student’s advisor.

5. Electives  

**AREAS OF SPECIALIZATION**

1. Corrections Concentration  
   - CRJ 300 Crime in America  
   - CRJ 301 Criminal Law in Action  
   - CRJ 304 The Police Manager  
   - CRJ 311 Parole and Probation  
   - CRJ 407 Comparative Justice Systems  
   - CRJ 410 Financial Administration and Budgeting  
   - CRJ 411 Justice Policy and Social Conflict  
   - CRJ 422 Delinquency Control  
   - CRJ 423 Corrections Administration  
   - CRJ 491 Special Topics in Criminal Justice
Recommended Allied Field
SOC 325  Urban Sociology
SOC 340  Social Welfare
SOC 344  Sociology of Deviant Behavior
SOC 345  Juvenile Delinquency
SOC 346  Criminology
SOC 347  Sociology of Mental Illness
or
PSY 310  Abnormal Psychology
PSY 301  Basic Learning Processes
PSY 321  Principles of Behavior Modification
COM 313  Interpersonal Communication
COM 363  Group Interaction and Decision-making
PCL 300  State Government
PAD 414  Metropolitan Administration
ENG 301  Professional Report Writing
LES 301  Law and Society
AHS 350  Health Law

2. Justice Administration Concentration
CRJ 300  Crime in America
CRJ 303  Municipal Police Administration
CRJ 304  The Police Manager
CRJ 311  Parole and Probation (Court Service-option)
CRJ 400  Police and the Community
CRJ 407  Comparative Justice Systems
CRJ 410  Financial Administration and Budgeting
CRJ 411  Justice Policy and Social Conflict
CRJ 491  Special Topics in Criminal Justice
CRJ 492  Seminar: Court Administration

Recommended Allied Field
PCL 300  State Government
PCL 413  Metropolitan Politics
PAD 414  Metropolitan Administration
PAD 416  Public Administration Internship
PAD 440  Comparative Public Administration I
PAD 441  Comparative Public Administration II
PCL 417  Policy Problems of Metropolitan Areas
or
PCL 418  The Politics of Planning for Urban Communities
PCL 475  Judicial Behavior
SOC 335  Social Institutions
COM 400  Opinion and the Mass Media
COM 411  Legal Responsibilities of the Mass Media
PAD 491  Special Topics in Public Administration
LES 301  Law and Society
LES 302  Legal Research and Investigation
LES 304  Law and the Paraprofessional
LES 315  Administrative Law
ENG 301  Professional Report Writing

3. Law Enforcement Concentration
CRJ 300  Crime in America
CRJ 303  Municipal Police Administration
CRJ 304  The Police Manager
CRJ 400  The Police and the Community
CRJ 410  Financial Administration and Budgeting
CRJ 411  Justice Policy and Social Conflict
CRJ 422  Delinquency Control
CRJ 301  Criminal Law in Action
CRJ 407  Comparative Justice System
CRJ 491  Special Topics in Criminal Justice
Recommended Allied Field
SOC 345 Juvenile Delinquency
SOC 346 Criminology
SOC 352 Race and Ethnic Minorities in the United States
SOC 344 Sociology of Deviant Behavior
or
PSY 310 Abnormal Psychology
PSY 308 Social Psychology
COM 311 Business and Professional Communication
COM 313 Interpersonal Communication
PAD 414 Metropolitan Administration
PCL 300 State Government
PAD 440 Comparative Public Administration I
PAD 441 Comparative Public Administration II
PCL 411 Public Policy Administration
PAD 491 Special Topics in Public Administration
ENG 301 Professional Report Writing
LES 302 Legal Investigation
LES 315 Administrative Law

PUBLIC ADMINISTRATION

Students considering careers in public service at the federal, state or local level may choose to enroll in the Public Administration program offered by the Department of Public Service Administration. The Public Administration program has been strengthened by the addition of relevant courses from these related programs — Criminal Justice and Allied Legal Services. Its internship option offers qualified students a significant opportunity to acquire practical experience in government while completing their undergraduate curriculum.

The major in Public Administration requires the completion of 48 quarter hours of approved courses — 36 in the core courses, and at least 12 quarter hours of electives in Public Service. Successful completion of the program leads to the Bachelor of Arts degree with a major in Public Administration.

BACHELOR OF ARTS: PUBLIC ADMINISTRATION

1. University Graduation Requirements
   (see page 46)

2. Environmental Studies Program
   (see pages 63-64)

3. Required Courses:
   PAD 350 Introduction to Public Administration 4 hours
   PAD 411 Public Policy Administration 4 hours
   PAD 414 Metropolitan Administration 4 hours
   CRJ 304 The Police Managers 4 hours
   CRJ 410 Financial Administration and Budgeting 4 hours
   CRJ 491 Special Topics 4 hours
   PAD/CRJ 494 Independent Study 4 hours
   STAT 201 Principles of Statistics 4 hours
   LES 315 Administrative Law 4 hours

4. Restricted Electives
   12 quarter hours selected from the Public Service Administration Department offerings.

5. Electives
   Total Quarter Hours Required 180
DEPARTMENT OF PSYCHOLOGY

Chairman:  D. Abbott, AD 124, Phone 275-2216
Faculty:  Blau, Brophy, Burr, Burroughs, Fisher, Frank, Jaffee, McGuire, O’Hara, Rollins, Shirkey, Smith, Tell, Thomas, Tucker, Van Twyver

The undergraduate program provides a general preparation in Psychology with the option to select specialization electives according to student interests. Successful completion of the program leads to the Bachelor of Arts degree with a major in Psychology.

BACHELOR OF ARTS: PSYCHOLOGY

Degree Requirements

1. University graduation requirements  
   (see page 46)

2. Environmental Studies Program  
   (see pages 63-64)

3. Required Courses
   
   PSY 201, 202  General Psychology  8 hours
   PSY 301  Basic Learning Processes  5 hours
   PSY 303  Physiological Psychology  4 hours
   PSY 316  Careers in Psychology  2 hours
   PSY 495  Research Methods  4 hours

4. Restricted Electives
   
   a) Any two
   PSY 308  Social Psychology  4 hours
   PSY 309  Personality Theory  4 hours
   PSY 310  Abnormal Psychology  4 hours
   PSY 313  Developmental Psychology  4 hours
   
   b) Any one
   PSY 305  Psychological Measurement  4 hours
   PSY 411  Statistical Methods in Psychology  4 hours
   
   c) A total of 20 quarter hours in other PSY courses taken in accordance with the student's interests and career goals and with the consent of advisor.

5. Electives  
   Total Quarter Hours Required  180

AREAS OF SPECIALIZATION

The following groupings of courses are important to include within the 55 psychology hours for the interest area or career goal indicated.

1. Industrial Psychology
   
   PSY 305  Psychological Measurement
   PSY 308  Social Psychology
   PSY 309  Personality Theory
   PSY 314  Industrial Psychology
   PSY 321  Principles of Behavior Modification
   PSY 340  Environmental Psychology
   PSY 353  Psychology of Racial Prejudice
   PSY 371  Interviewing and Counseling
   PSY 411  Statistical Methods in Psychology

II. Exceptional Populations
   
   PSY 305  Psychological Measurement
   PSY 306  Psychology of Adjustment
   PSY 309  Personality Theory
   PSY 310  Abnormal Psychology
   PSY 313  Developmental Psychology
III. Educational/Counseling

- PSY 305 Psychological Measurement
- PSY 309 Personality Theory
- PSY 313 Developmental Psychology
- PSY 321 Principles of Behavior Modification
  (Strongly recommended to be taken early in concentration)
- PSY 343 Educational Psychology
- PSY 371 Psychology of Exceptional Children
- PSY 370 Interviewing and Counseling
- PSY 390 Undergraduate Field Work
  (Recommended to be taken during senior year)

Other courses pertinent to the area:
- PSY 330 Psychology of Women
- PSY 306 Psychology of Adjustment
- PSY 353 Psychology of Racial Prejudice
- PSY 415 Individual Intelligence Testing
- PSY 315 Drugs and Behavior

Students interested in public school guidance counseling will need to obtain Professional Preparation in Education in addition to graduate training in guidance/counseling.

IV. Community Services

- PSY 309 Personality Theory
- PSY 310 Abnormal Psychology
- PSY 305 Psychological Measurement
- PSY 312 Clinical Psychology
- PSY 321 Principles of Behavior Modification
- PSY 415 Individual Intelligence Testing
- PSY 315 Drugs & Behavior
- PSY 370 Interviewing & Counseling
- PSY 390 Undergraduate Field Work
- PSY 313 Developmental Psychology

Other courses pertinent to the area:
- PSY 306 Psychology of Adjustment
- PSY 330 Psychology of Women
- PSY 373 Psychology of Aging
- PSY 353 Racial Prejudice
- PSY 343 Educational Psychology
- PSY 371 Exceptional Child
- PSY 372 Mental Retardation

DEPARTMENT OF SOCIOLOGY

Chairman: C. Unkovic, LR 117, Phone 275-2227
Faculty: Allen, Brown, Dees, Hodgin, Jones, Legg, Miller, Tropf, Wallace, Washington, Wright

The Department of Sociology offers the student an opportunity to obtain a Bachelor of Arts in Sociology with a specialization in general sociology, social work, or anthropology. Successful completion of a program leads to the Bachelor of Arts degree with a major in Sociology.
Although a foreign language is not required for a sociology major, students planning to continue their education at the graduate level are strongly urged to acquire a working knowledge of a foreign language.

**BACHELOR OF ARTS: SOCIOLOGY**

**Degree Requirements**

1. University Requirements  
   (see page 46)

2. Environmental Studies Program  
   (see page 63)

3. Required Courses
   - SOC 201 General Sociology  
   - SOC 304 The Development of Social Thought  
   - SOC 306 Modern Sociological Thought  
   - SOC 495 Research Methods  
   - STAT 201 Principles of Statistics  
   4 hours

4. Restricted Electives
   - Varies with Specialization

5. Electives  
   - Varies with Specialization
   - Total Quarter Hours Required 180

**AREAS OF SPECIALIZATION**

1. Anthropology
   A specialization in Anthropology requires a minimum of 56 quarter hours of SOC courses including the following additional required courses:
   - SOC 310 Introductory Anthropology (Physical)  
   - SOC 311 Introductory Anthropology (Cultural)  
   - SOC 315 Physical Anthropology  
   - SOC 316 Comparative Social Organization  
   - SOC 402 Method and Research in Anthropology  
   - SOC 497 Research  
   4 hours
   The remaining 16 quarter hours are to be taken from the areas listed below (Minimum of one course in each area.)
   "Area Courses" (minimum of 1 each area):
   - ENG 371 Principles of Linguistics  
   - SOC 403 Anthropological Linguistics  
   3 hours
   - Archaeology
     - SOC 312 Old World Prehistory  
     - SOC 313 New World Prehistory  
     4 hours
   - Ethnology
     - SOC 308 Ethnology N. American Indians  
     - SOC 309 Plains Indians of N. America  
     - SOC 317 Comp. Cult: Africa  
     4 hours
   - Specialized Studies
     - SOC 307 Sociology of Religion  
     - SOC 353 Cult. & Personality  
     - SOC 402 Method & Theory in Anthropology  
     4 hours

2. General Sociology
   A specialization in General Sociology requires a minimum of 56 quarter hours in SOC courses including the following additional required courses:
   - SOC 202 General Sociology  
   - SOC 310 Introductory Anthropology (Physical)  
   4 hours

185
SOC 311  Introductory Anthropology (Cultural)  4 hours
SOC 497  Research  4 hours

The remaining 28 quarter hours required in sociology may be selected according to the interests of the student and with the agreement of the advisor.

The following sequences are offered only as a guide for aiding students to pursue specialized interests and goals:

Family
SOC 349  Human Growth and Development
SOC 354  Sociology of Adolescence
SOC 406  Sociology of Aging
SOC 407  The Family

Research
SOC 494  Independent Study
SOC 495  Undergraduate Research Methods
SOC 497  Research
STAT 201  Principles of Statistics

Social Change
SOC 360  Social Change
SOC 362  Contemporary Women in Society
SOC 408  Social Change in Developing Areas
SOC 451  Contemporary Social Movements

Social Deviance
SOC 331  Social Problems
SOC 344  Sociology of Deviant Behavior
SOC 345  Juvenile Delinquency
SOC 346  Criminology
SOC 347  Sociology of Mental Illness
SOC 348  Sociology of Alcoholism
SOC 452  Sociology of Drug Abuse

Social Organization
SOC 316  Comparative Social Organization
SOC 320  Collective Behavior
SOC 336  Social Stratification

Social Psychology
SOC 353  Culture and Personality
SOC 401  Individuals in Society
PSY 308  Social Psychology

Theory
SOC 304  Development of Social Thought
SOC 306  Modern Social Thought

3. Social Work
A specialization in Social Work requires a minimum of 63 quarter hours in SOC courses including the following required courses:
SOC 311  Introductory Anthropology (Cultural)  4 hours
SOC 340  Social Welfare: A Social Institution  4 hours
SOC 341  Social Work: Principles and Methods  4 hours
SOC 342  Government and Social Welfare  4 hours
SOC 343  The Community and Social Welfare  4 hours
SOC 349  Human Growth and Development  4 hours
SOC 350  Interviewing in Social Work Practice  4 hours
SOC 412  Field Experience and Seminar  15 hours
SOC 494  Independent Study  4 hours

MAJOR IN SOCIAL SCIENCES

Contact Person: J. Rollins, AD243, Phone 275-2293

This unique program offers students an opportunity to become acquainted with the various fields of Social Sciences and to understand better the relationships between those fields. Satisfactory completion
of the program leads to the degree Bachelor of Science with a major in Social Sciences.

**BACHELOR OF SCIENCE: SOCIAL SCIENCES**

**Degree Requirement**

1. University requirements  
   (see page 46)

2. Environmental Studies Program  
   (see pages 63-64)

3. Required courses  
   none

4. Restricted Electives  
   a) Choose one  
      PCL 302  Scope and Methods of Political Science  
      PSY 495  Research Methods  
      SOC 495  Research Methods

   b) A minimum of 22 quarter hours in each of four Social Science disciplines. The following are the required courses for each discipline selected:

   **COMMUNICATION**  
   COM 100  Basic Communication  
   COM 301  Communication as a Behavioral Science

   **ECONOMICS**  
   ECON 202  Principles of Microeconomics  
   ECON 203  Introduction to Aggregate Economics

   **POLITICAL SCIENCE/CRIMINAL JUSTICE**  
   PCL 201  American National Government

   **PSYCHOLOGY**  
   PSY 201  General Psychology  
   PSY 202  General Psychology  
   PSY 309  Personality Theory

   **SOCIology**  
   SOC 201  General Sociology  
   SOC 202  General Sociology

5. Electives  
   Total Quarter Hours Required 180
The College of Social Sciences offers the following graduate programs of study:

- Master of Arts: Communication
- Master of Science: Clinical Psychology
- Master of Science: Industrial Psychology
- Master of Science: School Psychology
- Master of Public Policy

The College of Social Sciences requires all individuals seeking admission into a graduate program to submit a quantitative-verbal GRE score dating from no longer than 5 years previous.

**MASTER OF ARTS: COMMUNICATION**

**Program Coordinator:** P. Taylor, FA 544, Phone 275-2681

The Department of Communication offers a diversified program, individual and flexible, leading to the Master of Arts Degree in Communication. Instruction is offered in mass communication, communication theory and research, informational and educational systems, persuasion, communicative disorders, and other areas drawn from the divisions of Journalism, Radio-Television, and Speech.

**ADMISSION REQUIREMENTS**

1. University Admission Requirements  
   (see pages 46 and 58)

2. Program Admission Requirements
   a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
   b. three letters of recommendation from undergraduate professors

**University Graduate Policies and Procedures**

(See pages 58-59 as well as the current FTU Graduate Policy and Procedure Manual, available in the Office of Graduate Studies.)

**Degree Requirements**

1. Prerequisites: none

2. Core Courses: The following courses are required.
   - COM 602 Modern Communication Theory 4 hours
   - COM 695 Research Methods 4 hours
   - COM 696 Research Planning 4 hours

3. Restricted Electives: Twelve hours of prescribed courses from communication law, communication systems, small group communication, or specific courses approved by the student's committee.

4. Thesis: A six quarter hour credit thesis is required.

5. Examinations: Students must pass a comprehensive written and oral examination.
Other requirements:

a. A grade of "B" or better must be attained in each of the core courses.

b. Students may be required to demonstrate a proficiency in statistics and computer programming.

<table>
<thead>
<tr>
<th>Total Quarter Hours Required</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOR Maximum Hours Allowed</td>
<td>58</td>
</tr>
</tbody>
</table>

(see pages 61-62)

Master's Programs in Psychology

Psychology Programs Coordinator: J. McGuire, ADM 129, Phone 275-2216

The Psychology Department currently offers Master's Degree Programs in Clinical Psychology, Industrial Psychology and School Psychology. All programs require the equivalent of two years of full-time attendance to complete and are designed to prepare individuals for positions as masters of level psychologists working in industrial settings, community agencies, or schools.

Emphasis in all programs is on an individual being prepared for an applied position at the completion of each program.

MASTER OF SCIENCE: CLINICAL PSYCHOLOGY

The Clinical Psychology Graduate Program at FTU was initiated for the primary purpose of providing training and preparation for individuals interested in providing professional psychological service to the community. This can be conducted in such settings as community mental health or guidance centers, out-patient psychiatric clinics, public or veteran's psychiatric hospitals, half-way houses, drug treatment centers, college or university counseling facilities, public correctional facilities and allied psychological service agencies.

While the delivery of psychological services comprises the program's primary thrust, this training is accomplished within a rigorous academic foundation in basic psychology including research methods. The program consists of three key areas of professional preparation: (1) Psychological Assessment-Evaluation Skills, (2) Counseling/Psychotherapy Skills, (3) Supervised Internship-Field Experience.

ADMISSION REQUIREMENTS

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
   b. three letters of recommendation

University Graduate Policies and Procedures
   (see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional course work may be required to remove individual deficiencies.
2. Core Courses: The following courses are required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 654</td>
<td>Laboratory to accompany PSY 671, 680, 681, 686, 688</td>
<td>10</td>
</tr>
<tr>
<td>PSY 655</td>
<td>Clinical Internship</td>
<td>8</td>
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<tr>
<td>PSY 671</td>
<td>Individual Intelligence Testing</td>
<td>4</td>
</tr>
<tr>
<td>PSY 675</td>
<td>Implementation and Evaluation</td>
<td>4</td>
</tr>
<tr>
<td>PSY 676</td>
<td>Clinical Psychopharmacology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 680</td>
<td>Individual-Group Personality Testing</td>
<td>4</td>
</tr>
<tr>
<td>PSY 681</td>
<td>Psychoeducational Diagnosis</td>
<td>4</td>
</tr>
<tr>
<td>PSY 686</td>
<td>Clinical Intervention I</td>
<td>4</td>
</tr>
<tr>
<td>PSY 687</td>
<td>Clinical Intervention II</td>
<td>4</td>
</tr>
<tr>
<td>PSY 688</td>
<td>Clinical Intervention III</td>
<td>4</td>
</tr>
<tr>
<td>PSY 689</td>
<td>Clinical Intervention IV</td>
<td>4</td>
</tr>
<tr>
<td>PSY 695</td>
<td>Research Methods</td>
<td>4</td>
</tr>
</tbody>
</table>

3. Restricted Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 698</td>
<td>Research Report</td>
<td>4</td>
</tr>
<tr>
<td>PSY 699</td>
<td>Thesis</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Thesis/Research Report: Four quarter hours of thesis or research report credit are required.

5. Examinations:
   a. Diagnostic Examination must be successfully completed before beginning second academic year of the program.
   b. Qualifying Examination given after the fourth quarter of study or equivalent.

6. Other Requirements: None specified

Total Quarter Hours Required: 62
BOR Maximum Hours Allowed: 65
(See pages 61 and 62)

MASTER OF SCIENCE: INDUSTRIAL PSYCHOLOGY

The basic goal of the Industrial Psychology Graduate Program is to train individuals to apply psychological principles and skills effectively to industrial and related settings. The program is designed to lead to a terminal Master's degree whereby graduates from this program will be able to work effectively in a wide range of applied settings including industry, government, and the education fields.

Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
   b. three letters of recommendation

University Graduate Policies and Procedures

(see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional course-work may be required to remove individual deficiencies.
2. Core Courses: The following courses are required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 605</td>
<td>Test Theory</td>
<td>4</td>
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<tr>
<td>PSY 606</td>
<td>Applied Testing and Selection</td>
<td>4</td>
</tr>
<tr>
<td>PSY 607</td>
<td>Motivation, Training and Performance Appraisal</td>
<td>4</td>
</tr>
<tr>
<td>PSY 608</td>
<td>Applied Problems in Industrial Psychology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 641</td>
<td>Current Issues in Organizational Psychology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 660</td>
<td>Practicum I</td>
<td>4</td>
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<tr>
<td>PSY 661</td>
<td>Practicum II</td>
<td>4</td>
</tr>
<tr>
<td>PSY 686</td>
<td>Clinical Intervention</td>
<td>4</td>
</tr>
<tr>
<td>PSY 691</td>
<td>Professional Problems</td>
<td>2</td>
</tr>
<tr>
<td>PSY 692</td>
<td>Seminar: Assessment Centers</td>
<td>4</td>
</tr>
<tr>
<td>PSY 695</td>
<td>Research Methods</td>
<td>12</td>
</tr>
<tr>
<td>PSY 699</td>
<td>Thesis</td>
<td>11</td>
</tr>
</tbody>
</table>

3. Restricted Electives: Consent of advisor required for all electives. 4 hours


5. Examinations:
   a. Diagnostic Examination must be successfully completed before beginning the second academic year of the program.
   b. Qualifying Examination at the end of the first and second year of the program or equivalent.

6. Other Requirements: None specified.

Total Quarter Hours Required 65
BOR Maximum Hours Allowed 65
(see pages 61-62)

MASTER OF SCIENCE: SCHOOL PSYCHOLOGY

The School Psychology Graduate Program at FTU was initiated for the purpose of providing training and preparation for individuals interested in providing applied professional psychological services to schools and education fields. The School Psychology Program includes coursework enabling the graduate to meet the State of Florida Certification Requirements as a Specialist in School Psychology.

Admission Requirements

1. University Admission Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
   b. three letters of recommendation

University Graduate Policies and Procedures
   (see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional course-work may be required to remove individual deficiencies.
2. Core Courses: The following courses are required.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>10</td>
</tr>
<tr>
<td>PSY 656</td>
<td>School Internship</td>
<td>10</td>
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<tr>
<td>PSY 671</td>
<td>Individual Intelligence Testing</td>
<td>4</td>
</tr>
<tr>
<td>PSY 676</td>
<td>Clinical Psychopharmacology</td>
<td>4</td>
</tr>
<tr>
<td>PSY 680</td>
<td>Individual-Group Personality Testing</td>
<td>4</td>
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<tr>
<td>PSY 681</td>
<td>Psychoeducational Diagnosis</td>
<td>4</td>
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<td>PSY 684</td>
<td>Developmental Psychology</td>
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<tr>
<td>PSY 686</td>
<td>Clinical Intervention I</td>
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<tr>
<td>PSY 687</td>
<td>Clinical Intervention II</td>
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</tr>
<tr>
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<td>Clinical Intervention III</td>
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<td>PSY 689</td>
<td>Clinical Intervention IV</td>
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<tr>
<td>PSY 695</td>
<td>Research Methods</td>
<td>4</td>
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</tbody>
</table>

3. Restricted Electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Elective</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 698</td>
<td>Research Report</td>
<td>4</td>
</tr>
<tr>
<td>PSY 699</td>
<td>Thesis</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Thesis/Research Report: Four quarter hours of thesis or research report credit are required.

5. Examinations:

a. Diagnostic Examination must be successfully completed before beginning the second academic year of the program.
b. Qualifying Examination given after the fourth quarter of study or equivalent.

6. Other Requirements: None specified

| Total Quarter Hours Required | 64 |
| BOR Maximum Hours Allowed    | 65 |

**MASTER OF PUBLIC POLICY**

**Program Coordinator:** L. Tanzi, AD 243, Phone 275-2292

The Departments of Political Science and Public Service Administration offer graduate work leading to the Master of Public Policy degree. This program offers a flexible course of study which prepares students for positions as policy analysts and administrators in various modes of public service. The interdisciplinary nature of the programs provide the opportunity to acquire knowledge, master techniques, and develop insights essential for the design, analysis, and effectuation of policy programs at all levels of government.

Two specialization areas are available. The "Politics of Policy Making" is primarily for individuals interested in the institutions, processes, and behaviors of the political system and the environment in which policy decisions are made. The "Bureaucracy and Public Policy" specialization focuses upon the implementation and administration of policy decisions.

**Admission Requirements**

1. University Admissions Requirements
   (see pages 46 and 58)

2. Program Admission Requirements
   a. Submission of a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission.
   b. Submission of three letters of recommendation from indivi-
duals capable of assessing the applicant's ability to undertake graduate work successfully.

University Graduate Policies and Procedures

See pages 58-59 as well as the current FTU Graduate Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: Undergraduate study in Political Science or Public Administration desirable. However, individuals with strong backgrounds in related disciplines could be accommodated. Additional course work may be required to remove deficiencies.

2. Core Courses: The following courses are required.

- PCL 600 Public Policy and Political Analysis 4 hours
- PCL 603 Models for Policy Analysis 4 hours
- or
- PAD 611 Planning and Organization for Economic and Social Development 4 hours
  and in addition one (1) course in STAT
- PCL 695 Research Methods 4 hours
- PCL 698 Research Report 6 hours
- PAD 605 Bureaucracy and Public Policy 4 hours

3. Restricted Electives: Select one

- PCL 670 Issues in Urban Public Policy
- PCL 672 Issues in State Public Policy
- PCL 673 Issues in National Public Policy
- PCL 675 Issues in International Public Policy
- PAD 676 Issues in Economic Public Policy
- PAD 677 Issues in Public Administration

Other electives may be selected from University-wide graduate offerings if each elective is approved by the student's graduate committee.

4. Research Report: Six quarter hours of credit must be earned for an internship or investigatory research project that results in a research report acceptable to the student's graduate committee.

5. Examinations: Individuals must perform satisfactorily on a written comprehensive examination designed to test knowledge and abilities in the core program and specialization selected. Normally this examination will not be administered until at least 40 quarter hours of graduate work are completed. An oral examination will be administered by the student's graduate committee following the completion of the student's research report.

6. Other Requirements:
   a. No more than 9 quarter hours of "C" may be counted toward fulfilling degree requirements.
   b. Exceeding 9 quarter hours of "C" and/or unresolved "I" grades in a specified program of study constitutes grounds for dismissal from graduate status.

<table>
<thead>
<tr>
<th>Total Quarter Hours Required</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOR Maximum Hours Allowed</td>
<td>60</td>
</tr>
</tbody>
</table>

(see pages 61-62)
CLASSIFICATION OF COURSES

The University course numbering system is as follows:

100-299 are freshman and sophomore level courses and are designed primarily for these students.

300-499 are junior and senior level courses and are designed primarily for these and other advanced students. When approved for inclusion in an individual program of graduate study by a supervisory committee approved by the Dean of Graduate Studies, selected 400-499 courses may serve the needs of individual graduate students.

500-599 are beginning graduate and advanced undergraduate level courses—open to graduate students and those seniors who receive approval of the appropriate Dean(s).

600-699 are beginning graduate and professional level courses open only to graduate students.

SPECIAL COURSES

In addition to the regular courses listed in this bulletin, the following special courses may be available. Consult your academic advisor for details.

<table>
<thead>
<tr>
<th>Undergraduates</th>
<th>Special Grad¹</th>
<th>Grad &amp; Prof</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 400</td>
<td>500 600</td>
<td></td>
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<tr>
<td>391 491</td>
<td>591 691</td>
<td></td>
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<td>392 492</td>
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<td>394 494</td>
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<tr>
<td>499</td>
<td>699</td>
<td></td>
</tr>
</tbody>
</table>

These courses may be assigned variable credit. Some may be repeated upon approval.

¹The Special Graduate Courses are primarily for graduate students, but may be taken by advanced seniors with the consent of their deans.

PR: PREREQUISITE

A course in which credit must be earned prior to enrollment in the listed course.

CR: COREQUISITE

A course which must be taken concurrently with or prior to the listed course.

CI: CONSENT OF INSTRUCTOR
HOURS CODE

Each course listing is followed by a code which shows hours credit, contact hours, and quarters during which the course will normally be offered.

Example:

GEOL 201  
Physical Geology  
4 (2,4) W

Geology 201 carries four hours credit but requires six contact hours: two in class and four in laboratory or field work. It is scheduled to be offered in the Winter Quarter.

Quarter designation:  F = Fall; W = Winter; S = Spring; Su = Summer.

AVAILABILITY OF COURSES

The University does not offer all of the courses listed in the catalog each year. The class Schedule should be consulted for those courses offered each quarter.
## ACCOUNTANCY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Days</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCY 211</td>
<td>3 (3,0)</td>
<td>F,W,S,Su</td>
<td>Financial Accounting I: Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations.</td>
</tr>
<tr>
<td>ACCY 212</td>
<td>3 (3,0)</td>
<td>F,W,S,Su</td>
<td>Financial Accounting II: Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations.</td>
</tr>
<tr>
<td>ACCY 300</td>
<td>5 (5,0)</td>
<td>F,W,S,Su</td>
<td>Financial Accounting: PR: Junior standing. Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations. An accelerated course. Credit may not be earned in both ACCY 300 and the ACCY 211, 212 sequence.</td>
</tr>
<tr>
<td>ACCY 305</td>
<td>3 (3,0)</td>
<td>F,W,S,Su</td>
<td>Management Accounting: PR: ACCY 212 or ACCY 300 or equivalent. Business information requirements; cost accounting concepts and relationships, forecasting and budgeting. Not open to ACCY majors.</td>
</tr>
<tr>
<td>ACCY 314</td>
<td>3 (3,0)</td>
<td>F,W,S,Su</td>
<td>Introduction to Accounting Theory and Practice: PR: ACCY 300 or equivalent. An in-depth review of accounting process, concepts, content of financial statements; framework of accounting theory; errors, cash vs. accrual; statement analysis.</td>
</tr>
<tr>
<td>ACCY 341</td>
<td>3 (3,0)</td>
<td>F,S</td>
<td>Governmental Accounting: PR: ACCY 212 or ACCY 300. Budget, accounting and reporting problems of state and national governments.</td>
</tr>
</tbody>
</table>
ACCY 450  5 (5,0) F,W,S,Su

ACCY 475  2 (2,0) F,W,S,Su
Current Selected Topics: PR: Completion of all other required accounting courses, or concurrent registration, or permission of the Department Chairman. An examination and discussion of current changes and controversial topics in financial reporting.

ACCY 501  4 (4,0)
Financial Accounting Concepts: PR: Acceptance into the graduate program. The conceptual background for financial statements for external purposes including problems of the accounting period, the accrual concepts and changing price levels, etc.

ACCY 601  3 (3,0)
Accounting Analysis: PR: Graduate standing and ACCY 501 or one year of accounting. (Not open for accounting majors.) Accounting as an information measurement system for internal planning and control; concepts and analytical techniques for accumulating costs of products and services.

ACCY 610  5
Contemporary Accounting Theory: PR: Graduate standing and all of foundation courses or equivalents. An examination of the evolution of contemporary accounting theory. Emphasis is on current and future development.

ACCY 612  5
Computers and Information Systems in Accounting: PR: Graduate standing and all foundation courses or equivalents. Introduction to design and management of information flows integrating accounting within the framework of information systems with applications demonstrated through computer models.

ACCY 620  5
Advanced Auditing: PR: Graduate standing and all foundation courses or equivalents. The study of auditing problems with special emphasis on statistical sampling and the auditing of electronic data processing systems.

ACCY 630  5
Cost Accounting for Management Decisions: PR: Graduate standing and all foundation courses or equivalents. Emphasis on cost finding and analysis for management decisions.

ACCY 640  5
Taxation: PR: Graduate standing and all foundation courses or equivalents. An advanced study of tax law with emphasis on business taxes.

ACCY 650  5
Specialized Accounting Problems: PR: Graduate standing and all foundation courses or equivalents. A survey of specialized and regulatory accounting practice with emphasis on SEC filing and governmental and institutional accounting.

AIR FORCE ROTC

AFR 101  1 (1,1) F
The United States Air Force and Strategic Offensive Forces: PR: Qualification for Air Force ROTC or permission of Professor of Aerospace Studies. History, mission, organization and doctrine of the United States Air Force and a study of U.S. Strategic Offensive Forces.

AFR 102  1 (1,1) W
Strategic Defense Forces: PR: AFR 101 or permission of Professor of Aerospace Studies. Concepts of aerospace defense. A study of the various systems and functions associated with defense against manned bombers and missiles.
AFR 103 1 (1,1) S
Conventional Military Forces: PR: AFR 102 or permission of Professor of Aerospace Studies. A brief review of Army, Navy, and Marine Forces. An introduction to special operations and counterguerrilla.

AFR 201 1 (1,1) F
The Birth of Airpower: PR: AFR 103 or approval of PAS. A study of the early development of manned flight from the 18th century balloonist through to the achievement of mature airpower capabilities prior to World War II.

AFR 202 1 (1,1) W
Airpower: Crisis and Maturity: PR: AFR 201 or approval of PAS. A review of fifteen years of airpower development, highlighting changes in aircraft technology and employment brought about by experiences in WWII and Korea.

AFR 203 1 (1,1) S
The Aerospace Age: PR: AFR 202 or approval of PAS. A study of aerospace power in the contemporary world and its current employment as a force of stability.

AFR 301 3 (3,1) F
Military Role in Contemporary Society: PR: GMC or two-year program selection and/or approval of PAS. Review and survey of military communicative skills. Examination of the military profession and its role in American Society.

AFR 302 3 (3,1) W
Defense Policy and Strategy: PR: AFR 301 or approval of PAS. A study of the framework of defense policy and formation of defense strategy including political, economic and social constraints upon the national defense structure.

AFR 303 3 (3,1) S
Implementation of Defense Policy: PR: AFR 302 or approval of PAS. An examination of defense implementation by the DOD, Congress and the Presidency, and the manner in which they impact on the decision-making process.

AFR 401 3 (3,1) F
Leadership and Discipline in the Air Force: PR: AFR 303 or approval of Professor of Aerospace Studies. The need for Air Force leadership, professional responsibilities of the officer, and the need for discipline in the military.

AFR 402 3 (3,1) W
Principles of Military Leadership and Management: PR: AFR 401 or approval of Professor of Aerospace Studies. Variables affecting military leadership, traits and interactional approaches to leadership, introduction to military management, and systems approach to Air Force management.

AFR 403 3 (3,1) S
Air Force Management and the Junior Officer: PR: AFR 402 or approval of Professor of Aerospace Studies. Air Force personnel management policies and the military justice system as they affect the junior officer.

AFR 404 4 (4,0)
Introduction to Flight (Pilot): PR: AFR 301, 302, 303 and/or permission of the Professor Aerospace Studies. An academic introductory study of weather, navigation, FAA regulations and flight radio procedures.

ALLIED HEALTH SCIENCES

AHS 301 3 (3,0)
U. S. Health Care Systems: Organization and management of health care delivery systems in the United States; ethical, legal, community and professional relationships; needs, resources, programs, trends in health care.

AHS 305 5 (5,0) S
Medical Terminology: A study of the language of medicine and allied health specialities, including word construction, definitions and application of terms.
AHS 320  3 (3,0) F
Health Services Organization: PR: MGMT 301 or C.I. Health services organizational structure; departmental procedures; interdepartmental relationships.

AHS 330  3 (3,0)
Interpretation of Clinical Tests: PR: CHEM 113 and ZOOL 334, or C.I. Introduction to laboratory tests and their evaluation; emphasis will be on tests relating to gas transport and enzymology.

AHS 350  3 (3,0) W
Health Law: Principles of law as applied to the health field with special reference to health practices.

AHS 410  4 (4,0) S
Community and Public Health Services: History and philosophy of public health, interphase of governmental, voluntary, and private health agencies; current community health problems, issues, and needs; social and economic factors.

AHS 415  4 (4,0) W
Epidemiology: PR: STAT 201 or C.I. General concepts and scope of epidemiology; the distribution of selected diseases; factors influencing health and disease in a population.

AHS 420  3 (2,2) F
Supervisory Management for Health Services Agencies: PR: AHS 320, or C.I. Budgeting, equipment analyses; inservice education; office environmental factors; department layouts; job descriptions; policy and procedure manuals; staffing; scheduling; labor unions.

AHS 440  4 (4,0) F
Fundamentals of Medicine I: PR: ZOOL 324; or ZOOL 334 and ZOOL 335; or C.I. A study of the nature, cause and treatment of specific disease entities.

AHS 441  4 (4,0) W
Fundamentals of Medicine II: PR: AHS 440 or C.I. A continuation of AHS 440.

AHS 486  3 (3,0)
History and Future of Health Care: Health care institutions; purposes of health agencies, organizations and allied health professionals; new trends in health care delivery. Meets Advanced ESP requirements: designed for non-majors.

AHS 501  2
Health Delivery Systems in the United States I: Organization, management and programs. Patterns of organization of delivery systems, manpower and resources, distribution, needs, scope of programs, consumer factors.

AHS 502  2
Health Delivery Systems in the United States II: Legal and ethical aspects of vendors and consumers. Legislative process, enforcement, liability, licensing, court processes, conduct of a witness, confidentiality and privileged communications.

AHS 503  2

ART

ART 201  3 (2,4) F
Design Fundamentals I: Materials, processes, form. Application to product design, communication design, environmental design, and the visual arts. Emphasis on two-dimensional design problems.
ART 202  
Design Fundamentals II: Continuation of ART 201. Emphasis on color theory.

ART 203  
Design Fundamentals III: Continuation of ART 202. Emphasis on three-dimensional design in the various sculptural media.

ART 204  
Film Design: A series of exercises in craft, technique, and design for the film, including animation.

ART 211  
Drawing Fundamentals I: Drawing as a means of formal organization. Introduction to problems in drawing methods and media. Emphasis on descriptive techniques.

ART 212  
Drawing Fundamentals II: Continuation of ART 211. Emphasis on traditions of spatial organization.

ART 221  
The History of Art I: Painting, sculpture, and architecture from the Prehistoric Era through the Medieval Period.

ART 222  
The History of Art II: Painting, sculpture, and architecture from the Renaissance to the 19th Century.

ART 223  
The History of Art III: Painting, sculpture, and architecture of the 19th and 20th Centuries.

ART 231  
Visual Arts Overview: Analysis of the characteristics and scope of visual arts. Recommended for credit toward cultural and historical foundations section of the Environmental Studies Program.

ART 301  
Lettering: PR: Six hours of Design Fundamentals or C.I. Workshop study of the classical and historic types styles.

ART 302  
Graphic Design I: PR: Six hours Design Fundamentals and ART 301, or C.I. Principles of visual communication, methods, materials, and processes. Relationship of perceptual studies to graphic design.

ART 303  
Graphic Design II: PR: ART 302, ART 341 or C.I. Development of studio techniques and problems stressing balance between articulation and succinct presentation of information.

ART 304  

ART 305  

ART 308  
Jewelry Design: PR: Consent of the instructor.

ART 311  

ART 321  
Arts of Pre-Literate Societies: The visual arts in recent and contemporary primitive societies with emphasis on the cultures of Africa and Oceania.
ART 322 3 (3.0)  
Asian Art: An introduction to the history of visual arts of China, Japan, India and other Eastern cultures.

ART 324 3 (3.0)  
History of Photography: The development of still photography in terms of historical, aesthetic, and social impact on Western Culture from 1839 to the present.

ART 341 3 (2.4) F,W,S  
Photography: Consideration of basic technical and aesthetic factors in using still photography as a vehicle for visual, artistic expression.

ART 342 4 (3.3) W  
Cinematography: PR: ART 204 or C.I. Consideration of basic technical and aesthetic factors involved in using motion pictures as a vehicle for visual, artistic expression.

ART 351 3 (2.4) F,W,S  
Painting: PR: Three quarter hours in Design Fundamentals and three quarter hours in Drawing Fundamentals or C.I.

ART 361 3 (2.4)  
Printmaking: PR: Three quarter hours of Drawing Fundamentals or C.I. Basic procedure and processes in printmaking. Formal and expressive characteristics of the print media.

ART 371 3 (2.4) F,W,S  
Sculpture: PR: Six quarter hours in Design Fundamentals, to include three quarter hours in three-dimensional work, or C.I.

ART 381 3 (2.4) F,W,S  
Ceramics: PR: ART 203 or C.I. Basic concepts of ceramic design, experience in processes of forming, decorating, glazing, and firing pottery.

ART 382 3 (2.4)  
Experiments in Art and Technology: PR: Consent of instructor.

ART 402 3 (2.4) F  
Advanced Graphic Design I: PR: ART 303, acceptable portfolio or C.I. Typographic organization, paper, and light-sensitive materials related to design and production techniques.

ART 403 3 (2.4) W  
Advanced Graphic Design II: PR: ART 402 or C.I. Pictorial and symbolic expression in creation of poster design, symbols, magazine and book design.

ART 404 3 (2.4) S  
Advanced Graphic Design III: PR: ART 403 or C.I. Individual problems providing students with an opportunity to initiate search for an independent formula of graphic design principles.

ART 405 3 (2.4)  
Advanced Three-Dimensional Design: PR: ART 305. May be repeated for credit. Advanced problems in three-dimensional materials, processes, form.

ART 408 3 (2.4)  
Advanced Jewelry Design: PR: ART 308. May be repeated for credit.

ART 409 3 (2.4)  
Fibers, Fabrics, Textiles and Synthetics: Textile design and production, including non-loom and loom weaving processes.

ART 410 3 (2.4)  
Metals, Woods, Leathers and Stones: Processes and techniques of production in these traditional craft materials.

ART 411 3 (2.4)  
Advanced Drawing: PR: ART 311. May be repeated for credit.
ART 421
Purposes of Art: An Analysis and Appreciation of the visual arts in terms of their various purposes.

ART 425

ART 431
Developing Visual Creativity: Analysis of the nature of the creative faculties and the development of creativity through visual processes.

ART 433
Theory and Criticism of the Visual Arts: Criteria of criticism; analysis of works, elements of psychology and sociology of art. Developments in the arts of the 20th Century.

ART 434
Art and Technology: The impact of technological developments in the visual arts of the 20th Century.

ART 435
Environmental Art: Analysis of aesthetic design factors, related to city planning, architecture, product design, and experimental environmental arts.

ART 441
Advanced Photography: PR: ART 341. May be repeated for credit.

ART 442
Advanced Cinematography: PR: ART 342. May be repeated for credit.

ART 443
Special Problems in Photography: PR: ART 341 or C.I. A series of directed photographic problems of a research nature. May be repeated for credit.

ART 451
Advanced Painting: PR: ART 351. May be repeated for credit.

ART 461
Advanced Printmaking: PR: ART 361. May be repeated for credit.

ART 471
Advanced Sculpture: PR: ART 371. May be repeated for credit.

ART 481
Advanced Ceramics: PR: ART 381. May be repeated for credit.

ART 482
Advanced Experiments in Arts and Technology: PR: ART 391. May be repeated for credit.

ART 484
Senior Studio and Exhibition: PR: By petition (see page 124). Required of all B.F.A. degree candidates. Not open to B.A. degree candidates.

BIOLOGY

BIOL 103
Biological Principles: A study of various biological factors which affect the health and survival of man in modern society. Meets ESP requirements; designed for non-majors.

BIOL 105
Biology and Environment: Biological implications of the interaction among human society, population, and technology in relation to the environment and natural systems. Meets ESP requirements: designed for non-majors.
BIOL 110 5 (4,2) F,W
Basic Biology: Basic principles, unifying concepts and facts of modern biology. Introduction to quantitative biological experimentation. For Biological Sciences, Allied Health Sciences and preprofessional majors.

BIOL 332 5 (3,4) S

BIOL 350 4 (3,3) F
Principles of Ecology: PR: 12 hours in biological sciences. Elements of ecosystems, biogeochemical cycling, environmental factor interactions, population dynamics and evolution, communities, and succession.

BIOL 360 4 (3,3) S
Genetics: PR: BIOL 110. Basic principles of heredity as applied to plants and animals. Laboratory will emphasize work with Drosophila.

BIOL 363 4 (3,2) W, even years
Genetics and Man: BIOL 103 or 110. Basic principles of genetics as illustrated by human heredity. Meets ESP requirements: designed for non-majors.

BIOL 410 5 (3,6)
Microtechnique: PR: 1 yr. biological science. Preparation of plant and animal tissue for microscopic study; embedding; use of various microtomes; staining procedures; whole mounts.

BIOL 450 5 (3,6) F
Limnology: PR: BIOL 350 or C.I. Introduction to principles of limnology and methods for freshwater ecology with respect to physical, chemical and biological parameters.

BIOL 451 5 (3,6) W
Freshwater Systems: PR: BIOL 450 or C.I. Primary and secondary productivity and interaction among factors such as nutrients, pollutants, temperature radiation, turbidity, and seasons.

BIOL 455 4 (3,3) S, odd years

BIOL 463 3 (3,0) W
Organic Evolution: 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 3 (3,0)
History of Biology: PR: Junior standing. People and events from Aristotelian times to the present; development of the science of biology.

BIOL 484 3 (3,0) S, odd years
Biological Nature of Man: Man's behavior, reproduction, development, diversity, heredity, evolution, population control, aggression, and biological needs in contemporary society. Meets advanced ESP requirements: designed for non-majors.

BIOL 485 3 (3,0) S, even years
Biology and Society: Biological concepts applied to current human problems—food production, pollution, disease, extinction, and disrupted ecosystems. Meets advanced ESP requirements: designed for non-majors.

BIOL 554 5 (3,6)
Ecology of Running Water: PR: BIOL 450 or C.I. Biological adaptations and communities in relation to channel formation, flow dynamics, and physico-chemical aspects of running waters.
BIOL 560
Genetic Mechanisms: PR: BIOL 360 or C.I. Principles of cytological, developmental, human and population genetics.

BIOL 563
Evolutionary Biology: PR: 11 hours in biological sciences including BIOL 360. An outline of evolutionary principles, natural selection and phylogeny; origin of variation and species. Special project required.

BIOL 618
Field Methods for Biology: PR: Two years of biology. Experimental techniques and design in field biological research.

BIOL 619
Laboratory Methods for Biology: PR: BIOL 332 and MICR 430. Experimental techniques and design in laboratory biological research.

BIOL 620
Molecular Biology: PR: CHEM 442 or C.I. A course which considers the molecular basis of cellular structures and their functions. Emphasis on current information and research in the area of bioenergetics, cellular regulation, and cellular specialization.

BIOL 621
Development Biology: PR: 12 hours Biology or C.I. An in-depth examination of growth and development in plants, animals and protista stressing patterns and mechanisms.

BIOL 632
Organismal Physiology: PR: BIOL 332 and C.I. Modern experimental methods and detailed study of specific phases of the physiology of higher vertebrates.

BIOL 653

BIOL 675
Contemporary Studies in Environmental Biology: PR: Graduate standing. Analysis of current publications and developments in science and technology applicable to environmental problems.

BOTANY

BOT 100
General Botany: Introduction to botany; plant structure and function, including a survey of the plant kingdom giving special emphasis to forms important to man.

BOT 320
Comparative Morphology of Plants: PR: BOT 100. A sequential survey of plants with emphasis on evolutionary relationships, structure and function.

BOT 325
Plant Anatomy: PR: BOT 100. A study of the development, structure and function of the principal organs and tissue of vascular plants.

BOT 345
Plant Taxonomy: PR: BOT 100. An introduction to systematics, classification and identification of vascular plants with emphasis on the flora of peninsular Florida.

BOT 371
Plants and Man — Ethnobotany: Man's historical and modern uses of plants economically important in various cultures. Designed for non-majors.

BOT 372
Plants and the Urban Environment: The selection, placement, propagation
and care of ornamental plants in residential, commercial and industrial areas. Designed for non-majors.

**BOT 430**
4 (3,3) W, odd years
Plant Physiology: PR: BIOL 332, or C.I. A study of the mechanisms used by plants to cope with their environment.

**BOT 441**
4 (3,3) W, even years
Freshwater Algae: PR: BOT 100 or C.I. A lecture-laboratory course to survey the physiology, diversity and ecology of the freshwater algae.

**BOT 443**
4 (2,6)
Mycology: PR: BOT 320 or MICR 200 or C.I. A lecture-laboratory course emphasizing form and function of major fungous groups.

**BOT 453**
3 (3,0) W, odd years
Plant Geography: PR: BIOL 350 or BOT 451 or C.I. The major climatic plant formations of the world and historical plant geography.

**BOT 542**
4 (3,3)
Bryology: PR: BOT 320 or C.I. A lecture-laboratory survey course on the diversity and classification of mosses, liverworts and hornworts with special emphasis on those found in Florida.

**BOT 549**
5 (3,6) S, odd years
Plant Biosystematics: PR: BOT 345. Studies of evolutionary relationships among plant taxa and populations utilizing cytological, morphological, and biochemical techniques.

**BOT 647**
4 (3,3) S, even years
Field Botany: PR: 12 hours in biological sciences or science teaching experience or C.I. Classification and identification among lower and higher plant groups with emphasis on field experience. Major reference sources reviewed.

**BUSINESS ADMINISTRATION**

**BADM 301**
3 (3,0) F,W,S
Business Concepts: PR: Junior standing. The relationship of business and society. Discussion sections are devoted to developing the skill of solving organization problems. Not useable for BSBA degree credit.

**BADM 324**
3 (3,0) F,W,S,Su
Business Operations Management. Introduction to the management of operation systems found in goods — creating functions, service-generating functions, distribution functions and governmental functions.

**BADM 371**
3 (3,0)
Legal Environment of Business: PR: Junior standing. The presentation of law as an expanding social and political institution in the environment of the business enterprise.

**BADM 372**
3 (3,0)

**BADM 373**
3 (3,0)
Business Law: PR: BADM 371. (BADM 372 desirable). An examination of the law underlying the transfer and sale of goods, commercial paper and secured transactions including their interaction with the commercial environment.

**BADM 374**
3 (3,0) S
Property Law: PR: BADM 371 or C.I. Includes bailments, real and personal property, and security interests therein, insurance, suretyship and guaranty.

**BADM 444**
3 (3,3)
International Business Operation: PR: Senior standing or C.I. An integra-
tion of economics and functional areas of business focused upon the problems of managing international business operations through cases emphasizing financial and marketing problems.

**BADM 485**  
Business Policies: PR: Senior standing, completion of core requirements. The student is expected to utilize the subject matter in the business core and his major in analyzing business problems. Written cases are required.

**BADM 490**  

**BADM 501**  

**BADM 601**  
Operations Research Models for Business: PR: Graduate Standing and ECON 521 or equivalent. Quantitative techniques useful for the solution of business problems. Mathematical model building to aid the decision-making process is stressed.

**BADM 611**  

**BADM 621**  
Business Policy and Responsibility: PR: Graduate Standing and all foundation courses or equivalent. Functions and responsibilities of management, motivation of the business man and factors governing business decisions.

**BADM 637**  
Simulation of Dynamic Systems: PR: Graduate Standing. A survey of techniques for conducting simulation experiments on digital computers. These experiments involve mathematical and logical models of a business or economics system.

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**CHEMISTRY**

**CHEM 111**  
General Chemistry (Fundamentals): An introductory study of the fundamental concepts of chemistry, oriented toward AHS and Biology Education majors.

**CHEM 112**  
General Chemistry (Organic): PR: CHEM 111. A survey of organic chemistry stressing its applications to our society. The chemistry of functional groups will be related to industrial and natural processes.

**CHEM 113**  
General Chemistry (Biochemistry): PR: CHEM 112. A conceptual approach to the chemistry of living systems.

**CHEM 115**  
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 261</td>
<td>4 (4,0)</td>
<td>F,W,Su</td>
</tr>
<tr>
<td>Chemistry Fundamentals I: PR: High School Chemistry or CHEM 111. Basic physical theory of chemical reactivity, atomic structure, chemical bonding, periodicity, stoichiometry, equilibria, thermodynamics, and kinetics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 262</td>
<td>3 (3,0)</td>
<td>F,W,S</td>
</tr>
<tr>
<td>CHEM 263</td>
<td>3 (3,0)</td>
<td>W,S,Su</td>
</tr>
<tr>
<td>CHEM 264</td>
<td>1 (0,3)</td>
<td>F,W,S</td>
</tr>
<tr>
<td>Chemistry Fundamentals Laboratory: PR: CHEM 111 or CHEM 261. Illustration of chemical principles and introduction to the techniques of inorganic and physical chemistry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 265</td>
<td>2 (1,3)</td>
<td>F,S</td>
</tr>
<tr>
<td>CHEM 266</td>
<td>4 (4,0)</td>
<td>F,W</td>
</tr>
<tr>
<td>CHEM 267</td>
<td>3 (3,0)</td>
<td>W,S</td>
</tr>
<tr>
<td>CHEM 268</td>
<td>3 (3,0)</td>
<td>S,Su</td>
</tr>
<tr>
<td>CHEM 269</td>
<td>2 (0,6)</td>
<td>W,S</td>
</tr>
<tr>
<td>Organic Laboratory Techniques I: PR: CHEM 321. An introduction to the laboratory techniques of organic chemistry including the preparation, reaction, and analysis of organic compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 270</td>
<td>2 (0,6)</td>
<td>F</td>
</tr>
<tr>
<td>Organic Laboratory Techniques II: PR: CHEM 322 and CHEM 324. Open-end laboratory to develop synthesis, techniques and structure elucidation skills.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 271</td>
<td>3 (3,0)</td>
<td>W</td>
</tr>
<tr>
<td>Clinical Biochemistry: PR: CHEM 322. The biochemistry of proteins, carbohydrates, lipids, and nucleic acids will be developed and used to analyze health-related problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 272</td>
<td>3 (2,3)</td>
<td>F,W</td>
</tr>
<tr>
<td>CHEM 273</td>
<td>3 (1,6)</td>
<td>W,S</td>
</tr>
<tr>
<td>Analytical Chemistry II: PR: CHEM 351. Continuation of CHEM 351.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 274</td>
<td>5 (3,6)</td>
<td>F</td>
</tr>
<tr>
<td>Clinical Analytical Chemistry: PR: CHEM 263 and CHEM 264. The theory and practice of analytical chemistry as it pertains to the health sciences, including statistics, acid-base analysis electrometric methods, spectroscopy and chromatography.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 275</td>
<td>5 (4,2)</td>
<td>F</td>
</tr>
<tr>
<td>Physical Chemistry I: PR: CHEM 263, PHYS 212, and MATH 322. Rigorous treatment of atomic and molecular structure, thermodynamics, kinetics, and chemical bonding.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 276</td>
<td>3 (3,0)</td>
<td>W</td>
</tr>
<tr>
<td>Physical Chemistry II: PR: CHEM 361. Continuation of CHEM 361.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHEM 363 3 (3,0) S

CHEM 364 2 (0,6) W
Physical Chemistry Laboratory I: PR: CHEM 351 and CHEM 361. Classical as well as modern instrumental techniques coupled with computer data processing to measure physical properties and determine atomic and molecular parameters.

CHEM 365 2 (0,6) S
Physical Chemistry Laboratory II: PR: CHEM 362 and CHEM 364. Continuation of CHEM 364.

CHEM 364 2 (0,6) W
Physical Chemistry Laboratory I: PR: CHEM 351 and CHEM 361. Classical as well as modern instrumental techniques coupled with computer data processing to measure physical properties and determine atomic and molecular parameters.

CHEM 365 2 (0,6) S
Physical Chemistry Laboratory II: PR: CHEM 362 and CHEM 364. Continuation of CHEM 364.

CHEM 421 3 (3,0) F, odd years

CHEM 422 3 (3,0) F, even years
Advanced Organic Chemistry II: PR: CHEM 323 and CR: CHEM 361. A study of class reactions from a mechanistic and synthetic viewpoint and including recent and developing areas of importance.

CHEM 431 4 (4,0) S

CHEM 441 3 (3,0) F,W

CHEM 442 3 (3,0) W,S
Biochemistry II: PR: CHEM 441. Continuation of CHEM 441.

CHEM 443 3 (3,0) S

CHEM 444 2 (0,6) W
Biochemical Methods: PR: CHEM 113 or CHEM 441, and CHEM 352. A laboratory course stressing the application of the chemical arts to the separation, identification, and quantification of materials of biological significance.

CHEM 450 3 (1,6) W, even years
Analytical Methods Development: PR: CHEM 352. A lecture-laboratory course in which students propose and evaluate procedures for inorganic and organic analyses.

CHEM 451 5 (3,6) F
Advanced Analytical Laboratory Technique: PR: CHEM 323, CHEM 352, and CHEM 363. A lecture-laboratory course designed to give in-depth coverage to modern methods of analysis including electrochemistry, spectroscopy, and separation techniques.

CHEM 461 3 (3,0) S, even years

CHEM 471 3 (2,3) S, odd years
Nuclear and Radiochemistry: PR: CHEM 352 and CR CHEM 362. A lecture-laboratory course examining theories of fundamental particles, the chemical effects of nuclear transformations and the special uses of isotopes.

CHEM 475 3 (3,0) W, odd years
Concepts in Industrial Chemistry: PR: CHEM 361. An introduction to industrial practices emphasizing the application of chemical principles in the development of a commercial process or product.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 481</td>
<td>3</td>
<td>(3,0)</td>
<td>Chemistry in Society: Chemical processes related to everyday living and/or topics of current concern to society. Meets advanced ESP requirements: designed for non-majors.</td>
</tr>
<tr>
<td>CHEM 501</td>
<td>2</td>
<td>(2,0) F</td>
<td>Chemical Structure I: PR: CHEM 323, 352, and 363; or equivalent. Concepts in molecular structure and the relationships between structure and the chemical and physical properties of a substance.</td>
</tr>
<tr>
<td>CHEM 504</td>
<td>2</td>
<td>(2,0) F</td>
<td>Chemical Dynamics I: PR: CHEM 363 or equivalent. Dynamics of chemical reactions and physical processes including equilibrium systems catalysis, transport processes and physical phenomena at interfaces.</td>
</tr>
<tr>
<td>CHEM 505</td>
<td>2</td>
<td>(2,0) W</td>
<td>Chemical Dynamics II: PR: CHEM 504. Continuation of CHEM 504.</td>
</tr>
<tr>
<td>CHEM 506</td>
<td>2</td>
<td>(2,0) S</td>
<td>Chemical Dynamics III: PR: CHEM 505. Continuation of CHEM 505.</td>
</tr>
<tr>
<td>CHEM 507</td>
<td>2</td>
<td>(2,0) F</td>
<td>Chemical Synthesis I: PR: CHEM 323, 324, and 363; or equivalent. Survey of chemical synthesis from the standpoint of planning a synthesis, intermediates, special techniques, protection of functional groups, experimental design and optimization of reaction conditions.</td>
</tr>
<tr>
<td>CHEM 509</td>
<td>2</td>
<td>(2,0) S</td>
<td>Chemical Synthesis III: PR: CHEM 508. Continuation of CHEM 508.</td>
</tr>
<tr>
<td>CHEM 671</td>
<td>3</td>
<td>(1,6) F</td>
<td>Separation Processes: PR: CHEM 324 &amp; 363; or equivalent. A study of the basic operations utilized in separation processes. Topics will include distillation, azeotropic distillation, solvent extraction, absorption, crystallization, filtration and ion exchange.</td>
</tr>
<tr>
<td>CHEM 672</td>
<td>3</td>
<td>(3,0) W</td>
<td>Chemical Processes: PR: CHEM 671 or equivalent. A case study approach which reviews the sequence and strategy involved in the development of selected chemical processes.</td>
</tr>
<tr>
<td>CHEM 673</td>
<td>3</td>
<td>(2,3) S</td>
<td>Process Kinetics and Control: PR: CHEM 352 and 672; or equivalent. A case study approach analyzing kinetic data and techniques used in the design of reactors and process control systems.</td>
</tr>
<tr>
<td>CHEM 674</td>
<td>2</td>
<td>(2,0) F</td>
<td>Chemical Process Economics: PR: GI. Consideration of the various cost factors involved in the economics of a chemical process and methods used in evaluating relative economics of various processes.</td>
</tr>
</tbody>
</table>

**CIVIL ENGINEERING & ENVIRONMENTAL SCIENCES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEES 301</td>
<td>3</td>
<td>(3,0)</td>
<td>Environmental Engineering Biology: PR: ENGR 152. Principles of biology applicable to the engineering of water supply and treatment, wastewater treatment and disposal, waste degradation and environmental quality analysis and protection.</td>
</tr>
</tbody>
</table>
CEES 321 3 (2,3)
Surveying: CR: Junior Standing. Theory and field practice in engineering measurements, and the reduction and adjustment of data.

CEES 322 3 (2,2)
Engineering and Environmental Geology: Principles of physical geology with emphasis on engineering and environmental topics. Study of land forms, geologic maps, geologic structure, weathering, groundwater, mass wasting, and earthquakes.

CEES 351 4 (4,0)

CEES 401 3 (2,3) F
Environmental Engineering - Chemical Foundations I: Engineering applications of physical and analytical chemistry in the treatment of water and wastewater.

CEES 402 3 (2,3) W
Environmental Engineering - Chemical Foundations II: PR: CEES 401 or C.I. Continuation of CEES 401 to include organic chemistry and biochemistry and their application in environmental engineering.

CEES 411 4 (4,0) F

CEES 412 4 (4,0) W
Environmental Engineering — Wastewater: CR: ENGR 332. Drainage systems, collection and transmission of wastewater, channel flow, biodegradation of organic wastes, principles of wastewater treatment, effluent and sludge handling and disposal.

CEES 414 3 (3,0) S
Sanitary Systems Design: PR: CEES 411 and 412 or C.I. Planning capacity and design of water distribution systems, sanitary sewerage, storm drainage systems, water and wastewater treatment plants.

CEES 417 4 (4,0)
Environmental Health: PR: ENGR 361. Selected topics in industrial hygiene, occupational and radiological health hazards, and pollution effects, such as those due to air, noise, solid wastes, etc.

CEES 431 4 (4,0)
Geotechnical Engineering I: PR: ENGR 312 and ENGR 332. Nature of soils, classification, engineering properties, consolidation, seepage, compaction and soil investigation.

CEES 451 4 (4,0)

CEES 455 3 (2,2)
Structural Steel Design: PR: ENGR 312. Design of steel structural members. Selected topics in beam design, column design, plastic design, connections and built-up members.

CEES 457 3 (2,2)

CEES 461 3 (3,0)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEES 501</td>
<td>3 (2,3) F</td>
<td>Environmental Engineering — Chemistry I: Study of fundamental principles of physical and analytical chemistry applicable to treatment of water and wastewater. Chemical thermodynamics, chemical kinetics, chemical equilibria, water analysis.</td>
</tr>
<tr>
<td>CEES 502</td>
<td>3 (2,3) W</td>
<td>Environmental Engineering — Chemistry II: PR: CEES 501 or C.I. Continuation of CEES 501 to include study of fundamental principles of organic chemistry and biochemistry as applied to environmental quality control, biodegradation of wastes, and wastewater analysis.</td>
</tr>
<tr>
<td>CEES 503</td>
<td>4 (4,0)</td>
<td>Environmental Impact Assessment: PR: C.I. Evaluating, estimating, and predicting the effects of structures, processes, and systems upon the environment and the effects of environmental changes upon human populations.</td>
</tr>
<tr>
<td>CEES 518</td>
<td>3 (3,0)</td>
<td>Hydraulic Engineering: Application of principles of fluid mechanics to engineering problems. Topics include open channel flow, flow in conduits, hydraulic machinery, reservoir planning, and other hydraulic works.</td>
</tr>
<tr>
<td>CEES 531</td>
<td>4 (4,0)</td>
<td>Geotechnical Engineering II: PR: CEES 431 or C.I. Earth pressures, settlements, bearing capacity, pile foundations, slope stability, stabilization.</td>
</tr>
<tr>
<td>CEES 561</td>
<td>4 (4,0)</td>
<td>Design Elements of Transportation Systems: PR: CEES 461. Study of geometric and construction design elements in the engineering of transportation systems.</td>
</tr>
<tr>
<td>CEES 563</td>
<td>4 (4,0)</td>
<td>Traffic Engineering: PR: CEES 461 &amp; ENGR 371. Study of operator and vehicle characteristics, street capacity, signals, signs and markings.</td>
</tr>
<tr>
<td>CEES 581</td>
<td>4 (4,0)</td>
<td>Water Resources Engineering: Systems identification and solution to complex water allocation problems, including hydrology, hydraulics, pressure conduits, open channels, and other engineering designs and operations using economic analysis and operations research techniques.</td>
</tr>
<tr>
<td>CEES 601</td>
<td>4 (4,0)</td>
<td>Unit Operations and Processes of Sanitary Engineering I: PR: CEES 411 and CEES 412. Theory and design of physical, chemical, and biological operations and processes used in sanitary engineering.</td>
</tr>
<tr>
<td>CEES 602</td>
<td>4 (4,0)</td>
<td>Unit Operations and Processes of Sanitary Engineering II: Continuation of CEES 601. Theory and design of physical, chemical, and biological operations and processes.</td>
</tr>
<tr>
<td>CEES 603</td>
<td>2 (1,3)</td>
<td>Unit Operations and Processes Laboratory: PR: CEES 502 or C.I. Laboratory exercises in physical, chemical, and biological processes.</td>
</tr>
<tr>
<td>CEES 604</td>
<td>3 (3,0)</td>
<td>Water and Wastewater Treatment Systems: PR: C.I. Integration of unit operations and processes into treatment systems. Emphasis will be placed on functional hydraulic, and economic design using computers.</td>
</tr>
<tr>
<td>CEES 614</td>
<td>3 (3,0) S</td>
<td>Water and Wastewater Systems Design: PR: CEES 411 and 412 or C.I. Project course on design of water and wastewater systems.</td>
</tr>
</tbody>
</table>
CEES 615
Atmospheric Pollution Control: Atmospheric composition and dynamics, sources and nature of contaminants, toxicity thresholds and biological significance, engineering methods of measurement and control.

CEES 618
Solid Wastes Management: Study of the extent and characteristics of the solid waste problem, collection and disposal systems, and environmental interfaces and effects with emphasis on micro and macro modeling.

CEES 620
Groundwater and Seepage. Theories of groundwater movement, geological factors, analysis techniques, etc. Emphasis on practical considerations.

CEES 625
Advanced Topics in Engineering Geology: Geologic aspects of major civil engineering works including dams, reservoirs, urban development, transportation systems, etc.

CEES 630
Foundation Analysis and Design I: Analysis and design of fundamental foundation units including spread footings, combined footings, mats, and retaining walls.

CEES 631
Foundation Analysis and Design II: Continuation of topics in CEES 630 including sheet piles and pile foundations.

CEES 651
Structural Analysis: PR; CEES 351 and 451 or equivalent. Application of modern structural analysis to include optimization and matrix methods to the design of real structures.

CEES 655
Steel Design: PR; CEES 451 and 455 or equivalent. Design of complete steel structures to include economics, plastic design and real building examples.

CEES 657
Concrete Design: PR; CEES 451 and 457 or equivalent. Design of concrete structures to include economics, slabs, prestressed concrete, and real building examples.

CEES 661
Land Use and Transportation Planning: PR: CEES 461, 471, or C.I. Study of interrelated factors in land use and transportation planning.

CEES 665
Mass Transportation Systems: PR: C.I. Planning, design, construction, operation and administration of mass transportation systems.

CEES 671
Public Works Engineering: PR: C.I. Principles and practices, operation and maintenance, equipment, utilities, planning and design, etc.

CEES 672
Regional Planning, Design, and Development: PR: CEES 661. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.

**COMMUNICATION**

COM 100
Basic Communication: 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 301
Communication as a Behavioral Science: Basic principles of the behavioral science approach to the study of contemporary communication.
COM 310  
**History of the Motion Picture:** Development of the film industry, its social and economic impact. Same as THA 310.

COM 311  
**Business and Professional Communication:** PR: SPE 101 or C.I. Theoretical and practical training in effective presentational speaking for business and professions.

COM 312  
**Leadership Through Oral Communication:** A theoretical and practical investigation of leadership in oral communication situations, principles of parliamentary law, and approaches to problem solving.

COM 313  
**Interpersonal Communication:** Nature of the communication process; variables affecting the process and the individuals involved. Analysis of communication models, interactant behavior, situational cues, verbal and nonverbal messages.

COM 320  
**Introduction to Communicative Disorders:** Etiology, symptoms, and methods of diagnosing and treating communicative disorders. For beginning and prospective majors in Communicative Disorders.

COM 321  
**Biolinguistics: The Communicative Dyad:** Species-inherited communicative bonding. Evolution of mother-infant dyads in mankind and animals. Foundations of biolinguistic and social imprinting with implications for communicative disorders.

COM 350  

COM 363  
**Group Interaction and Decision Making:** A study of small group processes. Attention is given to problem solving, leadership emergence, conformity behavior, and group member role responsibilities.

COM 377  
**Differential Diagnosis in Communication Disorders:** PR: SPE 261, 364, COM 320, 321. Lectures, readings, observations and participation in the evaluative procedures concerned with speech and language skills of the handicapped.

COM 400  
**Opinion and the Mass Media:** Role of the mass media in influencing public opinion; techniques of opinion measurement, and impact of opinion polls on voters.

COM 401  
**Communicative Disorders: Articulation:** PR: SPE 261, 364, COM 320, PSY 301. Survey of articulation disorders and their management. Observations required.

COM 402  

COM 403  

COM 404  
**Communicative Disorders: Stuttering:** PR: SPE 261, 364, COM 320 and PSY 301. Survey of rhythm disorders and their management. Observations required.
COM 405  

COM 406  
Basic Instrumentation for Communicative Disorders: PR: C.I. Calibration and instrumentation for communicative sciences. Basics of circuitry as well as operation and minor repairs of audiological and speech pathology.

COM 410  
Social Responsibilities of the Mass Media: Relationships between the mass media and society; examination of social and ethical responsibilities of the media.

COM 411  
Legal Responsibilities of the Mass Media: Legal rights and restrictions, including Constitutional guarantees, libel, invasion of privacy, and contempt of court.

COM 414  
Mass Communication and Government: Role, responsibilities, and non-legal problems of both the government and press in the process of conveying governmental news to the public.

COM 415  
Informational Communication: An examination of available communication systems (non-technical) and their utilization within business, educational, entertainment, industrial, medical, and military organization.

COM 420  
Practicum in Communication: PR: C.I. May be repeated three times for credit.

COM 421  
Current Affairs Analysis: An analytical approach to the handling of the major news events through mass communications, with emphasis on their social, economic, political, cultural and historical impact.

COM 429  
Mass Media and Popular Culture: An impact study of mass media upon American culture past to present.

COM 440  
Clinical Observation and Practice: PR: C.I. Observation and supervised participation in speech pathology and audiology in the university clinic and local clinics.

COM 444  
Speech Science: PR: C.I. A comprehensive study of the physics of sound as related to the vocal mechanism including the use of instrumentation in voice analysis.

COM 445  

COM 450  

COM 451  
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 457</td>
<td>Communication Internship: PR: C.I. Internship in radio, television, film, journalism, public relations, advertising and speech involving practicum at selected communications organizations for one quarter.</td>
<td>1-15</td>
<td>(0,1-15) F,W,S,Su</td>
</tr>
<tr>
<td>COM 460</td>
<td>Group Dynamics: A study of human behavior in group situations.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 461</td>
<td>Nonverbal Communication: Review of current behavioral research in such areas as proxemics, kinesics, physical characteristics, tactile communication and paralanguage. Lectures are supplemented by frequent nonverbal exercises.</td>
<td>4</td>
<td>(4,0) F,S</td>
</tr>
<tr>
<td>COM 462</td>
<td>Attitudes and Communication: A survey of the immediate and direct ways in which persuasive communications and social groups come to influence attitudes.</td>
<td>4</td>
<td>(4,0) S</td>
</tr>
<tr>
<td>COM 463</td>
<td>Studies in Listening: Analysis of current trends, professional literature, and resource materials bearing upon the teaching of listening. Practice in listening; preparing listening experiences; oral and written reports.</td>
<td>4</td>
<td>(4,0) W</td>
</tr>
<tr>
<td>COM 472</td>
<td>Rhetoric of Social and Political Action: PR: Junior Standing. A critical investigation of social and political speaking within contemporary American society including agitative rhetoric of political dissent.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 501</td>
<td>Speech Communication Instruction: PR: C.I. Communication models as teaching devices, design of communication curricula, instructional media with speech practicum and classroom criticism and evaluation.</td>
<td>4</td>
<td>(4,0) F</td>
</tr>
<tr>
<td>COM 507</td>
<td>Freelance Writing: PR: Evidence of satisfactory writing skills. A study of the techniques and procedures of freelance writing, including the preparation of several manuscripts.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 510</td>
<td>Survey of Communicative Disorders: A survey of speech, language and hearing disorders for habilitative personnel and other interested professionals.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 511</td>
<td>Communicative Disorders Programs for the Public Schools: PR: C.I. Methods and techniques for the public school clinician; including organization of public school programs. Observations required.</td>
<td>5</td>
<td>(5,0)</td>
</tr>
<tr>
<td>COM 512</td>
<td>Audiology: PR: C.I. Advanced techniques in pure-tone speech, and automatic audiometry, with emphasis on interpretation of audiograms and differential diagnosis. Practice required.</td>
<td>4</td>
<td>(4,0) W</td>
</tr>
<tr>
<td>COM 513</td>
<td>Auditory Problems of Infants and Children: PR: C.I. Development of sensory perception, auditory deprivation tests, and testing techniques with the neonate, infant, and young child.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 514</td>
<td>Hearing Conservation: PR: C.I. Information regarding the prevention of hearing loss and the establishing of hearing conservation programs.</td>
<td>4</td>
<td>(4,0)</td>
</tr>
<tr>
<td>COM 520</td>
<td>Psycholinguistics: Foundations of language in affective consciousness and the human nervous system. Pragmatic analysis of word meaning and its precise scientific measurement. Implications for Communicative Disorders.</td>
<td>4</td>
<td>(4,2) S</td>
</tr>
<tr>
<td>COM 568</td>
<td>Evolution of Communication Theory: General Survey: Major communication</td>
<td>5</td>
<td>(4,0) W</td>
</tr>
</tbody>
</table>
trends from classical era to the present. Comparison of Aristotelian and non-Aristotelian rhetorics. Contributions of principal figures will be discussed.

**COM 602** 4 (4,0) F  
**Modern Communication Theory:** Comparative analysis of theories and models of human communication: behavioral systems, encoding and decoding processes, interaction variables, and social context.

**COM 603** 4 (4,0) W  
**Information and Educational Systems:** PR: C.I. Sources, processing and transmittal of educational and informational materials (software) used in educational broadcast systems, information retrieval systems, learning machines, etc.

**COM 605** 1-15 (0,1-15)  
**Clinical Practice in Language and Speech Pathology:** PR: COM 405 and C.I. Advanced clinical practice in diagnosis and treatment of communicative disorders. May be repeated with change of content, not to exceed a total of 15 hours.

**COM 612** 4 (4,0) W  
**Comparative International Communication Organizations:** A study of the principal mass communication organizations of the world.

**COM 613** 4 (4,0)  
**Communication and Society:** The importance of communications in societal stress situations, with emphasis on current problems.

**COM 617** 4 (4,0)  
**Governmental Public Relations:** PR: C.I. Emphasis study of campaign planning, image and public affairs activities of political aspirants and executive governmental offices at the city, county, state and federal levels.

**COM 620** 4 (4,0)  
**Studies in Persuasion:** Survey and evaluation of experimental research in persuasion.

**COM 621** 4 (4,0)  
**Persuasion in the Media:** Study of persuasive campaign with focus upon ethics, methodology, and strategies toward accomplishing the communication end.

**COM 622** 4 (4,0) W  
**Small Group Communication:** PR: C.J. A study of communication and its effect on small group behavior.

**COM 625** 4 (4,0)  
**Problems in Broadcast Journalism:** PR: C.I. Analysis of electronic journalistic policies, sources and control of information.

**COM 628** 4 (4,0)  
**Audience Measurement:** PR: C.I. Examination and review of audience measurement techniques. Individual assignments for compilation and analysis of measurement data.

**COM 630** 4 (4,0)  
**Communications Management:** PR: C.I. Analysis and developments, with reference to particular media. Organizational theory, structure and behavior. Management principles and operations.

**COM 635** 4 (4,0) W  
**Legal Aspects of Mass Communication Law:** PR: C.I. Further study into the legal rights and restrictions affecting the mass media.

**COM 640** 4 (4,0) W  
**Effects of Advertising on Society:** An in-depth study of advertising's effects on consumer behavior, societal mores and media economics.

**COM 645** 3 (3,0)  
**Speech of the Laryngectomee:** PR: C.I. Basic principles and practice for developing and improving the speech of the laryngectomee.
**COM 646**  4 (4,0)  
Aphasia: PR: C.I. Etiology, diagnostic techniques and management of the adult aphasic patient.

**COM 647**  4 (4,0)  
Auditory Amplification: Physical characteristics and clinical aspects of auditory amplifiers for the hearing handicapped. Clinical observations required.

**COM 649**  4 (4,0)  

**COM 660**  4 (4,0)  
Advanced Studies in Communicative Disorders: Articulation: Specific diagnostic techniques and therapeutic procedures for articulation disorders.

**COMPUTER SCIENCE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 101</td>
<td>4 (4,0)</td>
<td>Introduction to Computer Science: History, typical computer; elements and symbology; number systems; arithmetic operations; control and data flow; peripheral components; memory devices; case study of an application of computers.</td>
</tr>
<tr>
<td>COMP 102</td>
<td>3 (3,0)</td>
<td>Computer Programming: PR: MATH 110 or the equivalent. Problem definitions, algorithms, flow charts, digital computer programming using a higher level language (FORTRAN).</td>
</tr>
<tr>
<td>COMP 205</td>
<td>3 (3,0)</td>
<td>Algorithmic Processes I: PR: MATH 110 or equivalent. Use of computers, problem solving, algorithms, computer organization, assignment statements, data types, input/output, program logic, looping, arrays, selected projects.</td>
</tr>
<tr>
<td>COMP 206</td>
<td>3 (3,0)</td>
<td>Algorithmic Processes II: PR: COMP 205. Computing systems, procedures, storage allocation, parameter access, recursion, debugging techniques, selected projects.</td>
</tr>
<tr>
<td>COMP 301</td>
<td>3 (3,0)</td>
<td>Computing Processes: PR: At least one programming course. An accelerated course in algorithmic and computing concepts for the student with significant knowledge of at least one programming language. Credit may not be earned in both COMP 301 and the COMP 205, 206 sequence.</td>
</tr>
<tr>
<td>COMP 302</td>
<td>3 (3,0)</td>
<td>Programming and Numerical Methods: CR: MATH 322. Problem definitions, algorithms, flow charts, digital computer programming using FORTRAN for numerical applications.</td>
</tr>
<tr>
<td>COMP 303</td>
<td>3 (3,0)</td>
<td>Computer Fundamentals for Business Applications I: History of computers; processing information; manual information processing systems; introduction to electronic computer systems; storage of information; solving problems; preparation of common business reports.</td>
</tr>
<tr>
<td>COMP 304</td>
<td>3 (3,0)</td>
<td>Computer Fundamentals for Business Applications II: PR: COMP 303 or equivalent. Introduction to business systems, business parameters, information flow, business data processing terminology, program creation, documentation, and operations orientation.</td>
</tr>
<tr>
<td>COMP 305</td>
<td>4 (4,0)</td>
<td>Assembly Language Programming Laboratory: PR: COMP 206 or COMP 301 or COMP 302. Computer structure and assembly language.</td>
</tr>
</tbody>
</table>
systems organization, micro-programming, symbolic assembly systems, macros, program segmentation and linkage, systems and utility programs, selected projects using a mini-computer.

COMP 307 3 (3,0)
Algorithmic Processes III: PR: COMP 206 or COMP 301. Strings, lists, trees, graphs, files, job control language, numeric and non-numeric applications, selected projects.

COMP 311 3 (3,0)

COMP 331 4 (4,0)
Discrete Structures in Computer Science: PR: COMP 307 and a course in statistics. Recursion; algorithms for listing permutations, combinations, samples, and selections; Markov algorithms; theory of directed and undirected graphs; applications to computer science.

COMP 340 3 (3,0)
Data Structures and Operating Systems for Business: PR: COMP 304. Examination of data set structures and relations to file activity. Operating system services, multiprogramming, accounting, background-foreground processing, overhead cost analysis.

COMP 361 4 (4,0)

COMP 387 3 (3,0)
Computer Programming with Business Applications: PR: Any COMP Course. COBOL programming, data processing applications.

COMP 388 3 (3,0)
Advanced COBOL: PR: COMP 387. Processing of sequential, indexed and random files, advanced topics and laboratory projects.

COMP 401 4 (4,0)
Computer Organization I: PR: COMP 306, EECS 311. Processor characteristics, peripheral equipment characteristics, information representation, introduction to data communications.

COMP 405 4 (4,0)
Data Structures: PR: COMP 305 and COMP 307. Basic concepts of data; linear lists, strings, arrays, and orthogonal lists; ordering or sorting techniques; recursion; string and list processing languages.

COMP 408 4 (4,0)

COMP 411 4 (4,0)
Systems Programming I: PR: COMP 306 and COMP 405. Task scheduling, file management, file security, multi-programming, communication between system components, system logs and accounting and status reporting.

COMP 481 4 (4,0)
Computer Processing of Statistical Data: PR: STAT 402 and knowledge of FORTRAN, or C.I. Use of computers in statistical analysis; error analysis; Monte Carlo calculations; simulation; matrix calculations; regression; non-linear estimation; principal components; factor analysis; analysis of variance/covariance.

COMP 484 3 (3,0) W
Health Information Systems: PR: COMP 303. Survey of the current health information systems, application of automated data processing techniques to the health field, manual systems needed to support them.
COMP 487  \hspace{3mm} 3 (3,0)  
Computer Processing of Business Data I: PR: Junior standing and COMP 303. Computers in business data processing; applications in accounting, payroll, inventory control, and production control; file organization, development, and control; on-line systems and controls.

COMP 488  \hspace{3mm} 3 (3,0)  

COMP 489  \hspace{3mm} 3 (3,0)  

COMP 501  \hspace{3mm} 3 (3,0)  

COMP 503  \hspace{3mm} 4 (4,0)  
Hardware Concepts: PR: COMP 511 or equivalent. Storage organization and searching, logic, data-flow, computer architecture.

COMP 505  \hspace{3mm} 4 (4,0)  

COMP 508  \hspace{3mm} 4 (4,0)  
Programming Languages II: PR: COMP 408. List Processing, string manipulation, data description, and simulation languages.

COMP 511  \hspace{3mm} 4 (4,0)  

COMP 521  \hspace{3mm} 3 (3,0)  
Compiler Structure I: PR: COMP 405 and COMP 408. Syntax analysis; bootstrapping and metacompilers; languages for compiler writing, storage allocation, mapping, dynamic allocation; scanners; symbol tables; code emitters; one-pass and multi-pass systems; code optimization.

COMP 522  \hspace{3mm} 3 (3,0)  

COMP 561  \hspace{3mm} 4 (4,0)  

COMP 565  \hspace{3mm} 4 (4,0)  
Scientific Applications Concepts: PR: COMP 505 or the equivalent; and MATH 324. Use of computers in science and engineering, techniques and applications.

COMP 585  \hspace{3mm} 4 (4,0)  

COMP 601  \hspace{3mm} 4 (4,0)  
Computer Organization II: PR: COMP 503 or the equivalent. Computer system design problems, memory utilization, storage management, addressing, control and input-output, specific examples of computer architecture, array computers, variable structure computers.

COMP 602  \hspace{3mm} 4 (4,0)  

COMP 605  \hspace{3mm} 3 (3,0)  
Economics of Computers: PR: COMP 585 and a course in microeconomics;
The computer industry, terms and conditions of sale and rental, cost and effectiveness of computer systems, pricing computer services.

**COMP 607**  
**Philosophy of Programming:** PR: 8 hours of programming. Program organization, structured programming and allied topics, case studies and projects.

**COMP 611**  
**Systems Programming II:** PR: COMP 503 and 511; or equivalent. Batch process systems, parallel processing, multiprogramming and multiprocessing, user services and facilities.

**COMP 612**  
**Systems Programming III:** PR: COMP 611. Continuation of COMP 611.

**COMP 615**  
**Simulation of Computer Systems:** PR: COMP 511 or equivalent; and IEMS 620. Application of system methodology to hardware and software systems.

**COMP 617**  
**Information Organization and Retrieval:** PR: COMP 511 or the equivalent. Models for structured information, analysis of information content, automatic retrieval systems, evaluation of retrieval effectiveness.

**COMP 618**  
**Computer Graphics Systems:** PR: COMP 511. Systems software and data structures for graphics devices and display processors.

**COMP 651**  
**File Systems:** PR: COMP 601 and COMP 611. Functions of file systems, file system organization and structure, analysis of file systems, data management systems.

**COMP 653**  
**Computer-Based Communications Network:** PR: COMP 585 or the equivalent. Functions of communications systems, communication system hardware, communication system organization and structure, examples.

**COMP 655**  
**Information Analysis:** PR: COMP 585 or the equivalent. Determination of information requirements and alternatives, basic tools.

**COMP 656**  
**Information System Design:** PR: COMP 655. Tools and objectives, hardware/software selection and evaluation, data base development, program development, system implementation, post implementation and analysis. This course emphasizes the distributed processing approach.

**COMP 661**  
**Numerical Analysis II:** PR: COMP 561. Mathematically stability and ill-conditioning, discretization error, convergence of iterative methods, rounding error.

**COMP 681**  
**Managing the Computer Professional:** PR: COMP 585 and MGMT 501; or C.I. The programming group, team and project tasks, personality factors, motivating, training, experience.

**COOPERATIVE EDUCATION**

**COED 100**  
Cooperative Education, Freshman Year

**COED 200**  
Cooperative Education, Sophomore Year

**COED 300**  
Cooperative Education, Junior Year

**COED 400**  
Cooperative Education, Senior Year

*May be repeated*
CRJ 201
Law Enforcement: A comprehensive survey of the history and philosophy of law enforcement. The role of the police in the system of criminal justice will be emphasized.

CRJ 207
Criminal Investigation: A comprehensive survey of the modern methods and procedures used in the investigation and solution of criminal offenses.

CRJ 300
Crime in America: A survey of crime and criminality in the United States with emphasis on crime data and its weaknesses, theories of causation, and types of criminal behavior.

CRJ 301
Criminal Law in Action: Basic concepts of criminal law, their origin and development; constitutional and procedural rules; and Federal and State relations in the administration of justice.

CRJ 302
Administration of Justice: The broad system of criminal justice in America, and examination of various goals and conflicts present within law enforcement, court and corrections subsystems.

CRJ 303
Municipal Police Administration: PR: CRJ 201. Advanced study of contemporary operational concepts of administration with an emphasis on function, rather than structure.

CRJ 304
The Police Managers: PR: C.I. Elements of first-line supervision and executive development. Administrative leadership; its situational nature; methods and traits; recent theories and research on leadership.

CRJ 305
Justice of Manpower for Science and Technology: Study of both operational management concepts of various related investigative technological and scientific professions, and the relationship between justice programs and criminal events.

CRJ 310
The Correctional and Penal Systems: Theories, structures and methods of institutions and noninstitutional services in the correctional rehabilitation of criminal and juvenile offenders.

CRJ 311
Probation and Parole: Analysis of probation and parole services and systems: the organization, administration and management of treatment and field services for various types of public offenders.

CRJ 400
Police and the Community: Police relationships with citizenry. Ethnic and social conflict in relation to law enforcement, and how police deal with groups, crowds, gangs and nonconformist cultures.

CRJ 407
Comparative Justice Systems: A survey of contemporary foreign criminal justice systems, operational and philosophical differences emerging from various cultural and legal systems.

CRJ 410
Financial Administration and Budgeting: PR: C.I. Police budgets as instruments of policy making and management. Financial, fiscal, administrative and legal aspects of budgeting.

CRJ 411
Justice Policy and Social Conflict: The effects of social conflicts and political
decisions upon the administration of justice, especially the role assigned law enforcement in dealing with social problems.

CRJ 422
Delinquency Control: Examination of programs and institutions including juvenile court process, intake services, juvenile bureau administration, youth authority programs and drug abuse control.

CRJ 423
Corrections Administration: Organization, administration and operation of short and long term detention facilities or institutions including classification, treatment, security, supervision and prison sub-culture problems.

E

ECONOMICS

ECON 201 3 (3,0) F,W,S,Su
Fundamentals of Economics: An introductory course designed to provide the nonbusiness student with a terminal course in the fundamentals of economics. Not open to business majors.

ECON 202 4 (4,0) F,W,S,Su
Principles of Microeconomics: The determination of prices in a market economy; their 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 4 (4,0) F,W,S,Su

ECON 301 4 (4,0) F,W,S,Su
Intermediate Price Theory: PR: ECON 203. Theoretical analysis of the determination of product and factor prices under different market structures.

ECON 307 4 (4,0) F,W,S,Su
American Economic History: An introduction to the economic development of the United States with emphasis upon agriculture, labor, industrialization, transportation, and banking. (Same as HIST 311).

ECON 311 4 (4,0) F,W,S,Su
Intermediate Money, Income and Employment Theory: PR: ECON 203. Theoretical analysis of the determination of national income and employment, including an examination of the monetary system.

ECON 321 4 (4,0) F,W,S,Su
Quantitative Methods and Business Decision Analysis: PR: STAT 301. The use of statistical methods as scientific tools in the analysis of economics and business problems to aid in the process of decision making.

ECON 328 3 (3,0)
Transportation Economics: PR: 203. Economic characteristics and governmental regulation of public carriers. Consideration of competitive relations between modes of transportation and criteria for public investment in transportation and criteria for public investment in transportation systems.

ECON 331 3 (3,0)
Economics of Labor: PR: ECON 203. A survey of the growth, structure, objectives, and collective bargaining practices of organized labor groups.

ECON 332 3 (3,0)
Manpower and Human Resources: PR: ECON 203. Examines labor as a human resource or human capital. Special emphasis placed upon the changing role of manpower and manpower policies.
ECON 341 3 (3,0)
International Economics: PR: ECON 203. Fundamental principles of international trade and foreign exchange, including the balance of payments and problems of foreign economic policy.

ECON 381 3 (3,0)
Economics of Public Utilities: PR: ACCY 211 and ACCY 212 or ACCY 300, and ECON 203 or C.I. The nature of public utilities, the economics of rate determination, and regulatory policy.

ECON 401 3 (3,0)
Managerial Economics: PR: ECON 203 and ECON 321. The uses of economic analysis in economic decision-making and business policy formulation.

ECON 411 3 (3,0)
Comparative Economic Systems: 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 3 (3,0)

ECON 431 3 (3,0) F,W,S,Su
Public Finance in the American Economy: 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 435 3 (3,0)
Monetary Theory and Policy: 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 3 (3,0)

ECON 461 3 (3,0)
Business and Government: PR: ECON 203. A survey of the most significant public policies affecting business firms.

ECON 471 3 (3,0)
History of Economic Thought: PR: ECON 203. A study of the leading ideas of the major contributors to the development of economic thought.

ECON 501 4 (4,0)
Economic Concepts: PR: Acceptance into the graduate program. Introduction to economic analysis, including the theory of the market: supply, demand and price determination; income distribution; aggregate income and employment determination.

ECON 521 4 (4,0) W,S
Statistics for Business and Economics: PR: Acceptance into the graduate program. Statistical theory and problems relating to business and economics including time series and correlation theory, index number theory and statistical inference.

ECON 523 3 (3,0)
Econometric Methods: PR: Graduate standing and ECON 321 or equivalent. The application of econometric methods to economic theory and problems. Emphasis is placed on the validation of a model.

ECON 525 3 (3,0)
Mathematical Economics: PR: ECON 203 and MATH 223. An introduction to the mathematical tools of modern economic analysis.

ECON 551 3 (3,0)
Economics of Urban Areas: 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 601 3 (3,0)
Economic Analysis of the Firm: PR: Graduate Standing and ECON 501 or equivalent. Commodity price and output determination; factor price determination and functional income distribution; analysis of different types of markets.

ECON 602 5 (5,0)
Price Theory: PR: Graduate standing and ECON 301 or equivalent. An analysis of the theory of consumer choice, the theory of the firm, and the theory of distribution.

ECON 611 3 (3,0)
Aggregate Economics-Income, Unemployment and Growth: PR: Graduate standing and ECON 501 or equivalent. Macroeconomic measurement, theory and policy, designed specifically for the student who possesses a limited grasp of economic analysis.

ECON 612 5 (5,0)
Macroeconomic Theory: PR: Graduate standing and ECON 311 or equivalent. An analysis of the nature and determinants of aggregate output, employment, income, and spending with specific emphasis on the achievement of economic stability.

ECON 621 3 (3,0)
Statistical Models for Business: PR: Graduate Standing and ECON 521 or equivalent. The theory of model analysis including the validation of model assumptions through Monte Carlo analysis and advanced statistical techniques.

ECON 622 5 (5,0)
Statistical Analysis of Economic Data: PR: Graduate standing and ECON 321 or equivalent. A study of the concepts and methods of developing, analyzing, and interpreting measures of economic activity.

ECON 631 3 (3,0)
Public Finance and Financial Policy: PR: Graduate Standing and ECON 501 or equivalent. Analysis of the fiscal role and instruments of government and their effects on the economy; taxation, debt, and fiscal policy.

ECON 635 3 (3,0)
Money, Banking and Economic Activity: PR: Graduate Standing. A study of the institutions in which the money supply is generated and the influence of monetary policy on economic stability and growth.

ECON 636 3 (3,0)
Monetary Theory and Policy: PR: Graduate standing and a course in Money and Banking. An analysis of the fundamental theory underlying the supply of money, demand for money and effects of monetary variables on the level of economic activity.

ECON 641 3 (3,0)
Theory of International Finance and Monetary Institutions: PR: Graduate standing. Analysis of the international money market, international equilibrium and adjustment mechanism, exchange rate variations, balance of payments, capital flows, and effects of international monetary policies.

ECON 642 3 (3,0)
International Trade: PR: Graduate standing. An inquiry into the theory of international trade, commercial policy and economic integration.

ECON 645 3 (3,0)
Economic Development: PR: Graduate standing. Analysis of theories and problems of growth and development with special attention to resource scarcity, population growth, and interaction of foreign trade and internal development.

ECON 647 3 (3,0)
The Economics of Central Planning: PR: Graduate standing. An analysis of
the economics of planning as applied to the economy of the Soviet Union and Soviet type centrally planned economic systems.

**ECON 655** 3 (3.0)
Environmental Economic Analysis: PR: Graduate standing. An investigation of environmental problems, methods of economic analysis, policies of environmental protection and difficulties in making quantitative assessments of environmental damages.

**ECON 661** 3 (3.0)
Labor Economics: PR: Graduate Standing and ECON 501 or equivalent. An investigation into the nature and function of the labor markets, with specific concern for both institutional and non-institutional imbalance.

**ECON 671** 3 (3.0)
History of Economic Thought: PR: Graduate standing. The history and development of Pre-Keynesian economic doctrines with emphasis on classical and post-classical economic thought.

**ECON 681** 3 (3.0)
The Economics of Regulated Industries: PR: Graduate standing. Economic, legal, and administrative concepts of regulation with emphasis on goals, tasks, phases, and procedures of regulation pertaining to transportation, electric, gas, and communications systems.

**ECON 683** 3 (3.0)
Industrial Organization and Performance: PR: Graduate standing. A study of the performance of industries representative of various types of market structures and practices, relative to price and efficiency.

**EDUCATION, ADMINISTRATION AND SUPERVISION**

**EDAD 601** 5 (5,0)
Organization and Administration of Schools: PR: Rank III Certificate or C.I. School organizational patterns kindergarten through junior college. Study of functions such as scheduling, staffing, community relations, design and operation of facilities, financial management.

**EDAD 602** 5 (5,0)
Organization and Administration of Instructional Programs: PR: Rank III Certificate or C.I. Purpose and functions of school learning centers, curricula, media, and establishment of educational priorities; review and analysis of various grouping patterns for individualizing instruction.

**EDAD 603** 4 (4,0)
Legal Aspects of School Operation: PR: Rank III Certificate or C.I. Study of state and federal laws affecting the operation of public schools emphasizing individual rights and responsibilities of students, faculty, and administrators.

**EDAD 611** 4 (4,0)
Educational Supervisory Functions: PR: Rank III Certificate or C.I. Analysis of school supervisory functions in human relations, leadership, personnel administration, and in-service education for instructional improvement.

**EDAD 612** 5 (5,0)

**BUSINESS EDUCATION — DEVELOPMENTAL**

**EDBE 101** 3 (3,1) F,W,S
Introductory Typewriting: For the student with no previous instruction in typewriting. Development of basic elements in using the typewriter as a tool of literacy and communications.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDBE 102</td>
<td>3 (3,1) F.W.S</td>
<td>Typewriting Production I: PR: EDBE 101 or equivalent. Continuation of development of skills in speed and accuracy and introduction to skill building procedures in communications production.</td>
</tr>
<tr>
<td>EDBE 103</td>
<td>3 (3,1) F.W.S</td>
<td>Typewriting Production II: PR: EDBE 102 or equivalent. Expansion of communications production development, speed and accuracy.</td>
</tr>
<tr>
<td>EDBE 201</td>
<td>3 (3,1)</td>
<td>Principles of Shorthand I: 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.</td>
</tr>
<tr>
<td>EDBE 202</td>
<td>3 (3,1)</td>
<td>Principles of Shorthand II: PR: EDBE 102 and EDBE 201 or equivalents. A continuation in the study of shorthand theory, vocabulary development, and speed building.</td>
</tr>
<tr>
<td>EDBE 203</td>
<td>3 (3,1)</td>
<td>Principles of Shorthand III: PR: EDBE 102 and EDBE 202 or equivalents. Development and refinement of sustained shorthand dictation, speed, and vocabulary.</td>
</tr>
<tr>
<td>EDBE 301</td>
<td>3 (3,1)</td>
<td>Shorthand Dictation: PR: EDBE 102 and EDBE 203 or equivalents. Continued development of shorthand dictation and introductory communications production.</td>
</tr>
<tr>
<td>EDBE 302</td>
<td>3 (3,1)</td>
<td>Shorthand Transcriptions: PR: EDBE 102 and EDBE 301. Gregg Shorthand dictation and refinement of communications production.</td>
</tr>
<tr>
<td>EDBE 305</td>
<td>3 (3,1)</td>
<td>Office Technology: PR: EDBE 102 or C.I. Basic operation and function of technological media in modern business offices.</td>
</tr>
<tr>
<td>EDBE 601</td>
<td>3 (3,0)</td>
<td>Curriculum Innovations in Business Education: PR: Rank III Certificate or C.I. A critical analysis of the business curricula in post secondary schools; development of philosophy, objectives and design of innovative programs in business.</td>
</tr>
<tr>
<td>EDBE 602</td>
<td>3 (3,0)</td>
<td>Problems, Issues, and Trends in Business Education: PR: Rank III Certificate or C.I. Historical development; fundamentals of business education; its relation to business, vocational and general education, guidance, objectives and contemporary problems.</td>
</tr>
<tr>
<td>EDBE 603</td>
<td>3 (3,0)</td>
<td>Analysis, Trends and Research in Typewriting Instruction: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media: psychological principles, evaluation, and special attention to a study of research and new trends of instruction.</td>
</tr>
<tr>
<td>EDBE 604</td>
<td>3 (3,0)</td>
<td>Evaluation in Business Education: Rank III Certificate or C.I. A study of standardized and prognostic business education tests; functions, construction, administration, and evaluation of measurement instruments.</td>
</tr>
<tr>
<td>EDBE 610</td>
<td>3 (3,0)</td>
<td>Administration and Supervision of Business Education: PR: Rank III Certificate or C.I. Organization, administration, and supervision of Business Education.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Credits</td>
<td>Description</td>
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<tr>
<td>EDBE 611</td>
<td>3 (3.0)</td>
<td>Analysis of Instruction in Shorthand and Transcription: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.</td>
</tr>
<tr>
<td>EDBE 612</td>
<td>3 (3.0)</td>
<td>Analysis of Instruction in Office Technology: PR: Rank III Certificate or C.I. Techniques, materials and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.</td>
</tr>
<tr>
<td>EDBE 613</td>
<td>3 (3.0)</td>
<td>Analysis of Instruction in Basic Business and Accounting: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.</td>
</tr>
<tr>
<td>EDBE 614</td>
<td>3 (3.0)</td>
<td>Coordination of Cooperative Office Business Education: PR: Rank III Certificate or C.I. A study of cooperative programs; organization and cooperative business education programs.</td>
</tr>
<tr>
<td>EDBE 615</td>
<td>3 (3.0)</td>
<td>Improvement of Related Instruction in Cooperative Business Education: PR: Rank III Certificate or C.I. 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.</td>
</tr>
</tbody>
</table>

**ELEMENTARY EDUCATION — DEVELOPMENTAL**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EDEL 301</td>
<td>3 (2.1)</td>
<td>F,W,S Teaching Mathematics in the Elementary School: PR: Admission to Phase II or C.I. Consideration of selected concepts; organizing for instruction, techniques and activities; class and individual diagnosis; remedial procedures.</td>
</tr>
<tr>
<td>EDEL 302</td>
<td>3 (2.1)</td>
<td>F,W,S Mathematics Programs in the Elementary School: PR: EDEL 301. Analysis of teaching arithmetic, geometry and measurement; philosophy and objectives; instructional materials; current research and new curricula.</td>
</tr>
<tr>
<td>EDEL 306</td>
<td>4 (2.2)</td>
<td>F,W,S,Su Music in the Elementary School: Fundamental procedures for teaching elementary school music, stressing appropriate music materials and activities for different age groups; selected experiences in music.</td>
</tr>
<tr>
<td>EDEL 307</td>
<td>4 (4.0)</td>
<td>F,W,S,Su Literature for Children: PR: Admission to Phase II or C.I. 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.</td>
</tr>
<tr>
<td>EDEL 311</td>
<td>3 (3.0)</td>
<td>F,W,S Basic Foundations of Reading: PR: Admission to Phase II or C.I. Introduction to reading; principles, procedures and organization, current practices; analysis of reading materials; correlation with child development; investigation of research.</td>
</tr>
<tr>
<td>EDEL 312</td>
<td>3 (3.0)</td>
<td>F,W,S Reading in the Elementary School: 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.</td>
</tr>
<tr>
<td>EDEL 315</td>
<td>3 (3.0)</td>
<td>F,W,S Teaching Science in the Elementary School: PR: Admission to Phase II or C.I. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.</td>
</tr>
</tbody>
</table>
EDEL 316
Elementary School Curriculum: PR: Admission to Phase III or C.I. 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: PR: Admission to Phase II or C.I. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.

EDEL 318
Teaching Physical Education in the Elementary School: PR: EDTA 206 and EDTA 307. Organization, practice, and conduct of elementary school physical education with emphasis on teaching methods.

EDEL 405
Language Arts in the Elementary School: PR: Admission to Phase II or C.I. 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: Basic principles, purposes, scope and sequence; organization for instruction; evaluation of activities; selected art experiences.

EDEL 407
Classroom Diagnosis and Treatment of Reading Difficulties: PR: EDEL 311 or EDEL 312 or equivalent. 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: PR: Admission to Phase II or C.I. 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: PR: Admission to Phase II or C.I. 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: PR: Admission to Phase II or C.I. Observation, organization, practice, and conduct of health and physical education activities in the elementary school.

EDEL 460
Principles and Programming in Early Childhood Education: PR: C.I. Consideration of basic concepts, goals and principles underlying program planning: trends in research and development. Concurrent laboratory experiences.

EDEL 461
Curriculum in Early Childhood Education: PR: C.I. Exploration of early childhood curriculum; organizing for instruction; selection of appropriate objectives and activities in developing a balanced program. Concurrent laboratory experiences.

EDEL 462
Creativity in Nursery-Kindergarten Education: PR: C.I. Emphasizes using art and music activities in the early childhood education program to stimulate and develop individual creativity.

EDEL 482
Drug Abuse Education: PR: C.I. Study of developments relating to drug abuse
in contemporary society. Objectives, content, resources, and techniques of
drug abuse education.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDEL 524</td>
<td>3</td>
<td>Teaching the Metric System: PR: Rank III Certificate or C.I. Linear, area, volume, mass, force, and temperature measures from the metric system will be studied in relation to teaching aids, methods, and content. (K-12).</td>
</tr>
<tr>
<td>EDEL 530</td>
<td>4</td>
<td>Developmental Reading: PR: Rank III Certificate or C.I. Principles, procedures, organization, and current practices in the elementary reading program.</td>
</tr>
<tr>
<td>EDEL 535</td>
<td>3</td>
<td>Classroom Diagnosis and Treatment of Reading Difficulties: PR: EDEL 530 or equivalent. Principles and techniques of classroom diagnosis and corrective teaching in reading. Consideration of instructional materials.</td>
</tr>
<tr>
<td>EDEL 541</td>
<td>3</td>
<td>Science: A Process Approach (AAAS) as a Model program: PR: Rank II Certificate or C.I. Overview of general and special methods of science instruction; examines philosophy and materials of contemporary science programs; review curriculum development and curriculum change processes.</td>
</tr>
<tr>
<td>EDEL 542</td>
<td>3</td>
<td>Individualizing instruction in the Elementary School: PR: Rank III Certificate or C.I. Study of basic philosophy, organizational patterns, techniques, materials, and activities related to individualizing instruction in the elementary school classroom.</td>
</tr>
<tr>
<td>EDEL 560</td>
<td>4</td>
<td>Programs in Early Childhood Education: PR: Rank III Certificate or C.I. 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.</td>
</tr>
<tr>
<td>EDEL 561</td>
<td>4</td>
<td>Organization of Instruction in Early Childhood Education: PR: Rank III Certificate or C.I. Organization in instruction and techniques in areas relating to language arts, social sciences, science, mathematics, health and physical education; problems relating to reading readiness, perception and cognition. Concurrent laboratory experiences.</td>
</tr>
<tr>
<td>EDEL 562</td>
<td>4</td>
<td>Creative Activities in Early Childhood: PR: Rank III Certificate or C.I. Organization of instruction and methods of teaching music and art in early childhood education; emphasis on creative experiences with music and art. Concurrent laboratory experiences.</td>
</tr>
<tr>
<td>EDEL 601</td>
<td>5</td>
<td>Elementary School Curriculum: PR: Rank III Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of elementary schools.</td>
</tr>
<tr>
<td>EDEL 606</td>
<td>3</td>
<td>Curriculum Design in Elementary Education: PR: Rank III Certificate or C.I. Design and construction of programs to meet needs of varying levels of student populations. (May be repeated.)</td>
</tr>
<tr>
<td>EDEL 610</td>
<td>3</td>
<td>Trends in Elementary School Science Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in science education research.</td>
</tr>
<tr>
<td>EDEL 620</td>
<td>3</td>
<td>Trends in Elementary School Mathematics Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in mathematics education research.</td>
</tr>
</tbody>
</table>
EDEL 621  3 (3,0)

EDEL 622  4 (4,0)
Remediation of Difficulties in School Mathematics: PR: EDEL 621. Selection of materials and techniques for a remedial program in mathematics (K-12) based on individual diagnosis.

EDEL 623  4 (4,0)
Practicum in Diagnosis and Remediation of difficulties in Mathematics, K-12: PR: or CR: EDEL 621; CR, EDEL 622. Supervised diagnostic and remedial instruction with individual children; selection of instructional materials and techniques.

EDEL 630  3 (3,0) F,Su
Trends in Reading Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in reading research.

EDEL 632  4 (4,0)
Corrective Reading for Classroom Teachers I: PR: EDEL 535 or equivalent. A practicum for classroom teachers with emphasis on group diagnostic reading tests and classroom corrective techniques.

EDEL 633  4 (4,0)
Corrective Reading for Classroom Teachers II: PR: EDEL 632 or equivalent. A continuation of EDEL 632.

EDEL 635  3 (3,0)
Diagnosis of Difficulties in Reading: PR: EDEL 535 or equivalent. Administration and interpretation of individual tests. Consideration of physical, psychological and environmental factors contributing to reading difficulties.

EDEL 636  4 (4,0)
Diagnostic Reading Practicum: PR: EDEL 635 or equivalent. Evaluation of reading abilities and difficulties of children in the reading laboratory of the University. Preparation of individual case reports.

EDEL 637  4 (4,0)
Remedial Reading Practicum: PR or CR: EDEL 636. Supervised remedial instruction with individual children. Selection of instructional materials and techniques; preparation of case progress reports; parent interviews.

EDEL 640  3 (3,0) S,Su
Trends in Language Arts Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in language arts research.

EDEL 641  3 (3,0)
Investigation in Children's Literature: PR: Rank III Certificate or C.I. Analysis of the various approaches available for learning through the utilization of children's literature.

EDEL 650  3 (3,0)
Trends in Elementary School Social Science Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in social science education research.

EDEL 681  3 (3,0)
Seminar in Early Childhood Education: PR: Rank III Certificate or C.I. Study and evaluation of research applicable to the design and construction of a curriculum for 3, 4 and 5 year old children.

EXCEPTIONAL CHILD EDUCATION

EDEX 401  4 (4,0) F,S
Introduction to Exceptional Children: PR: C.I. An overview of educational programs, teaching procedures and educational materials necessary to provide for the needs of exceptional students.
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Days</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDEX 402</td>
<td>4</td>
<td>W,Su</td>
<td>Oral Communication Disabilities of Exceptional Children: PR: C.I. Identification and remediation procedures of communication disabilities, including the areas of speech, hearing, and language disorders.</td>
</tr>
<tr>
<td>EDEX 403</td>
<td>4</td>
<td>W,Su</td>
<td>Mental Retardation: PR: C.I. An orientation to the meaning, the prevalence, the courses, and educational provisions for the mentally retarded child.</td>
</tr>
<tr>
<td>EDEX 431</td>
<td>3</td>
<td>F</td>
<td>Teaching Mentally Retarded Students: PR: C.I. Organizing for instruction: present day and emerging diagnostic and prescriptive teaching practices.</td>
</tr>
<tr>
<td>EDEX 432</td>
<td>3</td>
<td>W</td>
<td>Curriculum and the Educable Mentally Retarded Child: PR: C.I. Curriculum content for the learning and motivational characteristics of the educable mentally retarded child.</td>
</tr>
<tr>
<td>EDEX 433</td>
<td>3</td>
<td>W</td>
<td>Curriculum and the Trainable Mentally Retarded Child: PR: C.I. Curriculum content for the learning and motivational characteristics of the trainable mentally retarded child.</td>
</tr>
<tr>
<td>EDEX 501</td>
<td>4</td>
<td>F,S,Su</td>
<td>Exceptional Children in the Schools: PR: Senior Standing or C.I. Characteristics, developmental patterns, educational problems, and appropriate educational programs for the exceptional children in schools.</td>
</tr>
<tr>
<td>EDEX 502</td>
<td>4</td>
<td>W,Su</td>
<td>Educational Implications for the Speech and Language Disorders of Exceptional Children: PR: Rank III Certificate or C.I. Identification, evaluation, interpretation, and planning appropriate learning experiences to aid exceptional children with speech, hearing, and language disorders.</td>
</tr>
<tr>
<td>EDEX 503</td>
<td>4</td>
<td>S</td>
<td>Fundamental Concepts of Mental Retardation: PR: Rank III Certificate or C.I. Characteristics, and symptom groupings, diagnostic procedures, learning characteristics, and educational treatment procedures of the mentally retarded.</td>
</tr>
<tr>
<td>EDEX 504</td>
<td>4</td>
<td>W,Su</td>
<td>Psycho-educational Appraisal of Exceptional Children: PR: Rank III Certificate or C.I. Selection of performance objectives, diagnostic measures, prescriptive teaching programs, and progress evaluation procedures for individualizing instruction.</td>
</tr>
<tr>
<td>EDEX 531</td>
<td>3</td>
<td></td>
<td>Classroom Organization for Teaching the Mentally Retarded: PR: Rank III Certificate, EDEX 514 or C.I. Special class organization, scheduling, utilizing materials, equipment; analysis of instructional procedures for teaching mentally retarded.</td>
</tr>
<tr>
<td>EDEX 532</td>
<td>3</td>
<td></td>
<td>Curriculum Planning Procedures for the Educable Mentally Retarded: PR: Rank III Certificate or C.I. Appropriate curriculum experiences and adjustments; media use; develop prevocational skills of educable mentally retarded children.</td>
</tr>
<tr>
<td>EDEX 533</td>
<td>3</td>
<td></td>
<td>Curriculum Planning Procedures for the Trainable Mentally Retarded: PR: Rank III Certificate or C.I. Curriculum experiences, media use, pre-vocational skills development for developmental levels of trainable mentally retarded children.</td>
</tr>
</tbody>
</table>
EDEX 611 3 (3,0)
Homemaking and Social Learning Skills for the Mentally Retarded: PR: Rank III Certificate or C.I. Personal development and management in clothing maintenance and repair, cooking, the use of hand tools, and homemaking tasks.

EDEX 621 3 (3,0) F,Su
Theories of Learning Disabilities of School Children: PR: Rank III Certificate or C.I. An introduction to etiology of learning disorders, with emphasis on environmental deprivation, sensory development, and other impairment.

EDEX 622 3 (3,0) F,W,Su
Instructional Diagnosis of the Learning Disabled Child: PR: EDEX 621. Evaluation techniques for diagnosing learning disabilities related to development in the basic school skills areas.

EDEX 623 3 (3,0) S

EDEX 624 3 (3,0) S,Su
Behavior Management Techniques with Exceptional Children: PR: Rank III Certificate or C.I. Study of pupil management techniques, including group and individual procedures, for modifying the learning behavior of exceptional pupils.

EDEX 641 4 (4,0) F,S
Behavior Disorders in Schools: PR: Rank III Certificate or C.I. Assessment/analysis of behavior disorders, cause and effects, identification and characteristics.

EDEX 642 4 (4,0) W,Su
Development of a Personalized Program for Children with Behavior Disorders. PR: Rank 3 certificate or C.I. Study of various approaches to use in teaching children with behavior disorders, including precision teaching, behavior management techniques, and interpersonal communications skills.

EDEX 643 4 (4,0) S,Su
Educational Programming for Children with Behavior Disorders. PR: Rank III Certificate or C.I. A study of existing models and theories of educational programs for children with behavior disorders.

EDGU 511 4
Introduction to Guidance in Schools: PR: Completion of Phase II of Educ. Prof. Prep. or Rank III or C.I. A basic course presenting an overview of the philosophy, organization, administration and operation of guidance and pupil personnel services in the schools.

EDGU 612 4

EDGU 613 4
Group Procedures in School Guidance Counseling: PR: Rank III Certificate, EDGU 511 or EDGU 615, or C.I. Nature, theory, process of group counseling including study of dynamics related to change in values and behavior of children and adolescents; class demonstration and practice.

EDGU 614 5
Counseling Practicum in Schools. PR: Rank III Certificate, EDGU 511, 613, 615 or C.I. Supervised counseling emphasizing competence in (1) individual counseling; (2) working with groups; (3) tests in educational-vocational-personal counseling.
**Library Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDLS 301</td>
<td>4 (4,0)</td>
<td>C.I.</td>
<td>Foundations of Librarianship: Survey of libraries and librarianship. Library services on all levels and related terminology.</td>
</tr>
<tr>
<td>EDLS 380</td>
<td>3 (3,0)</td>
<td>F,W,S</td>
<td>Library Resources and Materials: Use of the library, basic reference material, library services and research methods.</td>
</tr>
<tr>
<td>EDLS 421</td>
<td>4 (4,0)</td>
<td>EDLS 321</td>
<td>Administrative Factors and Media: Involvement in planning, organizing, supervising and administering media centers.</td>
</tr>
<tr>
<td>EDLS 425</td>
<td>4 (4,0)</td>
<td>EDLS 301</td>
<td>Administration of the Library Media Center: Principles and practices of administration applied to elementary and secondary school library media centers. Methods of teaching the use of the library.</td>
</tr>
<tr>
<td>EDLS 426</td>
<td>4 (4,0)</td>
<td>EDLS 301</td>
<td>Cataloging and Classification: Cataloging and classification of library materials. Practical problems in descriptive cataloging, subject cataloging and the Dewey Decimal Classification as practiced in school media centers.</td>
</tr>
<tr>
<td>EDLS 431</td>
<td>4 (4,0)</td>
<td>EDLS 426</td>
<td>Non-Book Materials in the Schools: Securing, processing and utilizing non-book materials in the schools.</td>
</tr>
<tr>
<td>EDLS 432</td>
<td>4 (4,0)</td>
<td>EDLS 321 or C.I.</td>
<td>Acquisition and Processing Library Materials: Searching, selecting, acquiring print and non-print materials.</td>
</tr>
<tr>
<td>EDLS 441</td>
<td>4 (4,0)</td>
<td>C.I.</td>
<td>Reference Materials and Services: Selection, evaluation and use of basic print and non-print reference materials.</td>
</tr>
<tr>
<td>EDLS 452</td>
<td>4 (4,0)</td>
<td>EDLS 451</td>
<td>Instructional Media Production: Selection, evaluation and production of instructional materials with emphasis on projected materials, display and presentation techniques.</td>
</tr>
<tr>
<td>EDLS 521</td>
<td>4 (4,0)</td>
<td>EDLS 321</td>
<td>Administrative Principles in Media Centers: Planning, organizing, directing, supervising and budgeting in school media centers. Personnel, public relations, and evaluating services. Planning buildings including equipment and furniture.</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>EDLS 531</td>
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<td>EDLS 532</td>
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<tr>
<td>EDLS 541</td>
<td>4 (4,0)</td>
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<tr>
<td>EDLS 551</td>
<td>4 (4,0)</td>
<td></td>
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<tr>
<td><strong>Instructional Technology and the Curriculum</strong>: PR: EDLS 451. Use and selection of instructional materials as they apply to the curriculum in elementary and secondary schools.</td>
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<tr>
<td>EDLS 611</td>
<td>4 (4,0)</td>
<td></td>
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<tr>
<td>EDLS 641</td>
<td>4 (4,0)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Reference Sources</strong>: PR: EDLS 441. Selection, evaluation and use of advanced and specialized reference materials in various subject fields.</td>
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</tbody>
</table>

**MUSIC EDUCATION**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>EDME 401</td>
<td>2 (2,0)</td>
</tr>
<tr>
<td><strong>Elementary School Music Instructional Analysis</strong>: PR: EDTA 206 and EDTA 307. Instructional planning, sources of information, instructional techniques, evaluation, and organizational and administrative procedures in the elementary school music program.</td>
<td></td>
</tr>
<tr>
<td>EDME 402</td>
<td>2 (2,0)</td>
</tr>
<tr>
<td><strong>Secondary School Music Instructional Analysis</strong>: PR: EDTA 206 and EDTA 307. Instructional planning, teaching techniques, evaluation procedures, sources of information and current trends in the general music program for middle, junior and senior high schools.</td>
<td></td>
</tr>
<tr>
<td>EDME 403</td>
<td>2 (2,0)</td>
</tr>
<tr>
<td><strong>Instrumental Music Instructional Analysis</strong>: PR: EDTA 206 and EDTA 307. Organization and administration of the instrumental music program; sources of information, instructional aids and materials, rehearsal procedures, conducting techniques, evaluation procedures, and performance considerations.</td>
<td></td>
</tr>
<tr>
<td>EDME 404</td>
<td>2 (2,0)</td>
</tr>
<tr>
<td><strong>Vocal Music Instructional Analysis</strong>: PR: EDTA 206 and EDTA 307. Organization and administration of the vocal music program; sources of information, instructional materials, rehearsal procedures, conducting techniques, evaluation procedures, and performance considerations.</td>
<td></td>
</tr>
<tr>
<td>EDME 601</td>
<td>3 (3,0)</td>
</tr>
<tr>
<td><strong>Foundations of Music Education</strong>: PR: Rank III Certificate or C.I. Examination of historical, philosophical and psychological foundations of Music Education.</td>
<td></td>
</tr>
<tr>
<td>EDME 602</td>
<td>3 (3,0)</td>
</tr>
<tr>
<td><strong>Current Trends in Elementary School Music</strong>: PR: Rank III Certificate or C.I. Analysis of current materials, new programs and teaching techniques in elementary school music, emphasis on practical applications.</td>
<td></td>
</tr>
<tr>
<td>EDME 603</td>
<td>3 (3,0)</td>
</tr>
</tbody>
</table>
Problems in Music Education: PR: Rank III Certificate or C.I. A seminar approach for developing solutions to contemporary problems in music education. Current readings will be included.

Teaching Musicianship: PR: C.I. Materials and procedures in presenting aural and visual aspects of music; evaluation procedures.

PHYSICAL EDUCATION — DEVELOPMENTAL

EDME 604 3 (3,0)
Problems in Music Education: PR: Rank III Certificate or C.I. A seminar approach for developing solutions to contemporary problems in music education. Current readings will be included.

EDME 610 3 (3,0)
Teaching Musicianship: PR: C.I. Materials and procedures in presenting aural and visual aspects of music; evaluation procedures.

EDPE 323 2 (1,1) F,W,S,Su
Instructional Analysis in Team Sports: PR: Sophomore standing. Analysis of neuromuscular performances and optimal approach to specific learning patterns in team sports.

EDPE 324 2 (1,1) F,W,S,Su
Instructional Analysis in Tennis: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.

EDPE 325 2 (1,1) F,W,S,Su
Instructional Analysis in Aquatics: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.

EDPE 326 2 (1,1) F,S,
Instructional Analysis in Gymnastics and Tumbling: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.

EDPE 327 2 (1,1) F,W,
Instructional Analysis in Golf: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.

EDPE 328 2 (1,1) F,S,
Instructional Analysis in Wrestling (M): PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.

EDPE 329 2 (1,1) F,S,
Choreography of Contemporary Dance (W): PR: Sophomore standing. Dance production as an art form.

EDPE 330 2 (1,1) F,W,S,Su
Instructional Analysis of Rhythmics: PR: Sophomore standing. Analysis of rhythm and rhythmic activities as they relate to teaching physical education.

EDPE 350 3 (2,1) F,W,S,Su

EDPE 360 3 (2,1) F,W,S,Su
School and Community Recreation: PR: Admission to Phase II or C.I. Knowledge and skills of after school activity and summer recreational programs.

EDPE 410 3 (2,2) F,W,S,Su

EDPE 421 4 (2,2) F,W,S,Su
Exercise Physiology — Cardiovascular: PR: ZOOL 324. A circulatory study of man’s homeostatic regulation during environmental stress. (Includes lecture and laboratory.)

EDPE 422 4 (2,2) F,W,S,Su
Exercise Physiology — Respiratory: PR: ZOOL 324 and EDPE 421. A study of metabolic costs and respiratory adjustment to exercise.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Type</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPE 430</td>
<td>4 (2,3)</td>
<td>F,S,Su</td>
<td>EDTA 306 or equivalent</td>
<td>Human Performance Learning: Theories of movement and factors influencing the learning of gross and fine motor skills. (Includes lecture and laboratory.)</td>
</tr>
<tr>
<td>EDPE 440</td>
<td>3 (2,1)</td>
<td>F,S,Su</td>
<td>EDPE 410</td>
<td>Rehabilitation Training Techniques: Recognition and rehabilitation of sports injuries, including first aid.</td>
</tr>
<tr>
<td>EDPE 441</td>
<td>3 (2,1)</td>
<td>Su</td>
<td>EDPE 410 and EDPE 422</td>
<td>Adapted Physical Education: Principles and methods for adapting physical education activities and programs for atypical participants. Nature of typical specific disabilities.</td>
</tr>
<tr>
<td>EDPE 450</td>
<td>3 (3,0)</td>
<td>F,W,S,Su</td>
<td>EDSE 380 or EDEL 318</td>
<td>Organization and Administration of Physical Education: Administering and organizing for instruction of the physical education class and the total school physical education program.</td>
</tr>
<tr>
<td>EDPE 455</td>
<td>3 (3,0)</td>
<td>W,Su</td>
<td>EDPE 350</td>
<td>Coaching Problems: Identification, analysis, and evaluation of problems in athletic coaching.</td>
</tr>
<tr>
<td>EDPE 482</td>
<td>3 (3,0)</td>
<td>W,Su</td>
<td>Jr. standing and completion of Phase I.</td>
<td>Measurement and Evaluation in Physical Education: Techniques of Measurement and evaluation in Physical Education.</td>
</tr>
<tr>
<td>EDPE 555</td>
<td>3 (3,0)</td>
<td>Su</td>
<td>Rank III Certificate or C.I.</td>
<td>Professional Coaching Problems: A seminar approach to problems and methods of coaching, including analysis of various philosophies.</td>
</tr>
<tr>
<td>EDPE 601</td>
<td>3 (3,0)</td>
<td></td>
<td>Rank III Certificate or C.I.</td>
<td>Philosophical Foundations of Physical Education: Analysis of the forces and events leading to the development of current concepts in physical education.</td>
</tr>
<tr>
<td>EDPE 602</td>
<td>3 (3,0)</td>
<td></td>
<td>Rank III Certificate or C.I.</td>
<td>Current Trends in Physical Education: A comprehensive review of the literature influencing trends in physical education.</td>
</tr>
<tr>
<td>EDPE 603</td>
<td>3 (3,0)</td>
<td></td>
<td>Rank III Certificate or C.I.</td>
<td>Organization and Design of Physical Education Programs: Study of physical education and its existing organization. Emphasis on ethics, values, principles and issues.</td>
</tr>
<tr>
<td>EDPE 604</td>
<td>3 (3,0)</td>
<td></td>
<td>Rank III Certificate or C.I.</td>
<td>Administration in Physical Education: Study of current problems in the administration of school physical education programs.</td>
</tr>
<tr>
<td>EDPE 621</td>
<td>5 (3,2)</td>
<td>Su</td>
<td>Rank III Certificate or C.I.</td>
<td>Physiology of Exercise — Environmental: A study of physiological adaptation resulting from prescribed physical activity programs.</td>
</tr>
<tr>
<td>EDPE 624</td>
<td>3 (2,1)</td>
<td></td>
<td>Rank III Certificate or C.I.</td>
<td>Rhythmics: Instructional analysis in classical and modern rhythms.</td>
</tr>
<tr>
<td>EDPE 632</td>
<td>3 (2,1)</td>
<td></td>
<td>EDTA 614 or C.I.</td>
<td>Perceptual Motor Development: Study of the relationship between perceptual motor development and learning. Special attention is given to the effects on academic achievement and reading.</td>
</tr>
</tbody>
</table>
EDPE 660 3 (3,0)
School Recreation: PR: Rank III Certificate or C.I. A study of recreational programs related to the public schools.

EDPE 680 3 (2,1)
Kinesiologic Analysis of Individual Activities: PR: Rank III Certificate or C.I. Analytical techniques of kinesiology and their methods of application to individual motor activities.

EDPE 681 3 (2,1)
Kinesiologic Analysis of Team Activities: PR: Rank III Certificate or C.I. Analytical techniques of kinesiology and their methods of application to team motor activities.

EDPE 682 3 (3,0)

EDPE 689 4 (4,0)

PROFESSIONAL LABORATORY — APPLICATION

EDPL 320 3 (0,14) F,W,S
Elementary School Student Teaching - Block A: PR: EDTA 206 and EDTA 307. Junior year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 321 3 (0,14) F,W,S
Elementary School Student Teaching - Block B: PR: EDPL 320. Junior year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 330 3 (0,14) F,W,S

EDPL 408 3 (3,0) F,W,S
Teaching Strategies: PR: Admission to Phase III. Seminar taken concurrently with student teaching exploring class management, aspects of professional and personal development, and current school problems and possible solutions.

EDPL 421 0 (0,30) F,W,S
Elementary School Student Teaching - Block C: PR: EDPL 321. Senior year student teaching in an elementary school under the supervision of a certified classroom teacher.

EDPL 430 9 (0,30) F,W,S
Secondary School Student Teaching - Block C: PR: EDPL 330. Senior year student teaching in a secondary school under the direction of a certified classroom teacher.

EDPL 450 2-12 (0,2-12)
Direct Field Experience: PR: Approval of Professional Laboratory Chairman. Field experience in an appropriate educational setting under the direction of a supervising teacher and/or university supervisor.

EDPL 551 1-12 (0,1-12) F,W,S
Supervised Teaching Practicum with Exceptional Children: PR: Bachelor's degree, approved program, and C.I. Supervised observation and teaching under the direction of a properly certified exceptional child teacher.

EDPL 558 4 (3,1) F,W,S
Supervision of Professional Laboratory Experiences: PR: C.I. Study of the
undergraduate professional laboratory experiences program with emphasis on the role and responsibilities of the Teacher Education Associate or Supervising Teacher.

**EDPL 650** 2-12 (0-2-12)
Internship: PR: Approval of Professional Laboratory Chairman. Internship in an appropriate educational setting under the direction of a qualified supervisor.

**EDPL 651** 4 (4.0)
Research Utilizing Problem Solving: PR: Rank III Certificate or C.I. The identification and diagnosis of classroom and/or school building problems. Action plans are formulated to resolve these problems and to evaluate action taken.

## SECONDARY EDUCATION — DEVELOPMENTAL

**EDSE 303** 3 (3.0) F,W,S

**EDSE 305** 3 (3.0)
Secondary School Curriculum: PR: EDTA 206 and EDTA 307. Study of total school patterns with emphasis on new trends, including subject areas, administration, supervision, school services and school related activities.

**EDSE 310** 4 (3.2)
Speech Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of instructional programs in speech; objectives, materials, techniques, organization for instruction, evaluation procedures, current research.

**EDSE 320** 3 (3.1)
Foreign Language as Human Behavior: PR or CR: ENG 371 or C.I. Nature of language, objectives of foreign language learning and introduction to teaching basic skills. One hour laboratory required each week.

**EDSE 321** 4 (3.2)
Foreign Language Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching foreign language.

**EDSE 330** 4 (3.2)

**EDSE 340** 4 (3.2)
English Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching English.

**EDSE 350** 4 (3.2)
Mathematics Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching mathematics.

**EDSE 360** 4 (3.2)
Science Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching science.

**EDSE 370** 4 (3.2)
Social Science Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of instructional programs in Social Sciences; objectives, materials; techniques; organization of instruction; evaluation procedures; current research.

**EDSE 380** 4 (3.2)
Physical Education Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching physical education.
EDSE 404 3 (3,0) F,W,S
Instructional Techniques: PR: EDPL 330, CR: EDPL 408 and EDPL 430. Procedures, applications and evaluation of technical skills a teacher may employ in the classroom.

EDSE 421 3 (3,1)
Oral Teaching of Foreign Languages: PR: EDPL 330 or C.I. Audio-lingually-based demonstration class. Practice in linguistic methods. One hour laboratory required each week.

EDSE 431 3 (3,0)

EDSE 432 3 (3,0)

EDSE 440 3 (3,0)
Teaching Language and Composition: PR: EDTA 206 and EDTA 307. Techniques and methods in teaching of dialects, semantics, the various grammars. A survey of composition and rhetorical methods of selected authors.

EDSE 441 3 (3,0)
Literature for Adolescents: PR: Senior standing or C.I. Selecting and evaluating books for adolescents with emphasis on the uses of literature in the development of young people.

EDSE 442 3 (3,0) F,W,S,Su
Teaching Reading in the Content Areas: PR: Senior standing or C.I. Study of techniques and materials to develop reading comprehension, vocabulary, rate and study skills of secondary students in content areas; diagnosis; evaluation.

EDSE 453 3 (3,0)

EDSE 461 3 (1,4)
Biology Laboratory Teaching: PR: Senior standing. Participation in introductory level biology laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.

EDSE 462 2 (1,3)
Chemistry Laboratory Teaching: PR: Senior standing. Participation in introductory level chemistry laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.

EDSE 463 2 (1,3)
Chemistry Laboratory Teaching: PR: EDSE 462. Continuation of EDSE 462.

EDSE 464 2 (1,3)
Physics Laboratory Teaching: PR: Senior standing. Participation in introductory level physics laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.

EDSE 465 2 (1,3)

EDSE 471 3 (3,0)
Trends in Secondary School Social Science: PR: Senior standing. Identification, development and evaluation of major social science concepts as they relate to contemporary school programs.

EDSE 501 4 (4,0)
Nature and Theory of the Middle School Curriculum: PR: Rank III Certificate or C.I. Philosophical constructs, characteristics of transescent youths, and organizational patterns in Middle School operation.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDSE 502</td>
<td>4 (4,0)</td>
<td>Middle School in Action: PR: Rank III Certificate or C.I. Supervised experiences designed to assist the development of individual competencies necessary of the Middle School educator.</td>
<td></td>
</tr>
<tr>
<td>EDSE 521</td>
<td>3 (3,0)</td>
<td>Media and Research in Foreign Language Teaching: PR: Rank III Certificate or C.I. Rationale and use of technological aids in foreign language teaching, classroom research and evaluation.</td>
<td></td>
</tr>
<tr>
<td>EDSE 541</td>
<td>4 (4,0)</td>
<td>Media and Methods in English Education: PR: Rank III Certificate or C.I. Practicum in the use of various media in the English classroom with emphasis on student film making and production of media.</td>
<td></td>
</tr>
<tr>
<td>EDSE 550</td>
<td>3 (3,0)</td>
<td>Intermediate School Mathematics: PR: Rank III Certificate or C.I. Diagnosis and remediation of learning difficulties in mathematics and selected individualized learning activity packages on mathematics topics for middle and junior high school mathematics teachers.</td>
<td></td>
</tr>
<tr>
<td>EDSE 553</td>
<td>3 (3,0)</td>
<td>Laboratory Programs in Mathematics: PR: Rank III Certificate or C.I. Design, organization and development of special materials and projects for mathematics independent study.</td>
<td></td>
</tr>
<tr>
<td>EDSE 560</td>
<td>3 (3,0)</td>
<td>Intermediate School Programs: PR: Rank III Certificate or C.I. Basic concepts, philosophies, and formats of experimental middle and junior high school science programs.</td>
<td></td>
</tr>
<tr>
<td>EDSE 561</td>
<td>3 (3,0)</td>
<td>Inquiry in the Sciences: PR: Rank III Certificate or C.I. The techniques in teaching science by inquiry in the secondary school with the opportunity to participate in and develop inquiry lessons.</td>
<td></td>
</tr>
<tr>
<td>EDSE 562</td>
<td>3 (3,0)</td>
<td>High School Biology Concepts: PR: Rank III Certificate or C.I. Major concepts in BSCS biology and other modern biology programs.</td>
<td></td>
</tr>
<tr>
<td>EDSE 570</td>
<td>3 (3,0)</td>
<td>Intermediate School Social Science: PR: Rank III Certificate or C.I. Identification, development and evaluation of major social science concepts, new materials and teaching strategies related to Middle and Junior High School programs.</td>
<td></td>
</tr>
<tr>
<td>EDSE 571</td>
<td>3 (3,0)</td>
<td>Inquiry in the Social Studies: PR: Rank III Certificate or C.I. An in-depth development of the role of inquiry in the new social studies with opportunity both to participate in and to develop inquiry episodes.</td>
<td></td>
</tr>
<tr>
<td>EDSE 602</td>
<td>3 (3,0)</td>
<td>Patterns of Curriculum and Instruction: PR: Rank III Certificate or C.I. An analysis of exemplary secondary school programs and instructional procedures.</td>
<td></td>
</tr>
<tr>
<td>EDSE 604</td>
<td>3 (3,0)</td>
<td>Seminar in Secondary School Instruction: PR: Rank III Certificate or C.I. Systematic and objective analysis of instruction, human relations, approaches to improving instructions and teaching strategies.</td>
<td></td>
</tr>
</tbody>
</table>
EDSE 611  5 (5,0)
Curriculum in the Secondary School: PR: Rank III Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of secondary schools.

EDSE 621  3 (3,0)

EDSE 622  3 (3,0)

EDSE 641  3 (3,0)

EDSE 642  3 (3,0)
Reading Guidance for Adolescents: PR: Rank III Certificate or C.I. Review of literary works appropriate for young people to provide insight into psychological problems common to teenagers.

EDSE 643  3 (3,0) F,W,S,Su
Reading in the Content Areas: PR: Rank III Certificate or C.I. Identification and evaluation of reading skills, diagnosis of reading problems, and development of methods and materials to increase student reading performance.

EDSE 651  3 (3,0)

EDSE 652  3 (3,0)
Seminar in Mathematics Teaching: PR: Rank III Certificate or C.I. A review of prominent research and the writings of selected authors in mathematics education.

EDSE 662  3 (3,0)
Laboratory Programs in Science Education: PR: Rank III Certificate or C.I. Design, organization and development of special materials and projects for science independent study centers.

EDSE 671  3 (3,0)
Laboratory Programs in the Social Sciences: PR: EDSE 571 or C.I. Design, organization and development of special materials related to selected conceptual specializations.

EDSE 672  3 (3,0)
Contemporary Social Science Education: PR: Rank III Certificate or C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.

**TEACHING ANALYSIS**

EDTA 206  3 (3,0) F,W,S,Su
Human Development: Analysis of basic principles and applications in growth and learning from conception through adolescence. EDTA 307 recommended concurrently.

EDTA 305  3 (3,0) F,W,S
Principles of Evaluation: PR: Successful completion of Teaching Analysis (EDTA 307), and Human Development (EDTA 206). Principles of evaluation applied to advising pupils, diagnosing learning deficiencies, determining effectiveness of instruction and judging pupil progress.
Variables Affecting School Learning: PR: Successful completion of Phase I. Study of learning principles affecting classroom teaching/learning with particular attention to those most relevant to teacher/student interaction.

Teaching Analysis: Initial requirement; an opportunity to examine and participate in general and specific dimensions of teaching with socio-economics factors emphasized. EDTA 206 recommended concurrently.

Overview of Education: Study of public education in the United States focusing on the development of structure and process in the educational enterprise.


Teaching Analysis: Initial requirement; an opportunity to examine and participate in general and specific dimensions of teaching with socio-economics factors emphasized. EDTA 206 recommended concurrently.

Overview of Education: Study of public education in the United States focusing on the development of structure and process in the educational enterprise.


Senior Seminar: Education in Human Affairs: 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.


Measurement and Evaluation in Education: PR: EDTA 695, Rank III Certificate or C.I. Rationale and construction of evaluative instruments, including classroom tests. Analysis of standardized and non-standardized tests in the classroom.


Analysis of Classroom Teaching: PR: EDTA 695, or Rank III Certificate or C.I. Analyses of verbal and non-verbal behaviors of teachers and their effect upon classroom instruction and learning.

Techniques of Game Use in Education: PR: Rank III Certificate or C.I. Analysis, development, and use of educational games as an approach to classroom teaching.

Adolescent Development and the Schools: PR: Rank III Certificate or C.I. Recent research in human development in adolescence with special emphasis upon research of interest to secondary school teachers.
EDTA 618 3 (3,0) F.W.Su
Philosophical Foundations of Classroom Learning: PR: EDTA 695, or Rank III Certificate or C.I. A systematic approach to the philosophical bases of learning and the effect such philosophies have on school programs and curriculum.

EDUCATION — VISUAL ARTS

EDVA 401 3 (3,0)
Elementary School Art Instructional Analysis: PR: EDTA 206 and EDTA 307 or C.I. Methods and curriculum materials appropriate for teaching Visual Arts in the elementary schools.

EDVA 402 3 (3,0)
Secondary School Art Instructional Analysis: PR: EDTA 206 and EDTA 307 or C.I. Methods and curriculum materials for teaching Visual Arts in the secondary schools.

EDVA 404 3 (3,0)
Continuing Art Progress in Schools: PR: EDVA 401 and EDVA 402 or C.I. Programs and innovations for visual arts in the schools.

EDVA 405 3 (3,0)
Schools Found Arts: PR: EDVA 431 and EDVA 432 or C.I. Appropriate materials for instruction in public schools will be examined and utilized.

EDVA 431 5 (5,0)
Two-Dimensional Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of two-dimensional materials to appropriate levels of instruction: chalk, ink, water color, crayon, tempera, acrylics, paper, fiber, and oils.

EDVA 432 5 (5,0)
Three-Dimensional Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of three-dimensional materials to appropriate levels of instruction: wood, paper, plaster, stone, clay, wax, fiber, metal, and synthetics.

EDVA 433 5 (5,0)
Graphic Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of graphic materials to appropriate level of instruction: direct and indirect basic processes of reproduction of mono and multi-printing.

EDVA 503 3 (3,0)

EDVA 504 3 (3,0)
Contemporary Visual Arts Education: PR: EDVA 401 and EDVA 402 or C.I. A study of current programs and innovations in public school Visual Arts Programs.

EDVA 505 3 (3,0)
Found Arts: PR: EDVA 431 and EDVA 432 or C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

EDVA 601 3 (3,0)
Two-Dimensional Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 431, or C.I. Application of two-dimensional materials to appropriate levels of instruction: chalk, ink, water color, crayon, tempera, acrylics, paper, fiber, and oils.

EDVA 602 3 (3,0)
Three-Dimensional Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 432, or C.I. Application of three-dimensional materials to appropriate levels of instruction: wood, paper, plaster, stone, clay, wax, fiber, metal, and synthetics.

EDVA 603 3 (3,0)
Graphic Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 433, or
C.I. Application of graphic materials to appropriate level of instruction: direct and indirect basic processes of reproduction of mono and multi-printing.

## VOCATIONAL/TECHNICAL EDUCATION

### EDVE 381 3 (3,0)
**Career Development Analysis:** Analysis of job core areas. Community, state and federal informational services, educational requirements and employment prospects in selected areas. Application and job interview techniques.

### EDVE 401 4 (4,0)
**Philosophy and Principles of Technical Education:** PR: Rank III Certificate or C.I. Overview of technical/vocational education; study of purposes, organization curriculum, financial supports, trends and history of technical/vocational education.

### EDVE 402 5 (5,0)
**Methods of Teaching Technical/Vocational Subjects:** PR: Rank III Certificate or C.I. A study of the techniques, skills and procedures used in teaching technical/vocational education subjects.

### EDVE 411 4 (4,0)
**Analysis of Vocational Occupations:** PR: Rank III Certificate or C.I. Techniques of analyzing components of an occupation to obtain content for instruction.

### EDVE 421 4 (4,0)
**Curriculum Planning for Vocational Education:** PR: Rank III Certificate or C.I. Systematic development of a course of study for use in teaching a subject in an occupational area.

### EDVE 422 4 (4,0)
**Evaluation of Occupational Instruction:** PR: Rank III Certificate or C.I. This course is concerned with the total evaluation process as it relates specifically to vocational instruction.

### EDVE 423 4 (4,0)
**Analysis of Learning as Applied to Vocational Education:** PR: Rank III Certificate or C.I. Course is designed to familiarize the vocational application to the Vocational classroom.

### EDVE 451 4 (4,0)
**Occupational Education Facilities:** PR: Rank III Certificate or C.I. Procedures and techniques in planning occupational educational facilities.

### EDVE 461 4 (4,0)
**Instructional Analysis in Industrial/Technical Education:** PR: Rank III Certificate or C.I. Course objectives, techniques, materials, evaluation, and instructional media having special application for teaching occupational and technical subjects.

### EDVE 462 4 (4,0)
**Classroom Management in Occupational Education:** PR: Rank III Certificate or C.I. Fundamentals of managing an occupational classroom or laboratory involving the concepts used in industrial plant management.

### EDVE 463 4 (4,0)
**Development of Occupational Education Programs:** PR: Rank III Certificate or C.I. Occupational task analysis techniques and its application in formulating a basic instructional plan.

### EDVE 481 4 (4,0)
**Principles of Occupational Education:** PR: Rank III Certificate or C.I. Recent developments, contemporary programs, and structure of vocational, technical, and adult education.

### EDVE 482 4 (4,0)
**School/Community Development for Vocational Education:** PR: Rank III Certificate or C.I. Identification, analysis, and maintenance of working relationships between school and community institutions.
EDVE 571 (4-8)
Occupational Work Experience: PR: Rank III Certificate and C.I. Directed occupational work experiences and seminar in selected offices, businesses or industries. Designed to fulfill one year's occupational experience in business and vocational education.

ELECTRICAL ENGINEERING AND COMMUNICATIONS SCIENCES

EECS 311 4 (3,3) F,S
Introduction to Digital Circuits: PR: COMP 205. Electrical components used in digital switching circuits; properties of magnetic materials; construction of basic logic gates and flip-flops. Intended primarily for computer science majors.

EECS 321 4 (3,3) F,W,

EECS 322 4 (3,3) W,S,
Electronic Engineering: PR: ENGR 322. Electronic devices and circuits including small signal amplifiers, and switching circuits.

EECS 341 4 (4,0) F,W
Electromagnetic Fields: PR: ENGR 322 and MATH 331. Introduction to electromagnetic fields.

EECS 411 4 (3,3) F,S

EECS 412 4 (3,3) W
Logical Systems Design: PR: EECS 411. Systems investigation, design, and operation of digital computers; study of a basic hardware set and a basic software set.

EECS 413 4 (3,3) W
Digital Systems Organization: PR: EECS 411 or EMCS 431 or COMP 305. Design, analysis and implementation of computer based control systems utilizing minicomputers and microprocessors.

EECS 414 3 (2,2) S

EECS 431 3 (2,3)
Electrical Machinery: PR: ENGR 323. Methods and techniques of systems analysis applied to the dynamics of electrical machinery.

EECS 442 4 (3,3) W
Microwaves: PR: EECS 341. Microwave devices and systems and measurement techniques.

EECS 451 4 (3,3) S

EECS 461 3 (2,3) F

EECS 464 3 (2,3) S
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECS 513</td>
<td>Introduction to Digital Systems: PR: EECS 411 or equivalent. Combinational logic, sequential logic, introduction to controller design.</td>
<td>3 (3,0) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 531</td>
<td>Environmental Control Systems: PR: ENGR 421 or equivalent. Modeling, control methods, stability, and optimization applied to environmental systems.</td>
<td>3 (3,0)</td>
<td>W</td>
</tr>
<tr>
<td>EECS 535</td>
<td>Electric Power Generation and Distribution: PR: ENGR 323 or equivalent. Introduction to electric energy sources. Concept of complex power in single and three phase systems. Synchronous machines, power transformer, and transmission lines.</td>
<td>3 (3,0) W</td>
<td>W</td>
</tr>
<tr>
<td>EECS 543</td>
<td>Coherent Optics Applications: PR: PHYS 354. Theory of coherent optical radiation and propagation. Design and analysis of optical components and systems.</td>
<td>3 (3,0) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 551</td>
<td>Signal and System Analysis: PR: EECS 321. Difference equations, transform techniques, state variables applied to continuous and discrete systems.</td>
<td>3 (3,0) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 553</td>
<td>Random Processes: PR: EECS 321 and ENGR 371. Random variables, averaging, sampling, elements of probability theory.</td>
<td>3 (3,0) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 612</td>
<td>Synthesis of Electric Filters: Analysis and synthesis of electric filters.</td>
<td>3 (3,0) Su</td>
<td>Su</td>
</tr>
<tr>
<td>EECS 613</td>
<td>Computer System Design: PR: EECS 513 or C.I. The specification, design, and programming of a digital computer system. Examination of digital systems architecture using a digital design language.</td>
<td>3 (3,0) W</td>
<td>W</td>
</tr>
<tr>
<td>EECS 621</td>
<td>Digital Computer Systems: PR: EECS 613, EMCS 431 or C.I. Investigation of various computer systems. The Processor-Memory-Switch level of system analysis applied to systems with one or more central or I/O processors.</td>
<td>3 (3,0) S</td>
<td>S</td>
</tr>
<tr>
<td>EECS 623</td>
<td>Modern Analog Computers: Analog programming fundamentals and techniques emphasizing integral use of logic and analog elements as applied to parameter optimization, boundary value problems, and partial differential equations.</td>
<td>3 (3,0) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 624</td>
<td>Modern Analog Computer Laboratory: CR: EECS 623. Laboratory for EECS 623 consisting of simulation using a modern analog computer.</td>
<td>1 (0,3) F</td>
<td>F</td>
</tr>
<tr>
<td>EECS 631</td>
<td>Modern Control Theory: State space method of analysis for discrete and continuous control, phase plane, Lyapunov stability.</td>
<td>3 (3,0) W</td>
<td>W</td>
</tr>
<tr>
<td>EECS 632</td>
<td>Optimal Control Systems: PR: EECS 631. Cost Function, control restraints, initial and target states. Pontryagin's theorem, time, fuel, and energy optimization.</td>
<td>3 (3,0) S</td>
<td>S</td>
</tr>
<tr>
<td>EECS 633</td>
<td>Nonlinear Control Systems: PR: EECS 631. Analysis and synthesis techniques for nonlinear systems, stability classifications, limit cycles, Popov's theorem. State variable description.</td>
<td>3 (3,0) Su</td>
<td>Su</td>
</tr>
<tr>
<td>EECS 643</td>
<td>Optical Electronics: PR: EECS 543 or C.I. Introduction to optical electronic equipment.</td>
<td>3 (3,0) W</td>
<td>W</td>
</tr>
</tbody>
</table>
systems, such as both gas and solid state laser systems, optical detectors, modulators, and frequency convertors. Optical communication systems.

EECS 644 3 (3,0) S

EECS 645 3 (3,0)
Remote Sensing Optical Systems: PR: EECS 341 or equivalent. Study of electromagnetic phenomena and systems at optical and near optical wavelengths and the use of such systems in environmental monitoring.

EECS 652 3 (3,0) W

EECS 653 3 (3,0) W
Communication Theory: PR: EECS 553 or C.I. Theory of communicating in the presence of noise, modulation, optimum filtering, phase-lock loop.

EECS 655 3 (3,0) S
Communication Systems: PR: EECS 653 or C.I. Deep-space, LOS, and tropo-scatter communication system. Phase-locked loops, fading, diversity, ranging. SNR and Error-rate calculations.

EECS 662 3 (3,0) F
Amplifier Design: Small-signal device models; analysis and synthesis of electronic amplifier circuits in frequency and time domains.

EECS 664 3 (3,0) W
Operational Amplifiers: The differential amplifier stage, multi-staging, linear circuit applications, uses in non-linear circuits, active filters.

ENGINEERING CORE

ENGR 100 4 (4,0) F,W,S,Su
Oceanography and Space: Fundamentals of oceanography and space with emphasis on the engineering aspects and uses. May be used to satisfy Scientific Environment requirement of Environmental Studies Program.

ENGR 101 3 (2,2) F,W
Engineering Graphics: Spatial visualization, sketching, and graphical presentation as a form of engineering communication. Engineering drawing, descriptive geometry, manipulation of vectors and graphical solution techniques.

ENGR 103 4 (3,2) F,W
Creative Design: PR: C.I. Role of the engineer as a creative design professional. Emphasis on understanding the creative process and the factors that influence it. Case studies.

ENGR 104 3 (3,0)
Man Made World: Introduction to engineering and its role in the understanding of the man made world.

ENGR 151 3 (2,2) F,W
Chemical Foundations of Engineering: 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.

ENGR 152 3 (2,2) W

ENGR 211 4 (4,0) F,W,S,Su
Engineering Concepts: CR: MATH 321. Introduction to the basic physical
phenomena essential to understanding of engineering structures, machines processes, and systems. Primary emphasis on mechanics, materials behavior, and thermofluid mechanics phenomena.

ENGR 310 4 (4,0) F,W,S,Su  
Engineering Analysis — Statics. PR: ENGR 211 and MATH 322. Fundamental concepts of mechanics including resultants of force systems, free-body diagrams, equilibrium of rigid bodies, and analyses of structures.

ENGR 311 4 (4,0) F,W,S,Su  
Engineering Analysis — Dynamics: PR: ENGR 310, and MATH 323. Kinematics and kinetics of particles and rigid bodies; mass and acceleration, work and energy, and impulse and momentum.

ENGR 312 5 (4,2) F,W,S,Su  

ENGR 320 4 (4,0) F,W,S,Su  
Electrical Science: PR: MATH 323 and ENGR 211. General concepts of electricity and magnetism; the development of fundamental laws of electrical engineering; the introduction of the basic circuit elements.

ENGR 321 4 (3,2) F,W,S,Su  

ENGR 322 4 (3,2) F,W,S,Su  

ENGR 323 4 (3,2) F,W,S,Su  

ENGR 331 3 (3,0) F,W,S,Su  

ENGR 332 4 (3,2) F,W,S,Su  

ENGR 341 3 (3,0) F,W,S,Su  

ENGR 342 3 (3,0) F,W,S,Su  

ENGR 351 3 (3,0) F,W,S,Su  

ENGR 352 3 (2,2) F,W,S,Su  

ENGR 361 3 (3,0) F,W,S,Su  
Engineering and the Environment: PR: ENGR 152 or equivalent. Man's inter-
action with the air, water and land environment and the role of engineering in control of this environment for the benefit of mankind.

ENGR 371 3 (3,0) F,W,S,Su
Probability and Statistics for Engineers: PR: MATH 323. 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 401 2 (2,0)
Professionalism, Practice and Ethics: PR: Junior or Senior Standing. Study of the professional engineer's role, practice and responsibility to act in the interests of public health, safety and welfare.

ENGR 403 3 (2,2) S
Senior Creative Design: PR: Senior standing. Application of the fundamental engineering design algorithm to design synthesis and inventiveness methods culminating in an individual or group engineering design project.

ENGR 421 4 (4,0) F,S
Linear Control Systems: PR: MATH 331 and ENGR 342. 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.

ENGR 431 3 (3,0) F,W,S,Su
Thermodynamics and Transport Processes: PR: ENGR 331; CR: ENGR 332. Consequences of the second law and combined first and second law analysis of thermodynamics systems. Introduction to heat transfer including conduction, convection, and radiation.

ENGR 442 3 (3,0) F,W,S,Su

ENGR 443 3 (3,0) F,W,S,Su
Engineering Administration: PR: ENGR 341 and senior standing. Engineering organization and administration; delegation of authority and responsibility; effective utilization of resources; compensation structure, labor-management relations; selected case studies.

ENGINEERING — INTERDISCIPLINARY COURSES

ENGR 380 3 (3,0) F,W,S

ENGR 480 3 (3,0)
Systems Modeling: PR: COMP 101 or equivalent, Representation of man/machine systems through analytic and computer-based models. Case studies in the analysis and improvement of systems in industry, education, and government.

ENGR 481 3 (3,0)
Man and Machine: The influence and interrelationship of invention and technical progress on the evolution of social forms and institutions.

ENGR 482 3 (3,0)
Engineering & Technology in History: Important developments in engineering and technology and their effect on society and our socio-economic processes and institutions.

ENGR 483 3 (3,0)
Technology and Social Change: 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 3 (3,0)
Science in History: Examination of the reciprocal relations of science and society from ancient to recent times.

ENGR 485 3 (3,0)
Topics in Urban Development: Production, distribution, and consumption of various commodities. Engineering relationships to distribution, internal structure, function of urban developments. Interrelationship of engineering, social, economic, and cultural phenomena.

ENGR 486 3 (3,0)
Energy and Man: Investigation of the forms of energy available, energy resources versus requirements in a technological society of increasing population problems, solutions and future predictions.

ENGR 487 3 (3,0)
Historical Architecture: 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 3 (3,0)
Man and Environment: PR: C.I. 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 489 3 (3,0)
Computers, Cybernetics and Society: The effects of computers and the cybernetic revolution on the individual and society. Effects of positive and negative feedback on biological, technological and social systems. Computers and their interactions with human system.

ENGR 582 3 (3,0)
Topics in Technological Development: PR: C.I. Case studies of selected topics in the engineering and technological development of western civilization. The weight-driven clock, steam engine, electric power, radar, electronics, etc.

ENGINEERING MATHEMATICS
AND COMPUTER SYSTEMS

EMCS 423 3 (3,0)
Mathematics Review for Engineers: Comprehensive review of college algebra, trigonometry, analytical geometry, vector calculus, and an introduction to differential equations for non-current engineering students wishing to pursue advanced work.

EMCS 430 3 (3,0) F

EMCS 431 4 (3,3) F
Mini-Computers in Engineering Systems: PR: COMP 302 or equivalent; EECS 411 or EECS 311. Organization of the computer, processor, memory and I/O. Assembly level programming. Input-output using programmed transfer and interrupt type I/O. NOVA mini-computer orientation.

EMCS 432 4 (3,3) W

EMCS 433 4 (3,3) S
Digital Systems Hardware Organization: PR: EMCS 431. Analysis of computer
subsystems and digital controllers in AHPL using techniques ranging from logic to micro programming.

EMCS 460 3 (3,0) F

EMCS 470 3 (3,0) S

EMCS 471 3 (3,0) W
Engineering Mathematical Analysis: PR: MATH 324 and MATH 331. The application of mathematical methods to engineering problems including vector and tensor fields, state space techniques, orthogonal curvilinear coordinates and orthogonal functions.

EMCS 472 4 (4,0) F,S
Engineering Applications of Computer Methods: PR: COMP 302 and MATH 324. Structuring engineering problems for computers including computer characteristics and performance measures. Introduction to time sharing and computer aided design.

EMCS 530 3 (3,0) W
Engineering Data Reduction: PR: ENGR 371. Methods for processing and analysis of scientific test and process data, including computer filtering schemes and data compression and recovery techniques.

EMCS 572 3 (3,0) W
Engineering Mathematical Analysis: EMCS 471 or C.I. The application of mathematical methods to engineering problems including linear analysis and transformations and matrix manipulation.

EMCS 573 3 (3,0) Su
Analytical Methods in Engineering: PR: EMCS 471 or C.I. The kinematics and dynamics of ideal field theory. Complex potential and conformal mapping with application to problems in fluid flow, thermal, and electrical potential.

EMCS 574 3 (3,0) S

EMCS 610 4 (3,2) S

EMCS 630 3 (3,0) W

EMCS 631 3 (3,0) S
Continuous System Simulation: PR: ENGR 342 or equivalent. Computer-based modeling and analysis of continuous systems. Use of state-space techniques and the CSMP/360 simulation language. Laboratory assignments.

EMCS 632 3 (3,0) F
Atomata Theory: PR: EECS 411 or equivalent. Structural theory and performance characteristics of the finite-state machines.

EMCS 640 4 (3,2) S
Engineering Data Reduction: PR: EMCS 530. Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.
EMMS 411 3 (3,0) F

EMMS 412 3 (3,0) W

EMMS 413 3 (3,0) S
Thermodynamic Properties of Materials: PR: EMMS 433. Fundamental concepts of thermodynamics and kinetics are applied to the study of solid state phase transformations, equilibrium in multicomponent systems and diffusion in solids.

EMMS 414 3 (3,0) Su

EMMS 421 3 (3,0) W
Theory of Crystalline Solids: PR: ENGR 352. Modern theory of crystalline materials. Topics treated include crystal structure, mechanical, thermal and transport properties.

EMMS 430 3 (3,0) S

EMMS 433 3 (3,0) Su

EMMS 434 3 (2,2) F

EMMS 435 3 (3,0) F
Structure and Properties of Ceramics and Polymers: PR: ENGR 352 or C.I. Structure of vitreous and crystalline non-metals; mechanical, thermal, and electrical properties of organic polymers and composite materials.

EMMS 501 3 (2,2) F

EMMS 502 3 (2,2) S

EMMS 508 3 (3,0) W

EMMS 511 3 (3,0) W
Phase Transformation in Solids: PR: EMMS 413 and EMMS 430 or C.I. Principles of phase transformations, including precipitation, recrystallization, eutectoids, and martensite; emphasis on the understanding of the thermodynamic and kinetic processes underlying these phenomena.
EMMS 521 3 (3,0) S

EMMS 541 4 (4,0) W
Intermediate Mechanics of Materials: PR: ENGR 312 and MATH 331. Stress and strain at a point; failure theories; elements of plane elasticity; curved beams; bending and torsion of thin-walled structures; theory of thin plates.

EMMS 600 3 (3,0) F

EMMS 610 3 (3,0) W

EMMS 620 3 (3,0) S
Physical Ceramics: PR: EMMS 435 or C.I. Composition and structure of ceramics and glasses. Discussion of thermal conductivity, heat capacity, magnetic behavior and ferroelectric behavior with emphasis on real materials.

EMMS 630 3 (3,0) Su
Polymer Science: PR: EMMS 435 or C.I. Consideration of the structure and properties of polymers from the viewpoint of materials science. Specific attention to polymerization processes, crystal structure, and mechanical properties.

EMMS 641 4 (4,0) S

EMMS 642 4 (4,0) F

EMMS 645 3 (3,0) F

EMMS 646 3 (3,0) W

EMMS 652 4 (4,0) S

EMMS 654 3 (3,0) F

EMMS 661 3 (3,0) S
Advanced Dynamics: ENGR 311, EMCS 471 or C.I. Dynamics of particles, distributed mass systems, and rigid bodies from an advanced viewpoint.
Virtual work principle. Lagrange’s and Euler’s equations of motion and Hamilton’s principle.

## ENGINEERING TECHNOLOGY

**ENT 303**

**problem Analysis:** PR: MATH 311, MATH 312 or C.I. Applications of computational techniques to selected problems in the practice of engineering technology. Problems relating to specific option areas.

**ENT 304**


**ENT 305**

**Applied Statics:** PR: MATH 107 or Equivalent. Coplanar parallel, concurrent and nonconcurrent force systems. Noncoplanar concurrent and nonconcurrent force systems. Centroids, centers of gravity and moments of inertia of areas.

**ENT 306**

**Materials and Processes:** PR: MATH 110 and MATH 111 or equivalent. Relation between structure and properties of metals, wood, ceramics and polymers. Testing and inspection, casting, forming and working of metals, heat treatment, and joining.

**ENT 307**

**Applied Fluid Mechanics:** PR: Basic Physics Course and Junior Standing. Application of principles of fluid mechanics. Properties of fluids, forces, and fundamentals of fluid flow. Special attention to pipes, pumps, and other equipment.

**ENT 321**

**Electronic Circuits:** PR: MATH 311 and basic electrical circuit theory. Introduction to graphical and analytical analysis of electronic circuits. Amplifiers, feedback networks and power supplies.

**ENT 322**

**Digital Circuits:** Operations and application of digital circuits. Laboratory.

**ENT 331**

**Hydraulics and Hydrology:** PR: Junior standing. Applied hydraulics and hydrology including topics in closed and open channel flow, rainfall, runoff, seepage, ground water, storage and impoundments, wells, etc.

**ENT 332**

**Water Supply Systems:** Fundamental techniques applicable to technical projects dealing with water resources, hydrology, water treatment, transmission and distribution.

**ENT 333**

**Wastewater Systems:** Fundamental techniques applicable to technical projects dealing with collection and transmission of wastewater, treatment of wastewater, handling and disposal of effluent and sludge.

**ENT 341**

**Contracts and Specifications:** Study of basic legal principles involved in contractual provisions and interrelationships with applicable specifications and the application of such principles.

**ENT 343**

**Product Design:** Principles of layout and dimensioning for production. Consideration of design factors, standards, specifications and codes with emphasis on productibility.

**ENT 351**

**Work Analysis:** PR: Junior standing. Analysis of work elements in technical projects. Work simplification and methods improvements in technical operations.
ENT 352 3 (3,0)  
Cost Estimation and Analysis: Determination and analysis of cost of manufacturing and construction operations including applicable indirect costs. Costs of all applicable work materials and services are included.

ENT 353 3 (3,0)  
Computer Methods in Industry: PR: COMP 102. An overview of industrial EDP applications. Includes data processing concepts, functions of the computer, and applications in data processing, process and machine control.

ENT 401 5 (4,2)  
Electricity and Electronics: Electricity and magnetism, applications of the basic principles of electric circuits, electronic amplifiers.

ENT 402 4 (4,0)  
Strength of Materials: PR: ENT 305 or C.I. Relationship between external forces and action of members of a structure. Topics include stress and strain, torsion, beams, columns, stress concentrations and fatigue.

ENT 403 4 (4,0) W  
Applied Thermodynamics: PR: MATH 312, ENT 405. Introduction to concepts of energy, work, and heat; thermodynamic properties and processes; basic laws; cycle efficiency; flow through orifices and nozzles; empirical design formulae.

ENT 405 4 (4,0)  

ENT 421 3 (3,0)  
Computer Systems: PR: ENT 322. The hardware organization of process control and special purpose digital computers. Peripherals and programming techniques.

ENT 422 3 (3,0)  
Antennas and Propagation: PR: ENT 321. Study of the basic theory and technology used in high frequency transmission lines and waveguides, propagation and radiation, antennas.

ENT 423 3 (3,0)  
Feedback Control: PR: ENT 321. Feedback control system analysis and design techniques, control system components, and applications to practical control systems.

ENT 424 3 (3,0)  

ENT 431 3 (3,0)  
Treatment Plant Analyses and Control: Basic techniques applicable to lab analyses, control measures, and overall operation of water and wastewater treatment plants.

ENT 432 3 (3,0)  
Environmental Sampling and Analyses: Fundamental techniques applicable to sampling and performing lab analyses of our physical environment, including air, water and land. Interrelation and analysis of results.

ENT 433 3 (3,0)  
Air Pollution Control: Fundamental Techniques applicable to analyzing composition and sources of pollutants, measuring concentrations, and controlling emissions. Aid pollution control programs, laws, rules, and regulations.

ENT 434 3 (3,0)  
Solid Waste Management: Fundamental techniques applicable to technical projects involving solid waste composition, collection and disposal. Solid wastes programs, laws, rules, and regulations.

ENT 442 Design Integration: PR: ENT 343. Project design involving planning, control, prototype construction, testing and evaluation.

ENT 443 Senior Project: PR: ENT 442. Individual project involving product conception, design, development, construction, and testing. A final technical report is required of each student.


ENT 451 Process Planning and Scheduling: Planning and control of specific tasks, and manhours related thereto. Includes description and application of techniques used in construction and manufacturing industries.

ENT 452 Occupational Safety: Accident prevention and the operation of an industrial safety program. Basic requirements of the Occupational Safety and Health Act standards.


ENT 454 Plant Maintenance Operation: Organization of the maintenance function in manufacturing and service industries. Maintenance planning and scheduling analysis of required and preventive maintenance operations, including economic trade-offs.

ENGLISH

ENG 100 Vocabulary Study: A word skills course for students wishing to improve their vocabulary.

ENG 101 Composition I: Expository writing with emphasis on effective communication. Writing topics to be based on selected readings.

ENG 103 Exploring Literature Through Writing: PR: ENG 101 or equivalent. Writing practice based on readings in contemporary prose and poetry selected to invite the interest of students in literature.

Note on Freshman English Program:
ENG 101 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 103. English, Education and Library Science majors must complete ENG 103 before enrolling in any English courses numbered above 103 with the exception of ENG 301.

ENG 105 Grammar Review: A systematic review of basic English grammar to improve clarity and accuracy of writing.

ENG 201 Literature of Modern Man: Reading and discussion of types and forms of modern literature. Satisfies the requirement (II) of the cultural and historical
foundation in the Environmental Studies Program.

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<tr>
<th>Course Code</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 202</td>
<td>3 (3,0)</td>
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<tr>
<td><strong>Literary Analysis:</strong> Analysis of fiction, drama, and verse in terms of major elements: plot, conflict, characterization, viewpoint, rhetorical and poetic devices, figurative language, meter, rhyme, verse forms.</td>
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<tr>
<td>ENG 208</td>
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<tr>
<td><strong>Principles of Creative Writing:</strong> An exploratory course in the several types of creative writing; group analysis of original writing; critical reading of established authors.</td>
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<tr>
<td>ENG 209</td>
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<tr>
<td><strong>Introduction to Verse Writing:</strong> Practice in writing poetry; group analysis and criticism of work produced by individual students.</td>
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<tr>
<td>ENG 210</td>
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<tr>
<td><strong>Introduction to Fiction Writing:</strong> Practice in writing the short story; group analysis and criticism of work produced by individual students.</td>
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<tr>
<td>ENG 211</td>
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<tr>
<td><strong>Survey of English Literature to 1625</strong></td>
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<tr>
<td>ENG 212</td>
<td>3 (3,0)</td>
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<tr>
<td><strong>Survey of English Literature, 1626-1798</strong></td>
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<tr>
<td>ENG 213</td>
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<tr>
<td><strong>Survey of English Literature, 1798-1914</strong></td>
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<tr>
<td>ENG 300</td>
<td>1 (1,0)</td>
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<tr>
<td><strong>Composition For Accountants:</strong> Writing exercises for students majoring in Accountancy and planning to take the CPA examination.</td>
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<td>ENG 301</td>
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<tr>
<td><strong>Professional Reporting Writing I:</strong> Emphasis on clear expository writing of memoranda, reports and articles in the student's particular field.</td>
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<tr>
<td>ENG 302</td>
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<tr>
<td><strong>Creative Writing Workshop I:</strong> PR: C.I. Practice in established forms: essay, short story, and poetry.</td>
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<tr>
<td>ENG 303</td>
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<tr>
<td><strong>Creative Writing Workshop II:</strong> PR: ENG 302 or C.I. Individualized practice in writing in one of the established forms; analytic study of the work of pertinent authors.</td>
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<tr>
<td>ENG 304</td>
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<tr>
<td><strong>Creative Writing Workshop III:</strong> PR: ENG 303 or C.I. Individualized practice in writing in one of the established forms; analytic study of the work of pertinent authors.</td>
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<tr>
<td>ENG 305</td>
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<tr>
<td><strong>Structure of Verse:</strong> Intensive study of the structural characteristics of English poetry, metrical systems, rhyme, scansion, and poetic rhetorical devices.</td>
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<tr>
<td>ENG 306</td>
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<tr>
<td><strong>Writing for Children:</strong> Practice in writing publishable literature for pre-school and elementary level children.</td>
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<tbody>
<tr>
<td>ENG 307</td>
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<tr>
<td><strong>Writing Skills:</strong> Intensive practice in description, narration, exposition and argumentation; control of tone, mood, viewpoint, and level of diction. Applicable to article, essay, and short-story writing.</td>
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<tr>
<td>ENG 308</td>
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<td><strong>Magazine Writing I:</strong> PR: ENG 307 or C.I. Structure and organization of articles, essays, profiles, and reviews; market analysis; data gathering.</td>
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<tr>
<td>ENG 309</td>
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<td><strong>Magazine Writing II:</strong> PR: ENG 308. Continuation of ENG 308.</td>
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<td>ENG 310</td>
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<tr>
<td>ENG 311</td>
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<td>ENG 312</td>
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<td>ENG 313</td>
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<td>ENG 314</td>
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<td>ENG 316</td>
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<td>ENG 317</td>
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<td>ENG 318</td>
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<td>ENG 321</td>
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<td>ENG 325</td>
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<td>ENG 326</td>
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<td>ENG 400</td>
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<td>ENG 403</td>
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<td>ENG 404</td>
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ENG 410 3 (3,0)
Ethnic Literature in America: Contributions of linguistic and ethnic groups of non-English origin to the literature of the United States.

ENG 415 3 (3,0) F,W
Readings in Shakespeare: Reading and analysis of a selected group of comedies, histories, and tragedies for English Education majors.

ENG 430 3 (3,0)
Chaucer: The Canterbury Tales, Troilus and Criseyde, and other works.

ENG 434 3 (3,0)
Milton: Paradise Lost, Paradise Regained, Samson Agonistes, shorter poems and selected prose.

ENG 439 3 (3,0) Even Yrs.
Renaissance Studies: Reading, analysis and discussion of literature in English: 1588-1660. May be repeated for credit.

ENG 440 3 (3,0) Odd Yrs.
18th Century Studies: Reading, analysis, and discussion of literature in English: 1660-1800. May be repeated for credit.

ENG 441 3 (3,0) Even Yrs.
19th Century Studies: Reading, analysis, and discussion of literature in English: 1800-1914. May be repeated for credit.

ENG 442 3 (3,0) Odd Yrs.
Shakespeare Studies: Reading, analysis, and discussion of Shakespeare's plays. May be repeated for credit.

ENG 443 3 (3,0) Odd Yrs.
Drama Studies: Reading, analysis, and discussion of drama in English (excluding Shakespeare). May be repeated for credit.

ENG 444 3 (3,0)
The British Novel in the 18th Century

ENG 445 3 (3,0)
The British Novel in the 19th Century

ENG 446 3 (3,0)
The American Novel in the 19th Century

ENG 451 3 (3,0)
British and American Fiction Since 1900

ENG 452 3 (3,0)
British and American Poetry Since 1900

ENG 453 3 (3,0)
British and American Drama Since 1900

ENG 460 3 (3,0)
Historical Survey of Literary Criticism: Study of the major critics from classical antiquity through the modern era.

ENG 471 3 (3,0) F
Modern English Grammar: Methods in the study of modern English grammar. Emphasis upon the analysis and comparison of traditional, structural, and transformational grammar.

ENG 472 4 (4,0) S
History of the English Language: Study of the English language and its development from Anglo-Saxon to Modern.

ENG 473 3 (3,0) W
Transformational Grammar: PR: ENG 471. Introduction to philosophical basis of transformational grammar. Students will develop grammar for modern English.

ENG 483 3 (3,0)
Black English: A study of the phonology, morphology, and syntax of Black
English. Provides an understanding of the implications of Black English in contemporary society.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ENG 501</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>Linguistics</strong>: Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.</td>
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</tr>
<tr>
<td>ENG 508</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>Rhetoric and Literature</strong>: Investigates the development of written strategies of persuasion. Traces their relation to practical and imaginative literature. Applications to classroom teaching of literature and composition.</td>
<td></td>
</tr>
<tr>
<td>ENG 520</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>Studies in Contemporary Fiction</strong>: Fiction of the last 20 years in the United States and Britain.</td>
<td></td>
</tr>
<tr>
<td>ENG 521</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>English Renaissance Literature I</strong>: Elizabethan poetry and prose, 1588-1603.</td>
<td></td>
</tr>
<tr>
<td>ENG 522</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>English Renaissance Literature II</strong>: Jacobean and Caroline poetry and prose, 1603-1642.</td>
<td></td>
</tr>
<tr>
<td>ENG 523</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>English Renaissance Literature III</strong>: Commonwealth poetry and prose, 1642-1660, including Milton.</td>
<td></td>
</tr>
<tr>
<td>ENG 524</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Studies In Restoration English Literature</strong>: Literature of the Restoration.</td>
<td></td>
</tr>
<tr>
<td>ENG 525</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>English Literature 1700-1745</strong>: Prose and poetry of the first half of the 18th. Century.</td>
<td></td>
</tr>
<tr>
<td>ENG 526</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>English Literature, 1745-1798</strong>: Prose and poetry of the last half of the 18th. Century.</td>
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</tr>
<tr>
<td>ENG 527</td>
<td>4 (4,0)</td>
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<tr>
<td>ENG 528</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Doubt and Belief (19th. Century Literature)</strong>: English, American, and Continental literature, 1832-1870.</td>
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<tr>
<td>ENG 529</td>
<td>4 (4,0)</td>
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<tr>
<td>ENG 531</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Shakespeare's Comedies</strong></td>
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<tr>
<td>ENG 532</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Shakespeare's Histories</strong></td>
<td></td>
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<tr>
<td>ENG 533</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Shakespeare's Tragedies</strong></td>
<td></td>
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<tr>
<td>ENG 541</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>English Drama to 1642 (exclusive of Shakespeare)</strong></td>
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<tr>
<td>ENG 542</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Restoration and 18th. Century English Drama</strong></td>
<td></td>
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<tr>
<td>ENG 561</td>
<td>4 (4,0)</td>
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<tr>
<td><strong>Use and Enjoyment</strong>: Criticism from Plato to Johnson.</td>
<td></td>
</tr>
<tr>
<td>ENG 562</td>
<td>4 (4,0)</td>
</tr>
<tr>
<td><strong>Modern Theories of Literature</strong>: Criticism since 1800.</td>
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</tr>
</tbody>
</table>
ENG 610
Literary Genres: Provenance, structure and critical problems in a specific genre such as tragedy, the epic, the novel, or the lyric.

ENG 620
World Literature: The study of the influence on British and American literature of selected foreign works read in translation.

ENG 630
Movements in Literature: Study of a movement such as naturalism, romanticism, or classicism, or a pervasive idea such as the absurd.

ENG 640
Problems in Linguistics: PR: ENG 501. In-depth study of the application of linguistics to various aspects of teaching and communication.

ENG 650
Major Literary Authors: Study of a single author or of two or three associated literary authors, with emphasis on biography, bibliography, and style.

ENG 660
Media and Popular Literature: Study of the literary content of contemporary media; popular fictions, such as science fiction, detective fiction, and historical fiction. Application to classroom teaching.

ENG 680
Practicum: The Teaching of Literature: Close work with an experienced instructor in teaching an undergraduate literature course, combined with regular group meetings for discussion of problems of teaching literature.

ENG 685
Practicum: The Teaching of Composition: Close work with an experienced instructor in teaching an undergraduate composition course, combined with regular group meetings for discussion of problems of teaching composition.

ENVIRONMENTAL STUDIES

PHYSICAL EDUCATION

The Environmental Studies Physical Education 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: A study and application of the physiological benefits of basic aquatic developmental skills — elementary and advanced strokes, water safety, springboard diving, and interval training.

ESPE 302
Body Development: A study and application of the metabolic, neuromuscular, and cardiovascular changes resulting from select physical activities.

ESPE 304
Golf: A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carryover activity.

ESPE 305
Tennis: A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carryover activity.

ESPE 306
Life Saving: Instruction, training and certification in basic life saving swimming skills.

ESPE 307
Scuba Diving: Instruction, training and certification in basic diving skills with
self-contained underwater breathing apparatus. Students may be required to supply their own equipment.

ESPE 308  3 (2,2) W,Su
Interpretive Dance: Instruction and analysis of creative dance performance as an art form.

ESPE 483  3 (3,0) F,W,S,Su
Actualization of Physical Potential in Contemporary Living: Factors underlying physical potential. Self physical assessment, values of physical activity, self-improvement, contemporary problems, body awareness, body mechanics, family responsibilities. Development of individual program.
FINANCE

FIN 300 3 (3,0) F,W,S
Personal Investments: PR: Junior Standing. Study of the fundamentals of managing and investing one's money. Topics include: budgeting, home ownership, insurance, stocks and bonds. Course satisfies Advance Environmental Studies requirement.

FIN 301 5 (5,0) F,W,S,Su
Finance: PR: ACCY 212 or ACCY 300, and ECON 203. Fundamentals of obtaining and administering funds to meet short-term and long-term capital requirements.

FIN 311 4 (4,0)
Risk and Insurance: PR: Junior Standing or C.I. Principles and methods of risk reduction and specialization, with particular emphasis on insurance.

FIN 321 4 (4,0)
Investments: PR: FIN 301 or C.I. Principles of determining investment policy for individual institutional portfolios.

FIN 331 4 (4,0) F,W,S,Su
Money and Banking: PR: ECON 203 or C.I. 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 4 (4,0)
Real Estate: PR: Junior standing. Basic principles of real estate ownership, its use and transfer, brokerage, management, legislation, and importance to the economy.

FIN 351 4 (4,0) F,W,S,Su
Financial Institutions: PR: FIN 301. The operation of financial institutions and an analysis of their role in the economy.

FIN 352 4 (4,0) W
Commercial Bank Administration: PR: FIN 301, FIN 351. Administrative areas of a commercial bank including operations, management of bank assets and liabilities, lending policies, trust & fiduciary activities, and regulatory aspects.

FIN 361 4 (4,0) F,W,S

FIN 421 4 (4,0)
Security Analysis: PR: FIN 301 and FIN 321. The problems of selecting securities for various investment purposes.

FIN 431 4 (4,0) F,S

FIN 461 4 (4,0) W,Su
Portfolio Management: PR: FIN 301. The management of security and asset portfolios with emphasis on portfolio selection and management using basic techniques derived from portfolio theory.

FIN 501 4 (4,0) F,S
Financial Concepts: PR: Acceptance into the graduate program, ACCY 501 and ECON 501 or equivalents. Effects of financial decisions upon the firm, interrelationships of these effects, and alternatives available to financial managers in meeting financing needs of the firm.

FIN 601 3 (3,0)
Capital Management and Analysis: PR: Graduate standing and FIN 501 or
equivalent. Financial planning, valuation, sources of long-term capital, concepts of cost of capital and capital budgeting.

FIN 611  3 (3,0)

FIN 631  3 (3,0)
Analysis of Investment Opportunities: PR: Graduate standing and FIN 501 or equivalent. Techniques for evaluating securities, investment decision making, and portfolio management.

FOREIGN LANGUAGES

FL 323  4 (4,0)
Comparative World Literature I: Masterworks of world literature in translation from the Book of Job to Cervantes. Authors include Homer, Sophocles, Cicero, Virgil, St. Augustine, Dante, Chaucer, Montaigne and Shakespeare.

FL 324  4 (4,0)
Comparative World Literature II: Continuation of FL 323, Renaissance to 20th Century, including Pascal, Milton, Rousseau, Goethe, Wordsworth, Poe, Balzac, Chekov, Baudelaire, Yeats, Mann, and Camus. Need not be taken in sequence with FL 323.

FORENSIC SCIENCE

FSC 300  4 (4,0)
Introduction to Forensic Science: Intended for nonmajors to provide an appreciation for the ways in which science serves the civil and criminal justice system.

FSC 301  4 (2,6)
Criminalistics I: PR: CHEM 263 or C.I. Examination and evaluation of evidence obtained from suspect criminal actions, including the microscopy of trace evidence.

FSC 302  4 (2,6)
Criminalistics II: PR: FSC 301. Continuation of FSC 301.

FSC 305  4 (2,6)
Civilistics: PR: FSC 301. Examination and evaluation of evidence obtained from suspect civil actions involving water and air pollution, public safety, and product design.

FSC 356  4 (2,6)
Forensic Analysis Techniques: PR: CHEM 352. Study of separation, purification, quantitative, and instrumental techniques in drug and narcotic analysis toxicology, blood factor, and enzyme identification.

FSC 470  4 (0,40)
Forensic Science Internship: PR: C.I. Credit for full-time work (10-12 Weeks) in a professional forensic laboratory. This course may be repeated for credit.

FRENCH

FRE 100  1 (1,0)
French Diction: This course is especially designed for music and voice students with an emphasis on musical terms, French songs and opera libretti.

FRE 101  4 (4,1)
Elementary French Language and Civilization: Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to French culture.


Intermediate French Language and Civilization: PR: FRE 202 or equivalent. Continuation of FRE 202 with greater emphasis on French civilization from the Middle Ages to the present.

French Conversation: PR: FRE 203 or equivalent. Development of skills in conversation and comprehension. This course may be repeated for credit. When repeated, credit will apply to general electives only.

French Composition: PR: FRE 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

Survey of French Literature I: PR: FRE 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance.

Survey of French Literature II: PR: FRE 203 or equivalent. Main literary currents and works of the seventeenth and eighteenth centuries.

Survey of French Literature III: PR: FRE 203 or equivalent. Main literary currents and works of the nineteenth and twentieth centuries.

Short Stories of 18th, 19th and 20th Centuries: PR: FRE 203 or equivalent. Selected readings designed to increase reading speed and develop analytical abilities. Authors include: Voltaire, Maupassant, Flaubert, Camus and others.

French Phonetics and Diction: PR: FRE 303 or equivalent. French phonology with emphasis on phonic groupings.

Advanced French Conversation: PR: FRE 301. Advanced conversation on directed topics from various disciplines: Literature, art, psychology, philosophy, music, business and the sciences.

Advanced French Composition: PR: FRE 303. Readings and written imitations of modern literary styles in the form of themes, sketches, poems and original stories.

Seventeenth Century French Theater: PR: FRE 312. Corneille, Racine, and Moliere. A study of the lives and principal works of the authors.

FRE 441 4 (4,0)

FRE 442 4 (4,0)

FRE 443 4 (4,0)

FRE 444 4 (4,0)

FRE 451 4 (4,0)
Twentieth Century French Literature: Contemporary French drama and poetry.

FRE 453 4 (4,0)

FRE 481 4 (4,0)
Stylistics: PR: FRE 301 or equivalent. An intense study of textual criticism. An examination of the relationship between language and literature; explanations and linguistic analysis of literary texts.

G

GEOGRAPHY, PHYSICAL

GEOG 100 4 (4,0)
Physical Geography: Basic physical elements of geography including climate, landforms, soils, natural vegetation, minerals and their integrated patterns of world distribution.

GEOG 301 3 (3,0)
Resources Geography: Analysis of basic principles and problems associated with development, use, conservation, and management of natural resources with special emphasis on the United States.

GEOGRAPHY, SOCIAL

GEOG 350 4 (4,0)
Urban Geography: The city as a geographical phenomenon created by human effort, its historical development; patterns of land use as related to economic, sociological and political influences. (Same as PAD 324).

GEOG 360 4 (4,0)
World Political Geography: Analysis of the types and distributions of political systems, review of factors which affect relative power of diverse politics, areas of conflict and arbitration. (Same as PCL 322).

GEOLOGY

GEOL 100 4 (4,0) F,W
Geology and Its Applications: Survey of geologic applications and hazards including: gemstones, geothermal energy, fossil fuels, groundwater, sinkhole, beach erosion, landslides, earthquakes, "tidal" waves, volcanism. Appropriate for Environmental Studies.

GEOL 105 4 (4,0) S
Historical Geology: Lunar and planetary histories, evolution of earth's crust including drifting continents and mountain building, evolution of life as reconstructed from fossils. Appropriate for Environmental Studies.
### Physical Geology: PR: GEOL 100. Geologic principles and recent theories developed in some depth with the aid of rock and mineral samples and geologic maps.

### Geology of Our National Parks and Monuments: Unique geologic features preserved in our national park system and the processes that gave rise to these features. Meets advanced ESP requirements: designed for non-majors.

## GERMAN

### GER 100 1 (0,1)
**German Diction:** This course is especially designed for music and voice students with an emphasis on musical terms. German songs and opera libretti.

### GER 101 4 (4,1) F
**Elementary German Language and Civilization:** 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 4 (4,1) W
**Elementary German Language and Civilization:** PR: GER 101 or equivalent. Continuation of GER 101.

### GER 103 4 (4,1) S
**Elementary German Language and Civilization:** PR: GER 102 or equivalent. Continuation of GER 102.

### GER 201 4 (4,1) F
**Intermediate German Language and Civilization:** PR: GER 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of German culture.

### GER 202 4 (4,1) W
**Intermediate German Language and Civilization:** PR: GER 201 or equivalent. Continuation of GER 201.

### GER 203 4 (4,1) S
**Intermediate German Language and Civilization:** PR: GER 202 or equivalent. Continuation of GER 202 with greater emphasis on German civilization from the Middle Ages to the present.

### GER 301 4 (4,0)
**German Conversation:** PR: GER 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.

### GER 303 4 (4,0)
**German Composition:** PR: GER 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

### GER 311 4 (4,0)
**Survey of German Literature I:** PR: GER 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance and Baroque.

### GER 312 4 (4,0)
**Survey of German Literature II:** PR: GER 203 or equivalent. Main literary currents and works of the 17th and 18th centuries.

### GER 313 4 (4,0)
**Survey of German Literature III:** PR: GER 203 or equivalent. Main literary currents and works of the 19th and 20th centuries.

### GER 321 4 (4,0)
**Short Story:** PR: GER 203 or equivalent. German short prose works of the 19th and 20th centuries.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Days</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 201</td>
<td>4 (4,0)</td>
<td>F,W,S</td>
<td>Western Culture and Civilization I: Rise of culture and civilization in the West from earliest times to the eve of the Renaissance.</td>
</tr>
<tr>
<td>HIST 202</td>
<td>4 (4,0)</td>
<td>F,W,S</td>
<td>Western Culture and Civilization II: Continuation of HIST 201. Europe from its feudal manorial state through the Napoleonic era.</td>
</tr>
<tr>
<td>HIST 203</td>
<td>4 (4,0)</td>
<td>F,W,S</td>
<td>Western Culture and Civilization III: Continuation of HIST 202. The Romantic era, the influence of liberalism, nationalism, and modern industrialism upon political, social, economic, and intellectual life.</td>
</tr>
<tr>
<td>HIST 210</td>
<td>4 (4,0)</td>
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<td>Introduction to Anglo-American Law; An historical survey of the development of the principles and processes of the American law from its origins in English common law to the present. (Same as LES 201).</td>
</tr>
<tr>
<td>HIST 301</td>
<td>4 (4,0)</td>
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<td>Age of Transition: A survey of social, economic, political, religious, and cultural developments in Europe from the fall of Rome to the 10th century. (Formerly HIST 353).</td>
</tr>
<tr>
<td>HIST 302</td>
<td>4 (4,0)</td>
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<td>Medieval Society and Civilization: A survey of social, economic, political, religious, and cultural developments in Europe from the 10th to the 13th centuries. (Formerly HIST 354)</td>
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<tr>
<td>HIST 303</td>
<td>4 (4,0)</td>
<td></td>
<td>Italian Renaissance</td>
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<tr>
<td>HIST 304</td>
<td>4 (4,0)</td>
<td></td>
<td>Protestant and Catholic Reformation</td>
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<tr>
<td>HIST 305</td>
<td>4 (4,0)</td>
<td></td>
<td>Enlightenment and Religious Revival: Science and political absolutism; the Enlightenment and the philosophies: secularism, cosmopolitanism and humanitarianism; the French Revolution; religious revival, and the beginning of romanticism. (Formerly HIST 301).</td>
</tr>
<tr>
<td>HIST 306</td>
<td>4 (4,0)</td>
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<td>Age of Revolution and Napoleon: Cause and course of the revolution; the rise and fall of Napoleon; impact on the thought and action of Western Europe. (Formerly HIST 457).</td>
</tr>
<tr>
<td>HIST 307</td>
<td>4 (4,0)</td>
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<td>Romanticism and Realism: Napoleon and nationalism; new ideas: conservatism; liberalism, romanticism, republicanism and socialism; urbanization, technology and mass culture; religious decline; Realpolitik, racism, imperialism and militarism. (Formerly HIST 302).</td>
</tr>
<tr>
<td>HIST 308</td>
<td>4 (4,0)</td>
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<td>The Rise of Mass Culture and Democracy, 1890-1930: Europe in the era of modern technology, militarism, the First World War, Paris Peace Conference, popular culture, and new democratic institutions east of the Rhine. (Formerly HIST 445).</td>
</tr>
<tr>
<td>HIST 309</td>
<td>4 (4,0)</td>
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<td>Second World War and Rebirth of Europe: Origins of World War II; Hitler's &quot;New Order,&quot; and resistance movements; Cold War; de-Stalinization in Russia; Sovietization of East Central Europe; Western reconstruction, and prosperity. (Formerly HIST 447).</td>
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<tr>
<td>Course Code</td>
<td>Credits</td>
<td>Term(s)</td>
<td>Description</td>
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<tr>
<td>HIST 311</td>
<td>4</td>
<td>F,W,S</td>
<td>American Economic History: An introduction to the economic development of the United States with emphasis upon agriculture, labor, industrialization, transportation, and banking. (Same as ECON 307).</td>
</tr>
<tr>
<td>HIST 312</td>
<td>4</td>
<td>F,W,S</td>
<td>American Political History: An introduction to political life in the United States with emphasis upon the three branches of government, political parties, and the federal system.</td>
</tr>
<tr>
<td>HIST 313</td>
<td>4</td>
<td>F,W,S</td>
<td>American Social History: An introduction to the effect of social change on Americans and their political institutions. Emphasis is placed on demographic, sexual and technological change.</td>
</tr>
<tr>
<td>HIST 320</td>
<td>4</td>
<td></td>
<td>The Changing Frontier in American History: A survey of the types and geographic settings of the frontiers. Attention given to the impact of the frontier on American History.</td>
</tr>
<tr>
<td>HIST 322</td>
<td>4</td>
<td></td>
<td>U.S. Constitutional History I: Development of the constitutional system and the idea of Constitutionalism from the colonial emphasis on written contracts and natural law through &quot;nullification&quot; and Civil War.</td>
</tr>
<tr>
<td>HIST 323</td>
<td>4</td>
<td></td>
<td>U.S. Constitutional History II: Post-war constitutional changes; the curious role of the 14th amendment; expansion of national power over the economy and civil rights; increasing popular belief in &quot;Constitutionalism.&quot;</td>
</tr>
<tr>
<td>HIST 324</td>
<td>4</td>
<td></td>
<td>Black American History: History of Negroes from their African heritage through American Slavery to freedom and their role in 20th Century America.</td>
</tr>
<tr>
<td>HIST 326</td>
<td>4</td>
<td></td>
<td>History of Florida to 1845</td>
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<tr>
<td>HIST 327</td>
<td>4</td>
<td></td>
<td>Florida History 1845 - Present</td>
</tr>
<tr>
<td>HIST 328</td>
<td>4</td>
<td>W</td>
<td>History of the South to 1865: Development of the southern colonies, beginning of sectionalism, the cotton economy, slavery, Calhoun's constitutional theories, secession, Civil War and its aftermath.</td>
</tr>
<tr>
<td>HIST 329</td>
<td>4</td>
<td>S</td>
<td>History of the South Since 1865: Reconstruction, the &quot;solid South&quot; and the racial dilemma, progressivism for whites only, southern literature, 20th century economic, political, and social changes, and the new Reconstruction.</td>
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<tr>
<td>HIST 331</td>
<td>4</td>
<td>W</td>
<td>Latin American History: The 19th Century: Continuation of HIST 330.</td>
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<tr>
<td>HIST 332</td>
<td>4</td>
<td>S</td>
<td>Latin American History: The 20th Century: Continuation of HIST 331.</td>
</tr>
<tr>
<td>HIST 333</td>
<td>4</td>
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<td>Spanish Borderlands: Survey of Spanish settlement in South and Southwestern U.S. with emphasis upon cultural conflicts found in the imperial rivalries for control of the area.</td>
</tr>
<tr>
<td>HIST 340</td>
<td>4</td>
<td></td>
<td>Modern Middle East</td>
</tr>
<tr>
<td>HIST 351</td>
<td>4</td>
<td></td>
<td>The Classical World: Greece: History and culture of Greece from the Minoan-</td>
</tr>
</tbody>
</table>
Mycenaean to the Hellenistic age, with emphasis on contributions in art, literature and philosophy. (Same as HUM 351).

**HIST 352**

The Classical World: Rome: History and culture of Rome from the Etruscan Period to the dissolution of the empire, with emphasis on contributions in architecture, law and literature. (Same as HUM 352).

**HIST 355**

Renaissance and Reformation: The influence of Renaissance humanism on arts, letters, and politics; Luther and Protestantism; the Catholic Counter-Reformation and the Thirty Years' War.

**HIST 370**

Survey of East Asia: An introduction to Far Eastern Cultures including India since the Age of the Moguls, China since early European penetration, Japan since the Hermit Kingdom. (Formerly HIST 304).

**HIST 411**

Colonial America, 1607-1763: The voyages of discovery, the origins of the thirteen colonies, and their political, economic, social, and religious life in the 17th and 18th centuries.

**HIST 412**

The Age of the American Revolution, 1763-1789: The American Revolution — its origins, course, and impact upon American society — the Articles of Confederation, the Philadelphia Convention and its work.

**HIST 413**

Age of Jefferson: The writing of the Constitution, the Federalist decade, Jeffersonian Democracy, the War of 1812, and emergence of New Nationalism.

**HIST 414**

Reign of Jackson: Administration of Andrew Jackson to the Civil War.

**HIST 415**

Civil War and Reconstruction: Reconstruction, and impact of industrialism.

**HIST 416**

Robber Baron Era: The Agrarian Revolt, the Spanish-American War, and the Progressive Era.

**HIST 417**

United States History: 1914-1940: 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: Contemporary America from World War II.

**HIST 420**

United States Diplomatic History: 1776-1914: A study of the evolution of basic American policies, American expansion and America's major wars with emphasis upon the international background.

**HIST 421**

United States Diplomatic History: 1914-Present: A study of the response of American diplomacy, the breakdown of the European equilibrium, the scientific revolution and the challenge of the totalitarian dictatorships.

**HIST 422**

American Culture I: The European Backgrounds; Puritanism; Enlightenment; the Great Awakening; Revolutionary Thought; Romanticism; the Southern Mind and the Yankee Response; Popular Culture and the rise of recreation.

**HIST 423**

American Culture II: The Darwinian Revolution; revolt of the intellectuals; the media explosion; mass entertainment in mass culture; the loss of community, the nuclear age, and presentism.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 424</td>
<td>European Diplomatic History: 1815-1914</td>
<td>The relationship of the European great powers from the Congress of Vienna to the outbreak of the First World War.</td>
</tr>
<tr>
<td>HIST 425</td>
<td>European Diplomatic History: 1914-Present</td>
<td>The relationship of the European great powers from the outbreak of the First World War to the present.</td>
</tr>
<tr>
<td>HIST 435</td>
<td>China in 19th and 20th Centuries</td>
<td>The Mongols in China; coming of the Europeans; social structure; Communist movement; Japanese aggression.</td>
</tr>
<tr>
<td>HIST 439</td>
<td>Modern Japan, 19th and 20th Centuries</td>
<td>A survey of the Tokugawa Shogunate; Western contact in the 19th century; World War I; Japanese militarism; World War II; and U.S. occupation.</td>
</tr>
<tr>
<td>HIST 441</td>
<td>The Rise of Modern Germany</td>
<td>Central Europe from the Reformation to 1890; The Thirty Years' War and absolute despotism; AustroPrussian rivalry; the German Enlightenment, Bismarck and the Second Reich.</td>
</tr>
<tr>
<td>HIST 442</td>
<td>Hitler's Third Reich</td>
<td>German nationalism and militarism; World War I and the Versailles Treaty; the Weimar Republic and the rise of the Nazis; Second World War, division and recovery.</td>
</tr>
<tr>
<td>HIST 446</td>
<td>Fascism and the Totalitarian Dictatorships</td>
<td>Totalitarian ideologies, institutions, and practices in Lenin's and Stalin's Russia, Mussolini's Italy, and Hitler's Third Reich; fascist movements in the non-totalitarian states.</td>
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<tr>
<td>HIST 455</td>
<td>French Monarchy: Louis XI to Henry IV</td>
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<td>HIST 456</td>
<td>French Monarchy: Henry IV to Louis XVIII</td>
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<tr>
<td>HIST 458</td>
<td>France, 1815-1914</td>
<td>Legacy of the French Revolution; Revolutions of 1830 and 1848; Franco-Prussian War and Third French Republic; Franco-German Rivalry and formation of the Entente.</td>
</tr>
<tr>
<td>HIST 459</td>
<td>France, 1914-Present</td>
<td>World War and aftermath; Locarno spirit; rise of Fascism and French response, World War II; Fourth Republic and Reconstruction; deGaulle and the Fifth Republic.</td>
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<td>HIST 461</td>
<td>English History to 1485</td>
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<td>HIST 462</td>
<td>English History: 1485-1815</td>
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<tr>
<td>HIST 463</td>
<td>British History: 1815-Present</td>
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<tr>
<td>HIST 464</td>
<td>British Empire and Commonwealth</td>
<td>Development of the British Empire and Commonwealth since the American Revolution.</td>
</tr>
<tr>
<td>HIST 466</td>
<td>British History: Tudor-Stuart Period</td>
<td>A study of the Tudor-Stuart period, with particular emphasis on the civil/religious conflicts of the time.</td>
</tr>
<tr>
<td>HIST 470</td>
<td>History of Russia to 1801</td>
<td>Kievan State; Mongol Yoke; Development of Moscovite Expansionism and Absolutism; Time of Troubles, Westernization of Russia under Peter I and Catherine; Role of Orthodox Church.</td>
</tr>
</tbody>
</table>
HIST 471 4 (4,0)
History of Russia: 1801-1917: Alexander I; Napoleonic Invasion; Revolutionary Movement; Russian Policy toward Central Asia and China; Great Reforms; Russo-Japanese War; Revolution of 1905; Constitutional Period; Triple Entente.

HIST 472 4 (4,0)
History of the Soviet Union: 1917-Present: First War; 1917 Revolutions; Civil War; New Economic Policy; Stalin-Trotsky Struggle; Collectivization; Stalinist Purges; Second War; Post-Stalin Russia; Khrushchev; Sino-Soviet Relations.

HIST 473 4 (4,0)
Soviet Foreign Policy: 1917 to Present: Begins with Comintern policy, establishment of relations with capitalist countries, rise of Fascism, World War II, post-Stalin foreign policy.

HIST 480 4 (4,0)
History and Historians: PR: C.I. A study of European and/or American historiography. May be repeated once for credit.

HUMANITIES

HUM 201 4 (4,0) F,W,S,Su
Landmarks in Western Humanities: Selected examples of man’s creative achievements in literature, philosophy, art, music; inter-related to enlarge understanding of the nature of man and appreciation of human values.

HUM 351 4 (4,0)
The Classical World: Greece: History and culture of Greece from the Minoan-Mycenaean to the Hellenistic age, with emphasis on contributions in art, literature and philosophy. (Same as HIST 351).

HUM 352 4 (4,0)
The Classical World: Rome: History and culture of Rome from the Etruscan Period to the dissolution of the empire, with emphasis on contributions in architecture, law and literature. (Same as HIST 352).

HUM 401 4 (4,0) F
The Ideal of Nature in the Arts: The search for identity with nature revealed in the arts of various times and cultures. Concerns feeling, imagination, subjectivity, creativity. Open to all upperclassmen.

HUM 402 4 (4,0) W
The Classical Ideal in the Arts: The search for order and form reflected in the arts of Greece and later cultures. Concerns reason, structure, objectivity, harmony. Open to all upperclassmen.

HUM 403 4 (4,0) S
The Spiritual Ideal in the Arts: The search for the meaning and experience of the sublime reflected in the arts. Spiritual impulses contrasted to pathos and ethos. Open to all upperclassmen.

HUMANITIES AND FINE ARTS

HFA 416 6-15
Supervised Special Training: Supervised special work experience. Open to students combining a major in Humanities and Fine Arts with Business Administration. Must be arranged in advance of registration.

HFA 490 3 (3,0)
Senior Seminar: Humanities and Arts in Human Affairs: Forum on the art and thought of the contemporary world. Intended for senior students. Offered as Advanced Environmental Studies seminar.
INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS

IEMS 301
**Management Standards:** CR: ENGR 341 or equivalent. Management standards for evaluation and control of man and man-machine systems. Flow and operation analysis, work measurement, job evaluation, wage determination techniques. Laboratory assignments.

IEMS 311
**Engineering Law:** PR: Junior standing. Influence of contract, property and tort law, upon engineering activities; contracts, agency, partnerships, corporations, liens and expert testimony. Patents and licensing.

IEMS 324
**Production Management:** PR: Sophomore standing. Principles and methods of production viewed from a managerial decision-making level.

IEMS 332
**Statistical Quality Control:** Statistical concepts and methods applied to the control of quality of manufactured products. (Same as STAT 332).

IEMS 412
**Safety Engineering:** PR: Junior standing. Basic principles of accident prevention in relation to hazards within workplace environment including machinery, flammable materials, pressure vessels and electrical hazards.

IEMS 413
**Safety Administration:** Organization of safety programs. Motivating safety habits and safety consciousness. Organizational aspects of accident prevention. Safety information systems and accident costs.

IEMS 414
**Industrial Facilities Planning Design:** PR: IEMS 301. Comprehensive design of industrial production systems including inter-relationships of plant location, process design, and materials handling. Laboratory assignments using computer and scale models.

IEMS 422
**Network Analysis:** PR: ENGR 442. Development, application and computerized analysis of networks for systems analysis and control. Applications of CPM, PERT, GERT, and maximal flow concepts.

IEMS 424
**Management Control Systems:** PR: ENGR 371. Management decision rules including mathematical and economic models of forecasting, scheduling, order, and inventory control problems. Lab assignments using computer algorithms.

IEMS 432
**System Simulation with Digital Computers:** PR: COMP 302 or equivalent. Methods and procedures for simulating large scale systems with digital computers, FORTRAN, CSMP and GPSS programming languages are used.

IEMS 434
**Industrial Information Systems:** PR: COMP 302, IEMS 424. Study of computerized information systems applied to manufacturing operations. Emphasis on development of automated information systems for control of men, materials and equipment. Laboratory assignments.

IEMS 441
**Mathematical Systems Theory I:** PR: MATH 331 and Senior standing. Concepts of linear systems analysis. Introduction to state and space techniques. Stable and unstable behavior of linear systems.
IEMS 447 3 (3.0) W

IEMS 450 4 (3.2) W
Biomedical Engineering: PR: ENGR 342 or C.I. Engineering description and analysis of living systems. Systems Analysis and its application to biomedical and ecological systems. Laboratory assignments.

IEMS 461 3 (2.2) S
Human Engineering: PR: Senior standing. Man-machine systems; design and conduct of human engineering studies.

IEMS 463 4 (4.0)
Occupational Health: Industrial health hazards and occupational diseases. Control of health hazards; substitution of less toxic materials, process changes, segregation of hazardous processes, noise control, radiation hazards.

IEMS 470 3 (3.0)
Introduction to Public Systems Analysis: PR: ENGR 371 or equivalent. Application of probability and statistics to the analysis of public systems data. Operations research models and applications; economic decision-models; cost/benefit analysis.

IEMS 502 3 (3.0) F
Probability for Engineers: PR: ENGR 371. Engineering application of probability, combinatorial analysis, sample space, events, probability, discrete and continuous random variables, and probability distributions. (Same as STAT 535).

IEMS 503 3 (3.0) W
Statistics for Engineers: PR: ENGR 371. Engineering application of statistics, significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation. (Same as STAT 536).

IEMS 510 4 (3.2)

IEMS 512 4 (3.2)

IEMS 521 3 (3.0) W
Engineering Reliability and Quality Assurance: PR: ENGR 371 or C.I. Design and management of reliability programs and quality assurance systems; mathematics of reliability.

IEMS 532 4 (4.0) S
Management Information Systems I: PR: IEMS 434 or C.I. The design and implementation of computer-based Management Information Systems. Consideration is given to the organizational, managerial and economic aspects of MIS.

IEMS 541 4 (4.0) F
Mathematical Systems Theory II: PR: IEMS 441 or equivalent. Introduction to non-linear analysis. Approximation methods and numerical solutions. Stability of non-linear systems. Systems examples to be taken from engineering, environmental science, and economics.

IEMS 550 4 (3.2)
Biomedical Instrumentation: PR: ENGR 342 or C.I. Theory and techniques of biological instrumentation systems including transducers and computers.
stage decision processes based on the application of the principle of optimality. Stochastic and deterministic models are developed.

IEMS 629
Production & Inventory Control: PR: IEMS 424 or equivalent. Review of models and techniques used in forecasting, production control and inventory control. Includes aggregate planning, production scheduling, inventory management, models, etc.

IEMS 640
Systems Dynamics: PR: COMP 302 or equivalent. Industrial dynamics and the use of computer-based simulation models for the improvement of management control systems. Use of Dynamo II computer simulation language.

IEMS 641

IEMS 667
Man — Computer Interaction: PR: IEMS 461 or C.I. The elements of man-computer interactive systems; hardware and software considerations; requirements of CAI, CAD, and MIS applications; design difficulties found in these systems.

IEMS 671
Public Works Economics: PR: ENGR 341 or equivalent. Economic considerations in public works planning. The nature and objective functions of public works projects; cost estimating, cost allocation and pricing. Cost/benefit analysis on primary and secondary benefits from public works projects.

IEMS 672
Urban Dynamics: PR: IEMS 540. Development of dynamic and community systems models. Use of computer simulation to analyze governmental and private sector policies in selected areas such as housing programs, industrial growth, worker training programs, environmental quality control, urban planning and land use planning.

IEMS 678
Public Operating Systems Analysis: PR: ENGR 371 or equivalent. Establishment of data base for public operating systems, including identification of data requirements. Development of service demand and workload relationships, resource and manpower requirements.

ITALIAN

ITA 100
Italian Diction: This course is especially designed for music and voice students with an emphasis on musical terms, Italian songs and opera libretti.

ITA 101
Elementary Italian Language and Civilization: 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: PR: ITA 101 or equivalent. Continuation of ITA 101.

ITA 103
Elementary Italian Language and Civilization: PR: ITA 102 or equivalent. Continuation of ITA 102.

J

JOURNALISM

JRN 319
Basic Reporting: Development of skills in gathering and writing for the mass media. Student must have minimum ability to type.
JRN 321 4 (2,2) W,F
Copy Editing: PR: JRN 319. Fundamentals of copy editing for printed media, including selection, processing and display of news.

JRN 322 4 (4,0) S
Advanced Editing: PR: JRN 321 or equivalent. Planning content and format of newspaper and other periodicals; layout; dummying, departmental editing, copy desk management.

JRN 323 4 (4,0)
Photojournalism I: Learning the use of the still camera, darkroom procedures, role of the photographer.

JRN 324 4 (4,0)
Photojournalism II: PR: JRN 323 or equivalent. Further study in the use of the still camera and darkroom procedures plus color photography.

JRN 330 4 (4,0) W
History of American Journalism: Development of newspapers and magazines, the press associations and the growth of the electronic media.

JRN 331 3 (3,0)
Film Criticism: PR: C.I. The practice of writing movie reviews: students will review at least one film a week during the course.

JRN 420 4 (4,0)
Technical and Scientific Writing: PR: C.I. The practice in the gathering of materials for technical and scientific articles; digesting of technical information into more readable forms.

JRN 421 4 (4,0)
Editorial and Column Writing: PR: C.I. Building the editorial page, backgroundering and interpreting the news.

JRN 422 4 (4,0)
Public Affairs Reporting: PR: JRN 319 or C.I. Study of community news sources, reporting courts, city and county government.

JRN 423 4 (4,0)
Writing for the Mass Media: PR: C.I. Students write for a certain segment of the mass media of their own choosing. Will include creative writing, article writing, etc. May be repeated for credit.

JRN 424 4 (4,0)
Critical Writing: PR: C.I. Practice in writing reviews of plays, concerts, and books.

JRN 425 4 (4,0)
Feature Writing: PR: C.I. Writing of feature articles for newspapers and magazines.

JRN 426 4 (4,0)
Political Cartooning I: PR: Evidence of drawing ability. The history and technique of the political cartoon plus marketing and syndication considerations.

JRN 427 4 (4,0)
Political Cartooning II: PR: JRN 426 or C.I. Further study into the technique of political cartooning.

JRN 430 4 (4,0)
The Newspaper in the Classroom: Study of the use of the newspaper as a teaching aid in the classroom. Designed for persons currently teaching or majoring in education.

JRN 431 4 (4,0)
International Communication and the Foreign Press: A study of the news communicating systems of the world, the role of foreign correspondents, the foreign press.
JRN 433 4 (4,0) W,Su
Propaganda and Psychological Warfare: Propaganda and psychological warfare principles with a study of the activities engaged in by nations.

JRN 440 4 (4,0)
Public Relations: Principles and practice of public relations, the means of gaining publicity and influencing people.

JRN 441 4 (4,0)
Public Relations Campaigns: PR: JRN 440. Planning and execution of a public relations campaign; use of research and coordination of elements of the campaign.

JRN 442 4 (4,0)
Institutional Public Relations: PR: JRN 440 or C.I. Principles and methods of public relations as practiced by educational, medical and corporate-related institutions.

JRN 464 4 (4,0)
Principles of Advertising: PR: RTV 451. Analysis of field of advertising; purposes, techniques, media, organization, and role of research; economic and social aspects of advertising. (Same as MKTG 364).

JRN 465 4 (4,0)
Advertising Media: PR: JRN 464 or C.I. Evaluation of advertising media, their ability to serve the advertiser’s communication needs and analysis used in determining media success.

JRN 466 4 (2,2) S

JRN 467 4 (4,0) S
Advertising Campaign: PR: JRN 464, JRN 465, JRN 466. The planning and execution of an advertising campaign; use of research and coordination of elements of the campaign.

JRN 468 4 (2,2)
Newspaper and Magazine Advertising: PR: C.I. A study of print advertising as it affects the retail advertiser; the mechanical requirements and limitations in print advertising.

LEGAL SERVICES — ALLIED

LES 201
Development of Anglo-American Law: A historical survey of the development of the principles and processes of the American Law from its origins in English common law to the present. (Same as HIST 210).

LES 202
Law and Justice: An examination of the philosophical origins of various concepts of legal justice with emphasis on the Anglo-American system.

LES 301
Law and Society: An overview of the law and the legal system and how they relate to our social, political and economic environment.

LES 302
Legal Investigation: A study of how legal questions are researched to obtain the applicable law. Examination of information collection and investigation procedures involved in legal actions.

LES 303
Comparative Legal Systems: A comparison of the Anglo-American system of law with those of selected contrasting cultures and nations.
applications. The nature of biological signals, their detection, analysis and display.


IEMS 603 Analysis of Industrial Operations: PR: IEMS 602. Role of engineering economics and operations research in analysis of industrial operations. Includes application of linear programming, queueing, inventory model and decision theory case studies.

IEMS 610 Project Engineering: PR: Graduate standing. Role of the project engineer in research and development, emphasizing the sequence of steps from project proposal to project completion. Analytical techniques will be considered.


IEMS 612 System Safety: PR: IEMS 412 or C.I., Concepts of system safety as applied to the recognition, evaluation and prevention or control of hazards in industry. Fault free analysis and risk management.


IEMS 621 Production Control: PR: IEMS 424 & IEMS 434 or C.I. Analytical methods in production control. Topics include: forecasting, production planning & scheduling, sequencing, and manufacturing process control. Emphasis given to the application of computer systems.


IEMS 624 Operations Research I: PR: ENGR 442 or equivalent. Methods of operations research including formulation of models and derivation of solutions by optimization techniques; sequencing and replacement, linear programming, geometric and dynamic programming.

IEMS 625 Operations Research II: PR: IEMS 624. Introduction to stochastic models and techniques including queueing theory. Simulation, non-linear programming, calculus of variations, and forecasting.

IEMS 626 Linear Programming: PR: ENGR 442 or equivalent. Theoretical and computational aspects of linear programming and related topics. Includes simplex algorithms, duality theory and integer programming. Operational applications and computer solutions are emphasized.


IEMS 628 Dynamic Programming: PR: IEMS 624. A study of the optimization of multi-
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<tr>
<td>LES 304</td>
<td>Law and the Paraprofessional: A study of the duties of the legal assistant in a law office. An examination of the ethical standards under which he works.</td>
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<tr>
<td>LES 305</td>
<td>Litigation and Trial Practice: A study of the more common types of law suits and procedures involved in the preparation, litigation and appeal of cases.</td>
<td>4</td>
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<tr>
<td>LES 306</td>
<td>Law Office Administration: A study of the organization, control, and operation of a law office with emphasis placed on the role of the legal administrator.</td>
<td>4</td>
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<tr>
<td>LES 315</td>
<td>Administrative Law: Study of the law governing the structure and processes of public service agencies and government departments and bureaus.</td>
<td>4</td>
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<tr>
<td>LES 328</td>
<td>Land Use Law I: Study of the law governing land use including planning, zoning, subdivision and building regulations.</td>
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<tr>
<td>LES 342</td>
<td>Estates and Trusts: A study of the common forms of wills and trusts and the applicable legal principles; of administration of estates; and of the probate court.</td>
<td>4</td>
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<tr>
<td>LES 374</td>
<td>Property Law: A study of legal practices, restraints, and privileges governing rights to real property.</td>
<td>4</td>
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<tr>
<td>LES 376</td>
<td>Criminal Law and the Paraprofessional: A study of the role of the legal assistant in criminal cases; the procedures involved in preparing for trial; trying the case; and appeals.</td>
<td>4 (4)</td>
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<tr>
<td>LES 378</td>
<td>Court Administration: A study of the policies and procedures of modern court administration.</td>
<td>4</td>
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<tr>
<td>LES 380</td>
<td>Real Estate Law: A study of the law of real property; the more common types of real estate transactions and conveyances; and closing procedures and title problems.</td>
<td>4</td>
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<tr>
<td>LES 428</td>
<td>Land Use Law II: Examination of recent statutory changes and judicial interpretations of land use law, especially vis-a-vis planning and environmental protection.</td>
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<tr>
<td>LES 442</td>
<td>Domestic Relations Law: A study of the law of domestic relations, to include divorce, child support and adoptions, and an examination of the role of the legal assistant.</td>
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**M**

**MANAGEMENT**

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<tbody>
<tr>
<td>MGMT 301</td>
<td>Management and Organization Behavior: Fundamentals of management showing how the manager in any organization effectively performs the functions of planning, organizing, directing, and controlling.</td>
<td>3 (3,0) F,W,S,Su</td>
<td></td>
</tr>
<tr>
<td>MGMT 311</td>
<td>Human Behavior and Interpersonal Relations: PR: MGMT 301 or C.I. Human behavior and its effect upon the operation of formal organizations.</td>
<td>3 (3,0) F,W,S</td>
<td></td>
</tr>
<tr>
<td>MGMT 364</td>
<td>Personnel Management: PR: MGMT 301. An investigation of personnel prac-</td>
<td>4 (4,0) F,W,S</td>
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</tbody>
</table>
tics and interpersonal relationships involved in managing employees. Internal problems of labor control and the utilization of human resources are considered.

**MGMT 401**  
Organization Theory: PR: MGMT 301. Elements in organizations and the processes by which they develop and influence behavior are considered.

**MGMT 402**  

**MGMT 403**  
Managing Decision Systems: PR: MGMT 402. An introduction to the managerial competencies required to assure effective and efficient operation of a decision system after its installation.

**MGMT 424**  
Production Management Problems: PR: MGMT 301, BADM 324, and STAT 301. 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: PR: MGMT 364. Case studies in personnel problems directed toward the application of personnel management theory and concepts to organization problems.

**MGMT 465**  
Industrial Relations: PR: MGMT 364 or C.I. The impact of trade unionism on industrial relations; current problems, conflicts and trends; the development of managerial approaches to achieve labor-management cooperation.

**MGMT 466**  
Human Relations in Management: PR: MGMT 301. The individual, interpersonal and group relations and inter-group and organizational problems in business.

**MGMT 480**  
Planning and Control: PR: MGMT 301. Emphasizes planning and controlling processes, including statement of organization objectives, development and implementation of an action plan, an evaluation of performance, and required follow-up activities.

**MGMT 501**  

**MGMT 601**  
Planning and Control Analysis: PR: Graduate standing and MGMT 501 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.

**MGMT 611**  
Analysis of Organizational Behavior: PR: Graduate standing and MGMT 501 or equivalent. The analysis of human behavior in organizations in terms of the individual, small group, intergroup relationships, and the total organization.

**MGMT 621**  
Group Decisions and Analysis: PR: Graduate standing and MGMT 501 or equivalent. Experience in company-wide management decision-making by groups using the management game technique. Analysis of the group decision-making process using video tapes.
MGMT 650 3 (3.0)
Evolution of Administrative Management: PR: Graduate standing and MGMT 501 or equivalent. The historical development of management in modern society with emphasis in the management process as applied within the economic, social, political, and legal environment.

MGMT 656 3 (3.0)
Research and Development Management: Graduate standing and MGMT 501 or equivalent. An examination of the function of Research and Development and the impact of technological innovation on our economic and social systems.

MARKETING

MKTG 301 5 (5.0) F,W,S,Su
Marketing: Study of functions, institutions and basic problems in marketing of goods and services in our economy.

MKTG 326 4 (4.0) F,W,S
Consumer Market Behavior: PR: MKTG 301. 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 4 (4.0)
Marketing Models and Logistics: PR: MKTG 301 and ECON 321. Qualitative and quantitative model building concepts applied to marketing problems with special emphasis on product planning, distribution, promotion strategy, and pricing problems.

MKTG 364 (4.0)
Principles of Advertising: PR: Junior standing. Analysis of field of advertising; techniques, media, organization, and role of research; economic and social aspects of advertising. (Same as JRN 464).

MKTG 367 4 (4.0) F,W,S,Su
Sales Management: PR: MKTG 301. Problems confronting sales manager; training in sales techniques; sales objectives and policies; organization; administration of sales force.

MKTG 384 5 (5.0) F,W,S
Marketing Research: PR: MKTG 301 and ECON 321. Study of research procedures and techniques for problem solving in marketing. Concepts are explored and the incorporation of information resources into the management function demonstrated.

MKTG 469 4 (4.0)
Channels of Distribution Management: PR: MKTG 301. Marketing activities and relationships within distribution channels. Primary attention given to decision making and policy formulation for wholesalers, retailers and integrated marketing institutions.

MKTG 485 4 (4.0) F,W,S
Marketing Policies and Strategies: PR: MKTG 384 and C.I. Marketing problems and policies are explored with emphasis placed on the decision-making process.

MKTG 489 4 (4.0)
Current Marketing Problems: PR: Senior standing, marketing major, and C.I. A course emphasizing the recognition and analysis of marketing problems arising from broad cultural, social, political, legal, economic, and competitive developments.

MKTG 501 4 (4.0) F,S
Marketing Concepts: PR: Acceptance into the graduate program. Study of functions, institutions and basic problems in marketing of goods in the U.S. economy.
**MKTG 601**  
**Marketing Policy:** PR: Graduate standing and MKTG 501 or equivalent. Marketing policy formulation and decision-making with respect to planning, pricing, promotion and distribution.

**MKTG 602**  
**Current Marketing Problems:** PR: Graduate standing and MKTG 501 or equivalent. Analysis of marketing problems stemming from broad social, economic, and political developments. Topics treated cover broad classes of marketing institutions.

**MKTG 604**  
**Sales Management and Control:** PR: Graduate standing and MKTG 501 or equivalent. Emphasis is placed on the allocation and development of sales territories and the training, motivation, and supervision of a sales force.

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### MATHEMATICS

**MATH 100**  
**Principles of Mathematics:** 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 101**  
**Elementary School Mathematics I:** PR: Two years of high school mathematics. Logic, sets, the system of whole numbers, numeration systems, the system of integers, the system of rational numbers. Open only to majors in elementary education.

**MATH 104**  
**Fundamental Algebra:** 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 106, 110, and 111.

**MATH 106**  
**College Algebra:** PR: MATH 104 or 2 years of high school algebra. Sets; exponential and polynomial functions; formula manipulation; graphs; linear equations; vectors; matrices. Not open to students with credit in MATH 110.

**MATH 107**  
**College Algebra and Trigonometry:** PR: Two years of high school algebra or equivalent. Algebraic expressions, polynomials, graphs, systems of equations, exponents and logarithms; trigonometric functions, triangle trigonometry, laws of sines and cosines, special formulas and trigonometric identities.

**MATH 110**  
**Precalculus Mathematics I:** 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 ir: college algebra emphasizing the notion of function.

**MATH 111**  
**Precalculus Mathematics II:** 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 201**  
**Elementary School Mathematics II:** PR: MATH 101. The system of real numbers, polynomials, linear equations and inequalities, systems of equations and inequalities, quadratic equations and inequalities, the complex numbers. Open only to majors in elementary education.
MATH 211 3 (3,0 F,W,S)
Analytic Geometry: CR: MATH 107 or MATH 111 or equivalent. Topics include coordinate systems; vectors; lines in the plane; lines and planes in space; conic sections; polar coordinates; transformation of coordinates.

MATH 271 4 (4,0)
Logic and Proof in Mathematics: PR: Four years of high school mathematics or equivalent. Basic mathematical logic, methods of proof in mathematics, application of proofs to elementary structures. Primarily for mathematical sciences majors.

MATH 301 4 (4,0) S
Elementary School Mathematics III: PR: MATH 201 or C.I. Algebraic structures, selected topics from number theory, experimental and formal geometry. Open only to majors in elementary education.

MATH 311 4 (4,0)
Applied Calculus I: PR: College algebra and trigonometry. Differential and integral calculus applied to problems in engineering technology fields. Not open to students with credit in MATH 320 or MATH 321.

MATH 312 4 (4,0)
Applied Calculus II: PR: MATH 311. Continuation of MATH 311.

MATH 313 4 (4,0) F,W,S
Finite Mathematics: PR: MATH 106 or equivalent. Mathematical logic, set theory, Boolean algebra with applications in circuit design, matrices.

MATH 314 4 (4,0)
Boolean Algebra: PR: MATH 323 or C.I. Axiomatic development of Boolean algebra; the algebras of sets, logic and circuits as Boolean algebras.

MATH 315 3 (3,0)
Introduction to Number Theory I: PR: C.I. Divisibility; primes and composites; divisors; multiples; Euclid’s algorithm; Diophantine equations; modulo arithmetic; simple continued fractions.

MATH 316 3 (3,0)
Introduction to Number Theory II: PR: MATH 315. Continuation of MATH 315.

MATH 317 4 (4,0)
Matrices: PR: MATH 323. Elementary properties of matrices; special, real and complex matrices; determinants and inverses; rank and systems of equations; transformations; eigenvectors; diagonalization; quadratic forms.

MATH 318 4 (4,0)
Linear Algebra I: PR: MATH 271. A detailed analysis of finite dimensional linear spaces including bases, subspaces, dual spaces, quadratic forms, and applications to geometry.

MATH 319 4 (4,0)
Linear Algebra II: PR: MATH 318. Continuation of MATH 318.

MATH 320 4 (4,0)
Concepts of Calculus: PR: MATH 106 or equivalent. Differential and integral calculus of exponential and polynomial functions; optimization of multivariate functions; mathematical models. Not open to students with credit in MATH 321.

MATH 321 4 (4,0) F,W,S,Su
Calculus I: PR: MATH 107, or 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 322 4 (4,0) F,W,S,Su
Calculus II: MATH 321. Continuation of MATH 321.

MATH 323 4 (4,0) F,W,S,Su
Calculus III: PR: MATH 322. Continuation of MATH 322.
MATH 324 4 (4,0) F,W,S,Su
Intermediate Calculus: PR: MATH 323. 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 4 (4,0) F,W,S,Su
Differential Equations: PR: MATH 323. First order ordinary differential equations; constant coefficients; variation of parameters; step-by-step integration; methods of Picard and Frobenius; input-output analysis; transform methods.

MATH 341 3 (3,0)
Vector Analysis: PR: MATH 324. Derivatives and integrals of vector valued functions; the directional derivative and vector operators; the theorems of Green, Gauss, and Stokes; application in engineering and physical sciences.

MATH 351 4 (4,0)
Foundations of Geometry: PR: C.l. Modern Euclidean geometry; logical defects in Euclid’s geometry; simple axiomatic systems; introduction to finite and affine geometries. Intended for prospective teachers of mathematics.

MATH 411 4 (4,0)
Algebraic Structures I: PR: MATH 271. An introduction to the properties of groups, rings, polynomial rings, integral domains and fields.

MATH 412 4 (4,0)
Algebraic Structures II: PR: MATH 411. Continuation of MATH 411.

MATH 420 3 (3,0)

MATH 421 3 (3,0)
Introduction to Analysis I: PR: MATH 271 and MATH 324. Limits, sequences and continuity; differentiation and integration; derivatives of integrals; infinite series and convergence; the Bolzano-Weierstrass theorem and the Heine-Borel theorem; extensions in Euclidean n-space.

MATH 422 3 (3,0)
Introduction to Analysis II: PR: MATH 421. Continuation of MATH 421.

MATH 423 3 (3,0)
Introduction to Analysis III: PR: MATH 422. Continuation of MATH 422.

MATH 424 3 (3,0)
Lebesgue Theory: PR: MATH 423. Inner and outer measure; measurable sets and functions; the Lebesgue integral.

MATH 426 3 (3,0)
Complex Variables I: PR: MATH 324. Analytic and harmonic functions; mapping by complex functions; Cauchy’s theorem and its implications; the maximum modulus principle; series expansions; the residue theorem and its applications.

MATH 427 3 (3,0)
Complex Variables II: PR: MATH 426. Analytic continuation; decomposition of meromorphic functions into partial fractions; Mittag-Leffler theorem; entire functions; Weierstrass’s Factorization theorem; Riemann Mapping theorem.

MATH 428 3 (3,0)
The Number System: PR: C.I. 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 3 (3,0)
Foundations of Calculus: PR: C.I. Functions; limits; continuity; differentiation and integration. Study of the basic structure of the calculus and recommended for prospective teachers of mathematics.
MATH 431 4 (4,0)  
**Ordinary Differential Equations I:** PR: MATH 323. First order differential equations; higher order differential equations; applications to mechanical and electrical systems, pursuit curves; Power series solutions and special functions.

MATH 432 4 (4,0)  
**Ordinary Differential Equations II:** PR: MATH 431. Sturm-Liouville boundary value problems; systems of first order equations; Volterra's prey-predator equations; nonlinear equations; stability; Poincare'-Bendixon theorem; existence and uniqueness of solutions.

MATH 434 3 (3,0)  
**Applied Boundary Problems I:** 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 3 (3,0)  
**Applied Boundary Problems II:** PR: MATH 434. Adjoint forms and Green's functions; applications in engineering and the physical sciences.

MATH 437 3 (3,0)  
**Laplace Transforms:** PR: MATH 331. Laplace and Z transforms; solutions of ordinary and partial differential equations; application to circuit analysis and difference equations.

MATH 438 3 (3,0)  
**Transform Calculus:** PR: MATH 331. Fourier, Hankel and other transforms with applications to physical problems; the transformations of distributions.

MATH 440 3 (3,0)  
**History of Mathematics:** 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 451 3 (3,0)  
**Non-Euclidean and Projective Geometry I:** PR: MATH 351 or C.I. Non-Euclidean geometry; projective plane, perspectivities, projectivities; projective theory fo conics; analytic projective geometry; vector theory; linear theory; linear transformations in projective geometry.

MATH 452 3 (3,0)  
**Non-Euclidean and Projective Geometry II:** PR: MATH 451. Continuation of MATH 451.

MATH 461 4 (4,0)  
**Topology I:** PR: MATH 271. Metric spaces; topological spaces, limit points, connectedness; compactness; topology of surfaces; spheres with handles and crosscaps; Euler characteristics; topological invariants.

MATH 462 4 (4,0)  
**Topology II:** PR: MATH 461. Continuation of MATH 461.

MATH 521 3 (3,0)  
**Advanced Calculus I:** PR: MATH 324. Differential and integral calculus of functions of several variables; vector differential calculus. Emphasis on applications.

MATH 525 4 (4,0)  
**Techniques of Complex Variables:** PR: MATH 324. 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 535 3 (3,0)  
**Special Functions:** PR: MATH 331. Series and integral representations, generating functions, recurrence relations, and orthogonality properties of
the special functions. Emphasis on Bessel, Legendre, hypergeometric functions, other special functions.

MATH 611  
Modern Applied Algebra: PR: MATH 324 or equivalent. Modern algebra for computer utilization and design: binary relations, finite state machines, groups, binary group coding, rings and ideals, polynomial codes.

MATH 621  
Advanced Calculus II; PR: MATH 521. Continuation of MATH 521. Two and three-dimensional theory of vector integral calculus with application; infinite series.

MATH 625  
Methods of Mathematical Analysis I: PR: MATH 324 or equivalent. Mathematical analysis applied to boundary and eigenvalue problems: calculus of variations, vibrations of stretched strings and membranes, the potential equation, the heat equation, Fourier series.

MATH 626  
Methods of Mathematical Analysis II: PR: MATH 625. Topics include self adjoint differential equations, the Sturm-Liouville problem, eigenvalues and eigenfunctions, variational methods, the Rayleigh Ritz method, Schrodinger's Wave equation, Green's functions.

MATH 633  
Transform Theory: PR: MATH 525. Laplace, Fourier, Hankel and other integral transforms, inversion theorems; the Z transform; applications to physical problems.

MATH 641  
Tensor Analysis: PR: MATH 341 or MATH 621 or equivalent. Contravariant and covariant tensors, metric tensors, geodesics, Christoffel symbols, covariant differentiation, curvature, Ricci tensor, Riemann-Christoffel tensor, and applications of tensors.

MATH 671  
Approximation Theory: PR: MATH 423 or MATH 621. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

MEAS 341  

MEAS 342  

MEAS 351  

MEAS 371  
**MEAS 382**

**Thermodynamics of Mechanical Systems:** PR: ENGR 431. Applied thermodynamics, availability analysis, thermodynamics of reactive and non-reactive mixtures, thermodynamic relations of properties. Thermodynamic design analysis of complete mechanical systems.

**MEAS 411**

**Aerodynamics:** 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 423**

**Vibration Analysis:** 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 432**

**Propulsion Systems:** PR: ENGR 431. Analysis of jet propulsion systems including turbojets, ramjets, and rockets.

**MEAS 436**

**Mechanical Power Systems:** PR: ENGR 431. Analysis and design of large power generating systems and components with emphasis on steam plants utilizing both chemical and nuclear fuels.

**MEAS 437**

**Nuclear Engineering:** PR: ENGR 431 and PHYS 344. Introduction to the principles of nuclear engineering, nuclear chain reactions, reactor systems, and control, health physics, radiation shielding and applications of nuclear energy.

**MEAS 439**

**Nuclear Reactor Engineering:** PR: MEAS 437. Nuclear concepts, and plant cycles for energy conversion. Application of thermodynamics, fluid mechanics, heat transfer, control theory and materials to nuclear reactor design.

**MEAS 442**

**Dynamics of Machinery:** PR: MEAS 341, MEAS 423. Critical speeds and response of flexible rotor systems, whirl, gyroscopic effects; balancing of rotating and reciprocating masses; cam dynamics.

**MEAS 482**

**Heat Transfer:** PR: ENGR 431. Steady state and transient conduction in one and two dimensions, convective and radiative heat transfer. Analysis and design of heat exchangers.

**MEAS 511**

**Aerodynamics:** PR: MEAS 411 or equivalent. Advanced aerodynamics principles including fluid dynamics, potential flow theory, airfoil and finite wing theory.

**MEAS 523**

**Acoustics:** PR: C.I. Elements of vibration theory and wave motion; radiation, reflection, absorption, and transmission of acoustic waves; architectural acoustics; control and abatement of environmental noise pollution.

**MEAS 537**

**Energy Conversion:** PR: ENGR 431 and PHYS 344. Unconventional method of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermonics, solar energy, photovoltaics, nuclear, and magnetohydrodynamics.

**MEAS 581**

**Statistical Thermodynamics:** PR: ENGR 331. Statistical approach to thermodynamic concepts, laws, and methods of analysis. Generalized p-v-T data. Special systems.

**MEAS 601**

**Energy Analysis:** PR: Consent of instructor. Examination of energy demands
and potential supply, computer simulation of resource depletion, alternate energy resources, transportation systems, economic and environmental constraints.

**MEAS 611**  
**Aerodynamics:** PR: MEAS 411 or equivalent. Theoretical methods useful for predicting performance and stability of thin lifting surfaces and slender vehicles at subsonic, supersonic and hypersonic speeds.

**MEAS 613**  
**Aeromechanics:** PR: MEAS 413 or equivalent. Advanced applied aerodynamics including stability and control of aerospace vehicles. Generalized vehicle performance. Small disturbance dynamic stability and control response.

**MEAS 632**  
**Turbomachinery:** PR: MEAS 432 or MEAS 436 or equivalent. Application of the principles of fluid mechanics, thermodynamics and aerodynamics to the design and analysis of pumps, compressors, and turbines.

**MEAS 638**  
**Environmental Thermodynamics:** PR: ENGR 431 or equivalent. Thermodynamics of the environment with applications to the analysis, control and designate design of thermal systems.

**MEAS 641**  
**System Control:** PR: ENGR 421 or equivalent. Theoretical, experimental and computer methods involved in the design and control systems. Emphasis on non-linear systems and advanced methods for control system analysis and optimization.

**MEAS 642**  
**Principles of Design:** PR: MEAS 342 or equivalent. Engineering design algorithm, graphical and computer-aided kinematic synthesis and dynamic analysis. Machine materials and properties, tension torsion, bending and strength under combined stresses.

**MEAS 643**  

**MEAS 644**  
**Computer-Aided Design:** PR: Graduate standing. Study and engineering application of computer-aided approaches to component and system feasibility study and design considerations computer graphics.

**MEAS 653**  
**Advanced Engineering Instrumentation:** PR: MEAS 351 or equivalent. Theoretical and experimental study of principles of operation, analysis and design techniques for systems of a mechanical and electromechanical nature.

**MEAS 671**  
**Gas Dynamics:** PR: MEAS 371 or C.I. Analysis of steady and unsteady subsonic, supersonic and hypersonic flows. Aerodynamics applications to the design of nozzles, diffusers, and high speed wind tunnels.

**MEAS 674**  
**Mechanics of Viscous Flow:** PR: EMCS 471 or C.I. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.

**MEAS 676**  
**Two Phase Flow:** PR: C.I. General transport equations for multiphase systems including gas-liquid, gas-solid and liquid-solid systems.

**MEAS 680**  
**Classical Thermodynamics:** PR: MEAS 372 or C.I. A general postulative approach to classical macroscopic thermodynamics featuring states as fundamental constructs. Conditions of equilibrium, stability criteria, thermodynamic potentials, Maxwell relations and phase transitions.
**MEDICAL RECORD ADMINISTRATION**

**MRA 300** 3 (2,2) F
Medical Record Administration: An introduction to the field of medical record administration.

**MRA 301** 5 (3,4) W
Evaluation of Patient Care: PR: MRA 300 or C.I. Problem oriented medical record; accreditation, certification; health statistics; release of information; medical staff committees; prospective, concurrent and retrospective evaluation techniques.

**MRA 302** 5 (3,4) S
Coding and Indexing Procedures: PR: AHS 305. Special registries; nomenclatures; coding and indexing; application of indices to research.

**MRA 370** 1 (0,4) W
Directed Experience I: PR: AHS 305 and MRA 300. Transcription and interdepartmental experience in selected health care facilities.

**MRA 371** 1 (0,4) S
Directed Experience II: PR: MRA 370. Application in a health record facility of the principles of filing; quantitative, qualitative record analysis; correspondence; microfilming; coding and indexing procedures.

**MRA 403** 5 (3,4) F
Health Care Records: PR: MRA 301 or C.I. Medical record standards and procedures for long term, ambulatory, home care, and other health care institutions. Field trips.

**MRA 421** 3 (2,2) S
Analysis of Medical Record Department Operations: PR: AHS 420. Forms analysis and control; work distribution and simplification; other evaluation techniques.

**MRA 422** 3 (3,0) S
Medical Care Evaluation: PR: MRA 421. Organizational structures; development and use of criteria in evaluating medical care, systems and procedures.

**MRA 472** 2 (0,8) F
**MEDICAL TECHNOLOGY**

**MEDT 340**
*Techniques in Clinical Microscopy:* PR: MICR 200 and C.I. Analysis of human urine and other body specimens, chemically and microscopically; interpretation of abnormal results and their correlation to disease included.

**MEDT 341**
*Techniques in Clinical Chemistry:* PR: CHEM 322. Laboratory techniques in clinical chemistry; instrumentation emphasized.

**MEDT 342**
*Hematology:* PR: ZOOL 334, CHEM 263 or C.I. Diagnostic procedures and morphologic interpretation related to blood cells and the correlation of this data to disease.

**MEDT 343**
*Immunohematology and Coagulation:* PR: ZOOL 334 or C.I. Clinical blood banking and coagulation; leukocyte typing, antigen-antibody identification, interpretation, correlation of abnormal results to disease.

**MEDT 401**
*Clinical Practice I:* PR: Admission to Medical Technology Internship or C.I. Rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Bank, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

**MEDT 402**
*Clinical Practice II:* PR: Admission to Medical Technology Program or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

**MEDT 403**
*Clinical Practice III:* PR: Admission to Medical Technology Program or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

**MEDT 404**
*Clinical Practice IV:* PR: Admission to Medical Technology Internship or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

**MEDT 440**
*Clinical Pathogenic Microbiology:* PR: Admission to Medical Technology Internship or C.I. Isolation and identification of pathogenic bacteria by culture and serological methods; interpretation of abnormal results, their correlation to disease emphasized.

**MEDT 441**
*Advanced Clinical Chemistry I:* PR: CHEM 441 and C.I. Practice in clinical chemistry; human enzyme systems, renal function, liver function tests, etc.

**MEDT 442**
*Advanced Clinical Chemistry II:* PR: MEDT 441. Continuation of MEDT 441 to cover hormones, isoenzymes, electrophoresis and toxicology.

**MEDT 443**
*Clinical Immunohematology:* PR: Admission to Medical Technology Intern-
ship or C.I. Antigenic structure of red blood cells; related to crossmatching of blood, antibody screening, other blood banking procedures.

MEDT 444
4 (4,0)
Advanced Hematology and Coagulation: PR: Admission to the Medical Technology Internship or C.I. Formed elements of the blood; platelet function, hemostasis, the methodology for studying this mechanism are presented; relationship to the clinical condition of human patients emphasized.

MEDT 445
2 (2,1)
Clinical Mycology: PR: Admission to Medical Technology Internship or C.I. Instruction and laboratory practice in the isolation and identification of fungi associated with mycotic infections of man.

MEDT 446
3 F,W,S
Clinical Parasitology: PR: Admission to Medical Technology Internship or C.I. Instruction and laboratory practice in the examination and study of clinical material for the detection and identification of animal parasites.

MEDT 447
3 (3,0)
Clinical Serology: PR: Admission to Medical Technology Internship or C.I. Serological methods used in diagnosis, study of disease; interpretation of abnormal results.

MICROBIOLOGY

MICR 200
4 (3,4) F,S
General Microbiology: PR: A college course in chemistry and 8 hours of biological science. Fundamentals of microbiology, microbial morphology, metabolism and laboratory techniques.

MICR 210
3 (1,4)
Culture Media and Reagents: PR: MICR 200. Preparation of differential, selective and enrichment media; reagents used in microbiology; instrumentation used in culture media preparation.

MICR 300
5 (3,6) W

MICR 320
4 (3,4) F,S
Pathogenic Microbiology: PR: MICR 300 or C.I. Microorganisms producing disease in man and other animals; means of transmission; protection against disease.

MICR 381
3 (2,2) F
Immunology: PR: One year of biological sciences. Basic principles of the immune reaction; antigens, antibody formation, hypersensitivity and autoimmunity.

MICR 382
3 (1,6) W
Serology: PR: MICR 381. Laboratory exercises in the production of antibodies, agglutination and precipitin reactions; quantitative techniques and isohemoagglutination.

MICR 410
4 (1,6) W, even years
Diagnostic Microbiology: PR: MICR 320. Techniques used in identifying bacteria which are pathogenic to man.

MICR 422
4 (3,4) W, odd years
Microbiology of Water and Waste: PR: MICR 300 or C.I. Organisms in water and their relationship to production and distribution of potable water; disposal of sewage.

MICR 430
4 (3,4) S
Microbial Physiology: PR: MICR 300 and CHEM 442. Relationship between structure and function in microorganisms.

MICR 440
4 (3,4) W, odd years
Determinative Microbiology: PR: MICR 300. Microbial classification, rules
of nomenclature, bacterial code and identification of species.

MICR 451 4 (3,4) W, even years
Microbial Ecology: PR: BIOL 350 and MICR 300. Study of the roles of microbes in the environment.

MICR 485 4 (3,3)
Medical Mycology: PR: MICR 300 or C.I. Etiology, mycology and clinical aspects of fungal induced human diseases.

MICR 524 3 (3,0) S, even years
Infectious Process: PR: MICR 300 or C.I. Discussion of current theories of the infectious process and the response of cells and tissue to infection.

MICR 570 4 (3,4)
Virology: MICR 300 and CHEM 442. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification. Special project is required.

MICR 581 4 (2,4) F, even years
Applied Microbiology: PR: MICR 300 or C.I. Microbiology of consumer products: role of microorganisms in world food production and deterioration of consumer products; quality control.

MICR 633 4 (4,0) W, even years
Microbial Metabolism: PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and syntheses.

MUSIC

MUS 100 0 (3,0) F,W,S,Su
Music Forum: A series of special musical events required of music majors. Includes lectures and recitals by faculty, students, and guest artists.

MUS 104 1 (1,1) F,W,S,Su
Secondary Performance: Private and/or class instruction. Credit applicable toward music degree if not in student’s principal performing medium; open to non-music majors. May be repeated for credit.

MUS 105 1 (0,2) F,W,S,Su
Class Piano I: Class instruction for beginning piano students. Not open to music majors whose major performing medium is piano. May be repeated for credit.

MUS 106 1 (0,2) F,W,S,Su
Class Piano II: PR: MUS 105 or C.I. Not open to music majors whose major performing medium is piano. May be repeated for credit.

MUS 107 1 (0,2) F,W,S,Su
Class Piano III: PR: MUS 106 or C.I. Preparation for the piano proficiency examination. May be repeated for credit.

MUS 108 1 (1,1) F,W,S,Su
Class Piano IV: PR: MUS 107 or C.I. Individualized instruction. Credit applicable toward music degree by non-piano majors; open to non-music majors. May be repeated for credit.

MUS 201 4 (2,4) F
Musicianship: PR: MUS 205 or Satisfactory placement test. Required of music majors; writing, performance, analysis of music; emphasis on present-day experimental music and twentieth century music.

MUS 202 4 (2,4) W
Musicianship: PR: MUS 201. Continuation of MUS 201.

MUS 203 4 (2,4) S

MUS 204 4 (1,7) F,W,S,Su
Principal Performance I: PR: Faculty jury. Required of music majors; private
and class lessons plus assigned major performing organization and chamber music ensemble. May be repeated for credit.

**MUS 205**

**Music Fundamentals:** Introduction to basic musical elements, development of the student's skills in writing, performance, and analysis. Credit not applicable toward music degree.

**MUS 301**

**Musicanship:** PR: MUS 203. Required of music majors; continuation of MUS 201-203: writing, performance, analysis of music of seventeenth-nineteenth centuries as related to present-day music.

**MUS 302**

**Musicanship:** PR: MUS 301. Continuation of MUS 301.

**MUS 303**

**Musicanship:** PR: MUS 302. Continuation of MUS 302.

**MUS 304**

**Principal Performance II:** PR: Necessary competence at MUS 204 level determined by faculty jury. Required of music majors. May be repeated for credit.

**MUS 305**

**Major Performing Organizations:** PR: C.I. Open to all students. Study and performance of music for large ensembles. May be repeated for credit; not applicable toward music degree.

**MUS 306**

**Chamber Music Ensembles:** PR: C.I. Open to all students. Study and performance of music for small ensembles. May be repeated for credit; credit not applicable toward music degree.

**MUS 310**

**Recorder I:** Open to all non-music students. Class instruction in beginning recorder playing.

**MUS 311**

**Recorder II:** Class instruction in advanced recorder solo and ensemble playing. PR: Open to music students; and non-music students who have taken MUS 310.01 and C.I.

**MUS 312**

**Music in Society:** Social functions of music and its relationships with other arts. No prerequisite.

**MUS 320**

**Enjoyment of Music:** PR: Open only to non-music majors. Instruction designed to develop an understanding of basic musical principles and improved techniques for listening to music.

**MUS 401**

**Musicanship:** PR: MUS 303. Required of music majors; continuation of MUS 301-303: writing, performance, analysis of Western European music to 1600 as related to present-day music.

**MUS 402**

**Musicanship:** PR: MUS 401. Continuation of MUS 401.

**MUS 403**

**Musicanship:** PR: MUS 402. Continuation of MUS 402.

**MUS 404**

**Principal Performance III:** PR: Satisfactory piano proficiency examination and necessary competence at MUS 304 level determined by faculty jury. Required of music majors. May be repeated for credit.

**MUS 474**

**Directed Experience:** PR: C.I. Required of music majors; experience in com-
Municating music under qualified teachers. Credit determined by number of hours assigned per week. May be repeated.

MUS 484  
**Principal Performance IV:** PR: Necessary competence at MUS 404 level determined by faculty jury. Required of music majors. May be repeated for credit.

MUS 501  
**Graduate Musicianship:** PR: C.I. The study of music from various style periods; writing, performance, and analysis of music; may be repeated for credit.

MUS 504  
**Graduate Performance:** PR: C.I. Amount of credit determined by audition. May include both principal and secondary performance areas. May be repeated for credit.

**PHILOSOPHY**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Days</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHI 105</td>
<td>4 (4,0)</td>
<td>W</td>
<td><strong>Critical Thinking:</strong> 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.</td>
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<tr>
<td>PHI 205</td>
<td>4 (4,0)</td>
<td>F,W,S,Su</td>
<td><strong>Formal Logic I:</strong> Analysis of logical form and of procedures used in deductive inference, of the kind underlying mathematical reasoning.</td>
</tr>
<tr>
<td>PHI 221</td>
<td>4 (4,0)</td>
<td>F,W,S</td>
<td><strong>Introduction to Philosophy:</strong> 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.</td>
</tr>
<tr>
<td>PHI 301</td>
<td>4 (4,0)</td>
<td>F</td>
<td><strong>Ancient Philosophy:</strong> Foundations of Western philosophy in ancient Greek thinking about man and nature, including the pre-Socratics, Socrates, Plato, Aristotle.</td>
</tr>
<tr>
<td>PHI 302</td>
<td>4 (4,0)</td>
<td>W</td>
<td><strong>Medieval and Early Modern Philosophy:</strong> Faith, reason and skepticism in the development of philosophy from the Scholastics to Hume; Continental Rationalism and British Empiricism.</td>
</tr>
<tr>
<td>PHI 303</td>
<td>4 (4,0)</td>
<td>S</td>
<td><strong>Late Modern Philosophy:</strong> Relativism and atheism in the development of philosophy from Kant to Nietzsche; the challenge of science and religion to philosophy.</td>
</tr>
<tr>
<td>PHI 305</td>
<td>4 (4,0)</td>
<td>S</td>
<td><strong>Formal Logic II:</strong> 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.</td>
</tr>
<tr>
<td>PHI 312</td>
<td>4 (4,0)</td>
<td>F</td>
<td><strong>Existentialism:</strong> 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.</td>
</tr>
<tr>
<td>PHI 314</td>
<td>4 (4,0)</td>
<td>W</td>
<td><strong>Problems in Contemporary Philosophy:</strong> Prominent issues and trends in 20th-century philosophy, excluding Existentialism.</td>
</tr>
<tr>
<td>PHI 331</td>
<td>4 (4,0)</td>
<td>F,S</td>
<td><strong>Ethics:</strong> An examination of the nature of moral problems, judgments and principles with an emphasis on recent formulations in ethical theory.</td>
</tr>
</tbody>
</table>
PHI 341 4 (4,0) W
Aesthetics: An investigation into the nature of human artistic experience with special reference to the problems of creativity.

PHI 401 4 (4,0)
Social Philosophy: Philosophically analyzes and evaluates selected issues arising from interaction of the individual, society, and the state.

PHI 405 4 (4,0) W
Philosophy of Religion: An examination of basic ideas, beliefs, attitudes and functions of religion; the significance of religion in human experiences.

PHI 409 4 (4,0) S
Philosophy of Science: An examination of the conceptual foundations and methodology of modern science.

PHI 461 4 (4,0)
The Secular View: Examination of the philosophical foundations of secularism and of literary and political humanism, based on the work of Erasmus, Montaigne, Voltaire, Hobbes, Locke, and Rousseau.

PHYSICS

PHYS 100 4 (4,0) F,S
Physical Science: Familiarization with the basic laws governing our universe and man's physical environment. Satisfies science requirements of the Environmental Studies Program.

PHYS 103 4 (4,0) F,S
Astronomy I: Descriptive survey of solar system, galaxies and universe. Physical properties of stars deduced from their radiation. Night observation sessions. Appropriate for the Environmental Studies Program.

PHYS 201 4 (3,3) F,W
College Physics I: PR: Two years of high school mathematics. Lectures and laboratory experiments, with special application to life sciences: mechanics, thermodynamics, electricity, magnetism, optics, sound, quantum and nuclear physics.

PHYS 202 4 (3,3) W,S
College Physics II: PR: PHYS 201 or C.I. Continuation of College Physics sequence.

PHYS 211 4 (4,0) F
General Physics I: CR: MATH 321. The first course in a sequence covering the basic principles of classical mechanics, thermodynamics, electricity, magnetism, optics and modern physics.

PHYS 212 4 (4,0) W
General Physics II: PR: PHYS 211; CR: MATH 322. Continuation of the General Physics sequence.

PHYS 213 4 (4,0) S
General Physics III: PR: PHYS 212; CR: MATH 323. Continuation of the General Physics sequence.

PHYS 282 1 (0,3) W
General Physics Laboratory I: PR: PHYS 211. Laboratory experimentation and instruction covering selected topics in physics.

PHYS 283 1 (0.3) S
General Physics Laboratory II: PR: PHYS 282 or C.I. Continuation of physics laboratory instruction.

PHYS 301 3 (1,3) F
Project Physics I: "Hands-on" lecture-laboratory course, particularly for Elementary Education majors and prospective Junior High science teachers. Topics range from naked-eye astronomy to radioactive dating.
PHYS 302  3 (1,3) W  
Project Physics II: PR: PHYS 301 or C.I. Continuation of Project Physics sequence.

PHYS 303  3 (1,3) S  
Project Physics III: PR: PHYS 302 or C.I. Continuation of Project Physics sequence.

PHYS 304  4 (4,0)  
Astronomy II: 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 308  3 (3,0) W,Su  
Physics of Science Fiction: Study and discussion of physical principles which form the basis of selected science fiction themes.

PHYS 311  4 (4,0) F  
Intermediate Physics I: PR: PHYS 213 or C.I.; CR: MATH 324. First course in a sequence covering mechanics, vectors, coordinate transformations, rigid-body dynamics, electrostatics, electrodynamics, Maxwell's equations, special relativity, radiation, atomic, nuclear, and solid state physics, wave guides, physical optics, wavemotion, quantum statistics in thermodynamics, and kinetic theory.

PHYS 312  4 (4,0) W  

PHYS 313  4 (4,0) S  

PHYS 314  4 (4,0) F  
Intermediate Physics IV: PR: PHYS 313 or C.I. Continuation of the Intermediate Physics sequence.

PHYS 315  4 (4,0) W  

PHYS 335  3 (3,0) W  

PHYS 343  4 (3,2) S  
Computer Methods in Physics I: PR: PHYS 211 and COMP 102 or C.I. Non-analytical problems in physics and astronomy, supplementary to the Physics 211, 212, 213 sequence, solved by approximation methods with computer assistance.

PHYS 344  3 (3,0) W,Su  

PHYS 345  3 (3,1)  
Astrophysics: PR: PHYS 213 or equivalent. Theories of evolution of stars and planets, models of stellar interiors, properties of stellar atmospheres and spectra. Night sessions for photography.

PHYS 354  3 (3,0) F,S  
Optics and Wave Motion: CR: MATH 324, PR: ENGR 320 or PHYS 213. Selected topics in optics, acoustics, and related wave phenomena. A study of reflection, refraction, interference, and diffraction.

PHYS 380  4 (3,3) F,S,Su  
Physics of Scientific Instruments: PR: PHYS 202 or C.I. A lecture-laboratory course in fundamentals of physics related particularly to the application,
operation and limitations of various scientific instruments.

**PHYS 381** 4 (2,4) F
Physics Laboratory — Electronics: PR: PHYS 380 or C.I. Lecture and laboratory work stressing electronic principles through the study of test equipment, power supplies, amplifiers, oscillators, and pulse circuits.

**PHYS 382** 4 (0,6) W
Intermediate Physics Laboratory I: PR: PHYS 213 or C.I. Laboratory work in basic measurements of physical constants; intermediate level experiments in electronics, modern physics, nuclear physics, optics and solid state physics.

**PHYS 383** 4 (0,6) S
Intermediate Physics Laboratory II: PR: PHYS 382 or C.I. Continuation of physics laboratory instruction.

**PHYS 407** 4 (4,0)
Biophysics: PR: PHYS 202 or C.I. Physics of biosystems, viewed as optical control systems with constraints imposed by energy transfer mechanisms and examined by considering energy, information and cybernetics.

**PHYS 443** 3 (2,2)
Computer Methods in Physics II: PR: PHYS 311 and COMP 102 or C.I. Examples and problems in physics from classical mechanics, electromagnetic theory and wave mechanics are solved using numerical techniques with computer assistance.

**PHYS 451** 3 (3,0)
Optics: PR: PHYS 354 or C.I. A study of modern approaches to refraction, interference, diffraction, polarization, scattering, absorption and stimulated emission, spectroscopy and lasers.

**PHYS 461** 3 (3,0)
Solid State Physics: PR: PHYS 314 or C.I. Properties of solids, crystal binding, free electron model, band theory of solids, Fermi surface, and solid state applications.

**PHYS 471** 3 (3,0)
Quantum Mechanics: PR: PHYS 314 or C.I. A study of the postulates of quantum mechanics, the Schrodinger equation, and an introduction to the statistics of many particle systems.

**PHYS 473** 3 (3,0)

**PHYS 477** 3 (3,0)
Nuclear Physics: PR: PHYS 344 or C.I. Nuclear force, structure, moments, and models. Alpha decay, beta decay, gamma-ray emission, nuclear reactions and applications of nuclear physics.

**PHYS 481** 4 (0,6)
Advanced Physics Laboratory: PR: PHYS 382 or C.I. Experiments in optics, electronics; atomic, molecular, nuclear, solid state physics; emphasis on design, data and scientific writing.

**POLITICAL SCIENCE**

**PCL 201** 4 (4,0) F,W,S,Su
American National Government: A study of the dynamics of American national government, including its structure, organization, powers, and procedures.

**PCL 300** 4 (4,0) F,S
Scope and Methods of Political Science: Introduction to the Scope and Methodology of contemporary political analysis. Topics include scope of the discipline, research design, and methods.

Principles of Political Science: Basic concepts of political science and its development as a field with emphasis on areas of concern; analysis of major approaches to the study of politics.

Political Parties and Processes: PR: PCL 201 or C.I. Study of American politics with major emphasis upon the role, organization, functions, and processes of parties in the American political system.

Interest Groups and Political Movements: A study of the role of interest groups in the American political process and a comparison of varying political objectives and strategies used by the groups.

The American Presidency: PR: PCL 201 or C.I. Examination of the presidency as an institution and of the evolution in status, powers, administrative responsibilities, leadership and decision-making roles.

Congress and the Legislative Process: PR: PCL 201 or C.I. The nature, role, and functions of the legislative process; the dynamics of executive-legislative relations and resultant problems.

Minorities in American Politics: The past and contemporary roles of minority groups in the American political system; their impact upon the legislative, executive, and judicial processes.

Public Opinion: A substantive and theoretical study of public opinion; patterns of distribution, opinion formation, opinion measurement, policy linkages.

Electoral Behavior: Theoretical and substantive inquiry into U.S. electoral behavior: a study of the factors influencing participation and voting behavior.

International Relations: Analysis of the fundamental principles and factors affecting interstate relations; the foreign policy decision-making processes of states.

World Political Geography: Analysis of the types and distributions of political systems, review of factors which affect relative power of diverse politics, areas of conflict and arbitration. (Same as GEOG 360).

Contemporary International Politics: Application of the theory and fundamentals of international politics to contemporary world affairs with attention to the impact of current developments upon the international system.

Comparative Politics: An analytical and comparative study of politics in other nations with emphasis upon the interrelationships of their social environments and political systems.

Nationalism: A Systematic Analysis: Theories of modern nationalism as a world-wide political phenomenon including problems of: nationalistic wars and rebellions, multi-nation states, trans-national organizations.
PCL 343 4 (4,0) F  
Politics of Developing Areas: An analysis of non-Western political systems with emphasis upon the problems of political, socio-economic, and cultural development.

PCL 344 4 (4,0) W  
Comparative Asian Politics: Selected Asian political systems will be examined in terms of the interaction between political institutions and processes and social, cultural and economic structures.

PCL 347 4 (4,0) F, W  
Contemporary Revolution and Political Violence: Theory and analysis of political violence and fundamental change of political systems. Analysis of revolutions, counterrevolutions and conditions of political turmoil in the contemporary world.

PCL 348 4 (4,0) F, W  
Politics of Mexico, Central America and the Caribbean: Survey of politics and governments of the area. Influence of cultural, social and economic factors in each country's political development are considered.

PCL 403 4 (4,0) S  
Political Behavior: PR: PCL 201, 303 or C.I. A substantive and theoretical study of individual and group political behavior in the American political system.

PCL 405 4 (4,0) F  
Political Theory: PR: PCL 201 or C.I. Examination of various normative and empirical approaches to the study of political science, stressing contemporary developments in the field.

PCL 406 4 (4,0) F  
Contemporary Democratic Theory: PR: PCL 201 or C.I. Study of democratic theories emphasizing elitist theories, participatory democracy, citizen participation and the relevance of empirical research to democratic theory.

PCL 413 4 (4,0) S  
Metropolitan Politics: Analysis of political patterns, processes and issues in American communities.

PCL 417 4 (4,0) S  
Policy Problems of Metropolitan Areas: A course designed to provide an in-depth analysis of two or three basic policy areas; for example, transportation, education, welfare, crime, etc.

PCL 418 4 (4,0) F  
The Politics of Planning for Urban Communities: An examination of social, political, and economic factors influencing the urban planning process at local, state, and national levels.

PCL 420 4 (4,0) F  
Contemporary International Politics of Asia: Examination of the role of Asia in international politics and the foreign policies of major and secondary powers as they relate to trends in Asia.

PCL 421 4 (4,0) F  
International Politics of the Middle East: The external politics of the Middle East from a regional-global perspective with particular attention to the region's impact upon the relations of major powers.

PCL 422 4 (4,0)  
Inter-American Politics and Organizations: Examination of relations among American Republics. Special attention given the roles of the United States, the Organization of American States, and trade and aid arrangements.

PCL 424 4 (4,0)  
Political Sociology: Sociological analysis of political and para-political groups; socio-economic variables of voting behavior; power elites, societies and systems of government. (Same as SOC 420).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>CRN</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL 425</td>
<td>4</td>
<td>Political Party Behavior: Political Party Behavior</td>
<td>In depth analysis of selected topics in political party behavior including: changes in Southern politics; urban parties in transition; political campaigns; the changing electorate.</td>
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<tr>
<td>PCL 427</td>
<td>4</td>
<td>American Foreign Policy: American Foreign Policy</td>
<td>Analysis of the traditions and development of American foreign policy with emphasis on the role and policies of the United States in the contemporary world.</td>
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<tr>
<td>PCL 428</td>
<td>4</td>
<td>American Defense Policy: American Defense Policy</td>
<td>Study of policy evolution since World War II including consideration of the social and political costs involved and means of control.</td>
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<tr>
<td>PCL 432</td>
<td>4</td>
<td>International Law I: International Law I</td>
<td>An introduction to the nature, evolution and sources of international law and its role in interstate relations.</td>
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<tr>
<td>PCL 433</td>
<td>4</td>
<td>International Law II: International Law II</td>
<td>PR: PCL 432 or C.I. Examination of various subareas of International Law including maritime law, laws of the sea and seabed, air law, and the legal status of outer space.</td>
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<tr>
<td>PCL 435</td>
<td>4</td>
<td>Coercion in International Politics: Coercion in International Politics</td>
<td>An examination of the role of coercive techniques among states in a nuclear age including theories of nuclear strategy and deterrence.</td>
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<tr>
<td>PCL 443</td>
<td>4</td>
<td>Government and Politics of the Soviet Union: Government and Politics</td>
<td>Examination of the origins, institutions, and functioning of the Soviet political system, including the role and characteristics of the communist party of the Soviet Union.</td>
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<td>PCL 444</td>
<td>4</td>
<td>Non-Western Politics: Non-Western Politics</td>
<td>Examination of the political system of one or two non-western nations, including the relationship of socio-cultural and historical environment to the political system.</td>
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<tr>
<td>PCL 447</td>
<td>4</td>
<td>Political Socialization: Political Socialization</td>
<td>PR: PCL 201 or C.I. Analysis of the quality and function of the recruitment and socialization processes. Identification of the agents and processes of political socialization.</td>
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<td>PCL 450</td>
<td>4</td>
<td>American Public Policy: American Public Policy</td>
<td>PR: PCL 201 or C.I. The American policy-making process with a focus upon contemporary problems including the malapportionment of societal power and social conflict.</td>
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<tr>
<td>PCL 461</td>
<td>4</td>
<td>Political Philosophy I: Political Philosophy I</td>
<td>Study of the development of political and social ideas in Western thought from early Greece to the Renaissance.</td>
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<tr>
<td>PCL 462</td>
<td>4</td>
<td>Political Philosophy II: Political Philosophy II</td>
<td>Renaissance to the 19th Century.</td>
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<tr>
<td>PCL 463</td>
<td>4</td>
<td>Political Philosophy III: Political Philosophy III</td>
<td>Study of contemporary Western political and social thought in the 19th and 20th Centuries.</td>
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</tbody>
</table>
PCL 471 American Constitutional Law: PR: PCL 201 or C.I. The impact of judicial
decision-making upon the growth of American political institutions and pro­
cesses.

PCL 473 American Constitutional Law: PR: PCL 201 or C.I. The role of judiciary in
the focusing and refinement of individual rights and civil liberties in American
society.

PCL 475 Judicial Behavior: Study of Judicial Behavior emphasizing the role of
courts as a bureaucratic structure. Consideration will be given to compara­
tive judicial systems.

PCL 480 Political Science Internship: PR: C.I. Internship working with National, State
County or Municipal governments. Assignments with selected civic organiza­
tions, elected or appointed official.

PCL 500 Contemporary American Problems: PR: Senior or graduate standing. A public
policy analysis of current problems encountered within the American political
system and an examination of policy alternatives.

PCL 600 Public Policy and Political Analysis: PR: C.I. An analysis of governmental
action and models useful in policy analysis, stressing the pressures and
procedures in decision making in a dynamic federal system.

PCL 601 Public Policy and Political Research: PR: C.I. Approaches to problem solving
in policy and political research, emphasizing the formulation of research
strategies, sources of data, and data analysis.

PCL 603 Statistical Models for Policy Analysis: PR: PCL 695 or C.I. Applications and
analysis of problems in the use of statistical data. Emphasis on methods
of data collection and analysis.

PCL 612 Choice Theory: PR: C.I. Analysis of rational choice theories, game theoretic
models, incremental decision making, with applications to problems of
strategy and politics.

PCL 614 The Environment of Policy Making: PR: C.I. Consideration of the impact of
the intra-systematic and extra-systematic environment upon the decision
making process.

PCL 620 Public Opinion and Policy Formation: PR: C.I. A substantive and theoretical
approach to understanding relationships between public opinion and public
policy, including opinion/policy linkage models as well as opinion measure­
ment.

which arise in urban political systems, the consideration of various public
responses to those issues.

PCL 672 Issues in State Public Policy: Analysis of selected aspects of policy
issues occurring in the states with attention given to both single
state and comparative studies.

PCL 673 Issues in National Public Policy: PR: C.I. Study of the establishment and
evaluation of selected national issues and priorities, means of implementa­
tion, and impacts of government programs.
**PCL 675**  
*Issues in International Public Policy:* PR: C.I. Analysis of domestic and foreign inputs influencing foreign policy formulation and execution, with extended analysis devoted to executive structures and decision making behavior.

**PCL 676**  
*Issues in Economic Public Policy:* Examination from the perspectives of organization and politics of selected fiscal and monetary policy issues; emphasis on the limitations economic factors place upon policy making.

**PSYCHOLOGY**

**PSY 201**  
*General Psychology:* The basic principles, theories, and methods of contemporary psychology.

**PSY 202**  
*General Psychology:* PR: PSY 201. A continuation of PSY 201.

**PSY 300**  
*Applied Psychology:* Applications of principles of psychology to personal adjustment, industry, and education.

**PSY 301**  

**PSY 302**  

**PSY 303**  

**PSY 304**  

**PSY 305**  

**PSY 306**  
*Psychology of Adjustment:* Psychological principles of adjustment; application of psychology to problems in living.

**PSY 307**  

**PSY 308**  
*Social Psychology:* PR: PSY 201 and PSY 202. Effects of social situations and social variables on the behavior of individuals.

**PSY 309**  

**PSY 310**  

**PSY 312**  
PSY 313 4 (4,0)  

PSY 314 4 (4,0)  
Industrial Psychology: PR: PSY 201, PSY 202, and STAT 201. Psychological principles of employee selection, training, morale.

PSY 315 4 (4,0)  
Drugs and Behavior: PR: PSY 201. Effects of certain drugs upon the nervous system, behavior, and society. Causes of drug abuse and the impact on mental health.

PSY 316 2 (2,0)  
Careers in Psychology: An examination of various career opportunities in Psychology including educational entry requirements, and related professional issues.

PSY 321 4 (4,0)  
Principles of Behavior Modification: 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 330 4  
Psychology of Women: Examination of the psychological impact of changing sex roles on women in modern society. Topics include childrearing, working women, sex differences in personality and cognition.

PSY 333 4 (4,0)  
Development of Language and Conceptual Behavior: PR: PSY 301. Normal ontogeny of language and conceptual behavior from infancy to adulthood; disorders of linguistic and conceptual development and their remediation; key theoretical interpretations.

PSY 335 4  
Sexual Behavior: A discussion of physiological, social, and clinical aspects of human sexuality.

PSY 340 4 (4,0)  
Environmental Psychology: PR: PSY 201, PSY 202, and STAT 201. An investigation theory and research relevant to the relationship between the physical environment and the behavior of man.

PSY 343 4 (4,0)  
Educational Psychology: PR: PSY 201 and PSY 202. Application of psychological principles and research methods to classroom behavior and learning.

PSY 353 4 (4,0)  
The Psychology of Racial Prejudice: Examination of literature relating to prejudice toward ethnic groups; effects of racism on individuals, development and maintenance of prejudice, and possible ways to reduce prejudice.

PSY 370 4 (4,0)  
Interviewing and Counseling Techniques: PR: PSY 201, 202, and 309. A survey into practical experience of interviewing and counseling procedures in most facets of psychology and related fields.

PSY 371 4 (4,0) F,W  
Psychology of Exceptional Children: Psychological problems of exceptional children including diagnosis, associated emotional problems, effects of institutionalization, special class placement, attitudes, and appropriate intervention methods.

PSY 372 4 (4,0)  
Psychological Approaches to Mental Retardation: Psychological approaches to the problems of mentally retarded citizens including diagnosis, environment versus heredity, legal restrictions, institutionalization, as well as methods of behavioral remediation.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
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<tbody>
<tr>
<td>PSY 373</td>
<td>4 (4,0)</td>
<td><strong>Psychology of Aging:</strong> PR: PSY 202. An examination of basic psychological processes related to the aging process with emphasis on the applied implications of changes in perceptual-motor, social-emotional and cognitive-intellectual functioning.</td>
</tr>
<tr>
<td>PSY 390</td>
<td>4 (1,8)</td>
<td><strong>Undergraduate Field Work:</strong> Placement in a community agency for supervised experience in applications of psychology to community problems.</td>
</tr>
<tr>
<td>PSY 403</td>
<td>5 (3,2)</td>
<td><strong>Introduction to Neuropsychology:</strong> PR: PSY 303. Study of brain function with particular emphasis on human behavior. Lec.-Lab.</td>
</tr>
<tr>
<td>PSY 405</td>
<td>4 (4,0)</td>
<td><strong>History and Systems of Psychology:</strong> PR: PSY 301 and PSY 309. Historical development of psychology with emphasis on classical theoretical positions.</td>
</tr>
<tr>
<td>PSY 411</td>
<td>4 (4,0)</td>
<td><strong>Statistical Methods in Psychology:</strong> PR: One course in statistics. Standard scores, confidence intervals, sampling distributions, hypothesis testing, correlation and regression as applied to research in psychology.</td>
</tr>
<tr>
<td>PSY 415</td>
<td>5 (2,3)</td>
<td><strong>Individual Intelligence Testing:</strong> PR: PSY 305. A consideration of the nature of intelligence and its measurement. Supervised training in Stanford-Binet and Wechsler testing. Lec.-Lab.</td>
</tr>
<tr>
<td>PSY 605</td>
<td>4</td>
<td><strong>Psychological Testing I:</strong> PR: Graduate admission and C.I. Theory of test construction including test reliability and validity.</td>
</tr>
<tr>
<td>PSY 606</td>
<td>4 (4,0)</td>
<td><strong>Applied Testing and Selection:</strong> PR: Graduation admission and C.I. Issues in selecting employees and an examination of currently used tests in industry.</td>
</tr>
<tr>
<td>PSY 607</td>
<td>4 (4,0)</td>
<td><strong>Motivation, Training, and Performance Appraisal:</strong> PR: Graduate admission and C.I. Survey of the area of industrial motivation, training, and performance appraisal.</td>
</tr>
<tr>
<td>PSY 608</td>
<td>4 (4,0)</td>
<td><strong>Applied Problems in Industrial Psychology:</strong> PR: Graduate Admission and C.I. Thorough involvement and exposure to problems faced in industrial situations through case study approach.</td>
</tr>
<tr>
<td>PSY 615</td>
<td>4 (0,4)</td>
<td><strong>Counseling Practicum:</strong> PR: Graduate admission and C.I. Application of counseling techniques in a supervised setting.</td>
</tr>
<tr>
<td>PSY 640</td>
<td>4 (4,0)</td>
<td><strong>Consumer Psychology:</strong> PR: Graduate admission and C.I. Application of psychology to consumer behavior. Survey of research in product selection, markets, and advertising.</td>
</tr>
<tr>
<td>PSY 641</td>
<td>4 (4,0)</td>
<td><strong>Organizational Psychology:</strong> PR: Graduate admission and C.I. Survey of present theories in Organizational Psychology. Application of psychological research to organizational functioning.</td>
</tr>
<tr>
<td>PSY 654</td>
<td>2 (2,0)</td>
<td><strong>Psychology Practicum:</strong> PR: Graduate admission and C.I. Supervised practice in assessment and interim intervention techniques. (May be repeated for credit).</td>
</tr>
<tr>
<td>PSY 655</td>
<td>4-12</td>
<td><strong>Community Psychology Internship:</strong> PR: Graduate admission, 2nd year status and C.I. Supervised placement in community setting. (May be repeated for credit).</td>
</tr>
<tr>
<td>Course Code</td>
<td>Credits</td>
<td>Title</td>
</tr>
<tr>
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</tr>
<tr>
<td>PSY 656</td>
<td>4-12</td>
<td>School Psychology Internship: PR: Graduate admission, 2nd year status and C.I. Supervised placement in school setting.</td>
</tr>
<tr>
<td>PSY 660</td>
<td>4 (0,4)</td>
<td>Industrial Psychology Practicum I: PR: Graduate admission and C.I. Supervised placement in school setting.</td>
</tr>
<tr>
<td>PSY 661</td>
<td>4 (0,4)</td>
<td>Industrial Psychology Practicum II: PR: Graduate admission and C.I. Supervised research in industry.</td>
</tr>
<tr>
<td>PSY 662</td>
<td>4 (0,4)</td>
<td>Industrial Psychology Practicum III: PR: Graduate admission and C.I. Supervised research in industry.</td>
</tr>
<tr>
<td>PSY 667</td>
<td>4 (4,0)</td>
<td>Problems in Correctional Psychology: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in correctional settings. May be repeated for credit.</td>
</tr>
<tr>
<td>PSY 668</td>
<td>4 (4,0)</td>
<td>Problems in Mental Health: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in Mental Health clinics. May be repeated for credit.</td>
</tr>
<tr>
<td>PSY 669</td>
<td>4 (4,0)</td>
<td>Problems in School Psychology: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in school systems. May be repeated for credit.</td>
</tr>
<tr>
<td>PSY 670</td>
<td>4 (4,0)</td>
<td>Teaching and Training Evaluation: PR: Graduate admission and C.I. Evaluation of effective teaching methods and practicum experience.</td>
</tr>
<tr>
<td>PSY 671</td>
<td>4 (4,0)</td>
<td>Individual Intelligence Testing: PR: Graduate admission, PSY 683 and C.I. A survey of commonly used individual tests used to measure intelligence of both children and adults.</td>
</tr>
<tr>
<td>PSY 673</td>
<td>4 (4,0)</td>
<td>Mental Retardation: PR: Graduate admission, PSY 683, PSY 684, and C.I. Theory, research and remedial techniques dealing with mental retardation.</td>
</tr>
<tr>
<td>PSY 675</td>
<td>4 (4,0)</td>
<td>Implementation and Evaluation: PR: Graduate admission and C.I. Strategies and procedures for evaluating programs in community and school settings.</td>
</tr>
<tr>
<td>PSY 676</td>
<td>4 (4,0)</td>
<td>Clinical Psychopharmacology: PR: Graduate admission, PSY 673 and C.I. Physiological and clinical effects of various psychomimetic and psychoactive drugs.</td>
</tr>
<tr>
<td>PSY 677</td>
<td>4 (4,0)</td>
<td>Learning Disabilities: PR: Graduate admission and C.I. Theory, research and remedial techniques dealing with learning disabilities and other factors interfering with learning such as motivation, language disorders and perceptual-motor deficits.</td>
</tr>
<tr>
<td>PSY 680</td>
<td>4 (4,0)</td>
<td>Personality Testing: PR: Graduate admission, PSY 683, PSY 671 and C.I. Survey of commonly used individual and group personality techniques.</td>
</tr>
<tr>
<td>PSY 681</td>
<td>4 (4,0)</td>
<td>Psycho-educational Diagnosis: PR: Graduate admission and C.I. Administration and interpretation of psychoeducational tests. Emphasis on evaluation of exceptional children.</td>
</tr>
<tr>
<td>PSY 685</td>
<td>4 (3,2)</td>
<td>Developmental Psychology: PR: Graduate Admission and C.I. Psychological</td>
</tr>
</tbody>
</table>
aspects of development including intellectual, social and personality factors.

**PSY 686**  
Clinical Intervention I: PR: Graduate admission and C.I. Various theories of counseling and their evaluated efficiency, including the problems of research in counseling techniques.  
4 (4,0)

**PSY 687**  
Clinical Intervention II: PR: Graduate admission. PSY 683 and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique.  
4 (4,0)

**PSY 688**  
4 (3,2)

**PSY 689**  
4 (3,2)

### PUBLIC ADMINISTRATION

**PAD 324**  
Urban Geography: The city as a geographical phenomenon created by human efforts, its historical development; patterns of land use as related to economic, sociological and political influences. (Same as GEOG 350).  
4 (4,0)

**PAD 350**  
Introduction to Public Administration: PR: C.I. Analysis of administrative theories and the process of implementing public policies in a democratic society.  
4 (4,0) F,W

**PAD 411**  
Public Policy Administration: Problems of values, interests, and objectives and their impact on execution of public programs, stressing the relationship between policies and administration.  
4 (4,0)

**PAD 414**  
Metropolitan Administration: PR: PAD 350 or C.I. Study of the formal and informal sociopolitical structures that govern urban areas; emerging patterns of government, and management practices in urban and suburban settings.  
4 (4,0) F

**PAD 416**  
Public Administration Internship: PR: C.I. Internship in municipal, county, state or federal government, including assignments in such fields as personnel, planning, budget and fiscal, procurement and public safety.  
6-12 (0,12)

**PAD 440**  
Comparative Public Administration: PR: C.I. An analysis of administrative structures and processes of selected countries, including an evaluation of the influence of economic, social and political environment on bureaucratic functions and the role of the executive.  
4 (4,0)

**PAD 441**  
Comparative Public Administration II: PR: C.I. A case study approach to the problems of administration in diverse political environments stressing patterns or organization, personnel systems, field services and administrative style.  
4 (4,0) F,S

**PAD 510**  
Administrative Problems of the Metropolitan Community: PR: PAD, 350, or C.I. Senior or graduate standing. This course focuses on the processes of policy formulation and execution in the metropolitan community, including governmental restructure and area-wide policy formulation and implementation.  
4 (4,0)

**PAD 605**  
Bureaucracy and Public Policy: PR: C.I. A critical examination of the bureau-
cracy and the development and impact of bureaucratic behavior and structure upon public administration.

PAD 611
Planning and Organization for Economic and Social Development: PR: C.I.
The purpose and use of economic and social planning, examining theories of development, regional analysis, methods and administration of planning, and evaluation of plan performance.

PAD 630
Policy Analysis and Administration: PR: C.I. Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.

PAD 633
Budgeting as a Policy and Program Instrument: PR: C.I. Budgets as planning/programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS, and incrementalism.

PAD 636
Labor-Management Relations in the Public Sector: PR: C.I. A broad perspective of management-employee relations in the public sector including grievance procedures, fact finding, collective bargaining, mediation and arbitration.

PAD 677
Issues in Public Administration: PR: C.I. Analysis of both substantive and theoretical issues confronting the broad spectrum of contemporary public administration; consideration of the "new public administration" movement.

Q
QUANTITATIVE BUSINESS ANALYSIS

QBA 312
Quantitative Analysis I: PR: MATH 320. Mathematical models and techniques used in the formulation, solution, and analysis of business problems. Linear, non-linear and dynamic programming, network, decision tree analysis; queueing, inventory, and decision theory. Computer applications.

QBA 313
Quantitative Analysis II: PR: QBA 312. Continuation of QBA 312.

QBA 450
Business Simulation: PR: MATH 320 and COMP 310. An introduction to simulating various aspects of the business enterprise. Topics include the simulation modeling process, applicable simulation languages, and model formulation, analysis, and validation.

QBA 451
Quantitative Applications to Business Problems: PR: QBA 313 or C.I. Applications of quantitative analysis to complex business problems. Emphasis is on analyzing specific problem situations and deciding on appropriate quantitative techniques to be applied.

R
RADIO/TELEVISION

RTV 337
Broadcast Techniques: Introduction to the radio and television studio. Utilization of studio operating techniques and equipment (consoles, recorders, cameras, etc.) for use in educational and commercial broadcasting.
RTV 340 4 (4,0)
Radio Production: PR: RTV 337 or C.I. The production of music (live and recorded), talk, interview, discussion, sports, and documentary including performance (talent and announcing) and direction.

RTV 341 4 (4,0)
Television Production: PR: RTV 337 or C.I. Emphasis on the coordination of talent, cameras, visuals, audio and lighting with the dramatic values of the presentation.

RTV 342 4 (4,0)
Broadcast Journalism I: PR: JRN 319 or C.I. Historical, legal, and quasi-legal influences on broadcast news; introduction to news sources, writing and interviewing techniques for radio-television news.

RTV 343 4 (4,0)

RTV 344 4 (4,0)
Broadcast Continuity and Programming I: Practice in the preparation of written commercial copy for radio and television. Examination of program practices and traffic systems.

RTV 345 4 (4,0)
Films for Television: Principles and practices of 8mm and 16mm film usage within the television industry.

RTV 347 4 (4,0)
Television Scene Design: PR: RTV 337 or C.I. Study, application, and creative utilization of staging, lighting, graphics, special effects, costuming, and make-up for television production.

RTV 355 4 (4,0)
Foundations of Broadcasting: Nature of the media, the mechanics of operation, history, economics, programming, and internal and external control.

RTV 441 4 (4,0)
Television Directing: 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 444 4 (4,0)
Broadcast Continuity and Programming II: PR: RTV 344 or C.I. Preparation of documentaries and dramatic writing for television and radio.

RTV 445 4 (1,3)
Television Film Production: PR: C.I. Planning and preparation of filmed documentaries, public service and commercial productions. (Laboratory hours to be arranged).

RTV 446 4 (4,0)
Radio, Television and Society: A study of the impact of electronic media upon the habits, customs and thinking of our times. Considerations of internal media problems.

RTV 447 4 (4,0)
Television Film Documentary: PR: C.I. Historical developments, styles, and production techniques of the television film documentary.

RTV 448 4 (4,0)
Broadcast Regulations: PR: RTV 355 or RTV 342. Federal, state, local and self-regulator agencies and practices which govern electronic media.

RTV 450 4 (4,0)
RTV 451 4 (4,0)
Radio-Television Advertising: PR: JRN 464 or C.I. Radio and television as advertising media; advertisers' demands and budget; appropriate programs for the sponsors' needs; writing of commercial continuity.

RTV 452 4 (4,0)
Broadcast Criticism: Evaluation and criticism of past and present radio and television programs, policies, and critics. Concentration on the problem of criteria development.

RTV 453 4 (4,0)

RTV 454 4 (4,0)
Instructional Broadcasting: 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 455 4 (4,0)
International Broadcasting: Comparative analysis of national broadcast systems. World broadcasting as a social, political and economic force.

RTV 458 4 (4,0)
Broadcast Management: PR: RTV 448. Consideration of broadcast management problems in station operations at the local, regional, and national levels.

RADIOLOGIC TECHNOLOGY

RTE 340 3 (3,0)
Fundamentals of Radiologic Technology: PR: Admission to the professional phase of the RTE program or C.I. Historical science of radiology. Fundamentals of radiation, terminology, procedures, protection, patient care, professional ethics and medio-legal aspects as applied to radiology.

RTE 342 3 (0,30)

RTE 350 4 (4,0)

RTE 352 3 (0,28)

RTE 360 4 (4,0)
Radiographic Quality Control: PR: C.I. Survey of medical and surgical disease and usage of radiographic accessories related to disease, patient habitus, technique variations including darkroom control and film critique.

RTE 362 3 (0,28)
Directed Clinical Education III: PR: RTE 352, CR: 360. Supervised clinical practice in radiographic procedures and positioning with emphasis on factors affecting quality control including darkroom procedures and equipment.

RTE 380 4 (4,0)

RTE 382 3 (0,28)
RTE 440 3 (3,0)
Special Radiographic Procedures: PR: Completion of all junior level RTE courses or C.I. Specialized and complex procedures, pharmacology, and systematic requirements of constant media with related nursing procedures. Film critique.

RTE 442 3 (0,30)
Directed Clinical Education V: PR: RTE 382, CR: RTE 440. Supervised clinical practices with emphasis on special procedures, operating theatre, portable, intraoral and pediatric practicum.

RTE 450 4 (4,0)
Therapy-Nuclear Medicine Techniques: PR: C.I. Variation of equipment, treatment planning, shielding protection and close calculation. Usage of radioactive elements, detection and recording equipment as applied to medicine.

RTE 452 3 (0,16)

RTE 454 3 (0,16)

RTE 460 5 (5,0)
Radiographic Education-Administration: PR: C.I. Evaluation and integration of radiographic theory, practice, communication, management; department and interdepartmental organization; equipment maintenance.

RTE 462 4 (0,16)

RTE 464 3 (0,18)

RTE 480 5 (5,0)
Radiologic Technology Analysis: PR: C.I. Comprehensive review, evaluation and analysis of all phases of radiology. Preparation for continuing education, advancement and opportunities with survey of current trends and practices.

RTE 482 4 (0,16)

RTE 484 4 (0,18)
Clinical Practice III: PR: RTE 464, CR: RTE 482. Clinical practices under general supervision in all phases of diagnostic, therapeutic, nuclear medicine, instructional and departmental procedures.

RELIGION

REL 300 4 (4,0) F,W,S
The Hebrew and Christian Heritage: An examination of the Old and New Testaments as religious documents; a study of their emergence in the socio-political context of the Ancient Near East.

REL 315 4 (4,0) S
Religions of China and Japan: A study of basic concepts in Shinto, Taoism, Confucianism, Buddhism, and Zen.

REL 317 4 (4,0) W
Hinduism: A study of Hindu religious ideas and scriptures; the Vedas, the Upanishads, the Bhagvat Gita, and later works.
REL 318 4 (4,0) F
Islam: An inquiry into the foundations and development of Islamic thought from earliest times to modern in various parts of the world.

REL 319 4 (4,0)
Ancient Near Eastern Religions: An investigation of the principal religions of the ancient Near East with special emphasis on Mesopotamian, Canaanite, and Egyptian religions.

REL 321 4 (4,0)
Religion in America: 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 401 4 (4,0) S
Comparative Religion: An analysis of the nature of the religious experience in several of the world's major religions, showing their similarities and differences in thought, action, and fellowship.

REL 441 4 (4,0) W
Modern Theology: Explores the revolution in religious thought prompted by Kierkegaard, Tillich, Barth, Niebuhr, and Bonhoeffer, and the secular trends suggested by Nietzsche, Altizer, Cox, and Hamilton.

REL 471 4 (4,0) S
Mythology: An examination and interpretation of myths dealing with gods, divine heroes, and sacred events.

REL 473 4 (4,0) F
The Religious Quest: A study of major religious statements from the desert Fathers to Kafka and Kazantzakis, and of the human and cultural circumstances from which they emerged.

REL 477 4 (4,0) W
Mysticism: The modes and aims of the mystic, both Eastern and Western, as seen in art, music, and literature.
# RESPIRATORY THERAPY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTH 340</td>
<td>3 (3,0) S</td>
<td>Introduction to Pharmacology: Regulatory agencies and the regulation concerning the use of drugs. Review of pharmacological mathematics. Drug absorption and distribution in the human body.</td>
</tr>
<tr>
<td>RTH 380</td>
<td>3 (3,0) S</td>
<td>Respiratory Pathology: PR: ZOOL 324. Cellular pathology with emphasis on pathology of respiratory and cardiovascular systems.</td>
</tr>
<tr>
<td>RTH 401</td>
<td>2 (0,20) F</td>
<td>Clinical Practice III: PR: C.I. Advanced cardiopulmonary resuscitation. Patient care with advanced cardiopulmonary equipment.</td>
</tr>
<tr>
<td>RTH 402</td>
<td>2 (0,20) W</td>
<td>Clinical Practice IV: PR: C.I. Pulmonary functions studies. Care of patients</td>
</tr>
</tbody>
</table>
with medically treated diseases. Exposure to the functional role of the department administrator.

RTH 403 2 (0,20) S

RTH 410 2 (1,2) S

RTH 420 3 (3,0) S

RTH 430 3 (3,0) S
Cardiopulmonary Therapy: PR: IT 370. Introduction to diagnostic and surgical techniques in thoracic and general surgery.

RTH 431 1 (0,3) S

RTH 440 3 (3,0) F

RTH 442 3 (3,0) W

RTH 460 3 (3,0) W
Medicine: PR: RTH 370. Disease states treated medically in conjunction with one or more modalities of respiratory therapy.

RTH 461 1 (0,3) W

RTH 462 3 (3,0) F
Pulmonary Function Studies: PR: C.I. Detailed procedures and tests to provide objective information for diagnosis of respiratory diseases.

RTH 463 1 (0,3) F

RUSSIAN

RUS 101 4 (4,1) F
Elementary Russian Language and Civilization: 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 4 (4,1) W

RUS 103 4 (4,1) S
Elementary Russian Language and Civilization: PR: RUS 102 or equivalent. Continuation of RUS 102.
RUS 201
Intermediate Russian Language and Civilization: PR: RUS 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of Russian culture.

RUS 202
Intermediate Russian Language and Civilization: PR: RUS 201 or equivalent. Continuation of RUS 201.

RUS 203
Intermediate Russian Language and Civilization: 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 Conversation: PR: RUS 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.

RUS 303
Russian Composition: PR: RUS 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

SOCIOLOGY
Introductory Sequence: SOC 201, 202.
Anthropology Concentration: SOC 310, 311, 314, 315, 316, 402.
Social Organization: SOC 325, 326, 333, 335, 407, 411, 416.

SOC 201 4 (4,0) F,W,S,Su
General Sociology: The basic principles, theories and methods of contemporary sociology.

SOC 202 4 (4,0) F,W,S,Su
General Sociology: PR: SOC 201. Continuation of SOC 201.

SOC 304 4 (4,0) F,S
The Development of Social Thought: PR: SOC 201. 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 life to World War II.

SOC 306 4 (4,0) W
Modern Sociological Thought: PR: SOC 201 and SOC 304. A study of major European and American contributors to, and schools of, modern sociology from World War II to the present.

SOC 307 4 (4,0) S
The Sociology of Religion: Patterns in religious behavior in various societies with primary emphasis on myth, rite, taboo and festival as social phenomena.

SOC 308 4 (4,0) S
Ethnology of North American Indians: A survey of the aboriginal cultures of North America with emphasis on the pre-contact cultural condition.
SOC 309 4 (4,0) F

SOC 310 4 (4,0) F,S
Physical Anthropology and Archaeology: Introductory anthropological survey of physical anthropology and archaeology. Survey of man's place among primates, evolution, genetics, and prehistoric cultural development to the earliest civilizations worldwide.

SOC 311 4 (4,0) W,Su
Social Anthropology: Framework and principles of sociocultural organization as exemplified among various cultures and ethnic groups.

SOC 312 4 (4,0) F,S
Old World Prehistory: PR: SOC 310 and SOC 311. Fundamentals of archaeological discipline and research techniques. Surveys prehistoric record of cultural development from earliest times to rise of civilizations in all areas of Old World.

SOC 313 4 (4,0) W
New World Prehistory: PR: SOC 310 and SOC 311. Essentials of New World archaeology, methods, and excavations. Surveys space-time framework of Native American Indian cultures and civilization from earliest times to A.D. 1500.

SOC 314 4 (4,0) W
Archaeological Methods: PR: SOC 310 or 311. A seminar surveying archaeological field and laboratory techniques; i.e., bone preservation, zooarchaeology, ethnobotany, cataloguing, classification, and laboratory analysis.

SOC 315 4 (4,0)
Physical Anthropology: PR: SOC 310 and SOC 311. The study of man as a product of the evolutionary process. Study and analysis of diversity among present human populations.

SOC 316 4 (4,0)
Comparative Social Organization: PR: SOC 310 and SOC 311. Introduction to anthropological viewpoints on role of marriage, family, kin groups, and descent in the study of economic, political and ideological aspects of social organization.

SOC 320 4 (4,0) F
Collective Behavior: PR: SOC 201. Analysis of relatively unstructured social situations such as disasters, mobs, crowds, mass hysteria, protests, fads and fashions.

SOC 325 4 (4,0) F,S

SOC 326 4 (4,0) F

SOC 331 4 (4,0) F,W,S,Su
Social Problems: Analysis of major social problems such as mental disorders, sexual deviance, racial discrimination, poverty, community disorganization, and violence.

SOC 333 4 (4,0) F,S
Social Psychology of Management. A social psychological analysis of processes relating to developing and changing social attitudes, work motivation and satisfaction, decision making, and social structure affecting managerial skills.

SOC 335 4 (4,0) S
Social Institutions: PR: SOC 201. Social institutions, social differentiation, and social control, with emphasis on American and other modern societies.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Term(s)</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 336</td>
<td>4</td>
<td>(4,0) S</td>
<td>Social Stratification</td>
<td>PR: SOC 201. Study of class, status and power; cultural variations in stratification system; patterns of mobility and change.</td>
</tr>
<tr>
<td>SOC 340</td>
<td>4</td>
<td>F,S</td>
<td>Social Welfare: A Social Institution</td>
<td>PR: SOC 201. 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.</td>
</tr>
<tr>
<td>SOC 342</td>
<td>4</td>
<td>W</td>
<td>Government and Social Welfare</td>
<td>PR: SOC 340. The role of federal, state, and local government in social welfare. Laws, policy formulation, administration, and current issues will be examined.</td>
</tr>
<tr>
<td>SOC 343</td>
<td>4</td>
<td>W</td>
<td>The Community and Social Welfare</td>
<td>PR: SOC 340. The community as a social system in meeting human needs. Emphasis on private agencies, including their organization, functions, interrelationships and coordination with governmental agencies.</td>
</tr>
<tr>
<td>SOC 344</td>
<td>4</td>
<td>W,S</td>
<td>Sociology of Deviant Behavior</td>
<td>PR: SOC 201. An examination of the nature, types and societal reactions to deviant behavior; special emphasis on the process of stigmatization and the emergence of deviant subcultures.</td>
</tr>
<tr>
<td>SOC 345</td>
<td>4</td>
<td>W,S</td>
<td>Juvenile Delinquency</td>
<td>Types of delinquent behavior found among juveniles; possible causes and ways society attempts to treat the various forms of delinquency.</td>
</tr>
<tr>
<td>SOC 347</td>
<td>4</td>
<td>F</td>
<td>Sociology of Mental Illness</td>
<td>A sociological examination of mental illness as a social problem; legal aspects of mental illness, and the mental health professions.</td>
</tr>
<tr>
<td>SOC 348</td>
<td>4</td>
<td>F</td>
<td>Sociology of Alcoholism</td>
<td>Introduction to the nature of alcoholism and review of its impact on society.</td>
</tr>
<tr>
<td>SOC 349</td>
<td>4</td>
<td>F,W</td>
<td>Human Growth and Development</td>
<td>PR: SOC 340. Development of an understanding of individual physical, mental and emotional growth from birth to death, recognizing social and cultural influences on the development.</td>
</tr>
<tr>
<td>SOC 350</td>
<td>4</td>
<td>(4,0)</td>
<td>Interviewing in Social Work Practice</td>
<td>PR: SOC 340. Examination of interviewing as the primary medium through which social work is practiced with emphasis on the development of methods, skills and techniques.</td>
</tr>
<tr>
<td>SOC 352</td>
<td>4</td>
<td>F,S</td>
<td>Race and Ethnic Minorities in the United States</td>
<td>Theoretical analysis of the emergence, maintenance and disruption of patterns of racial and ethnic stratification.</td>
</tr>
<tr>
<td>SOC 353</td>
<td>4</td>
<td>(4,0)</td>
<td>Culture and Personality</td>
<td>PR: SOC 201. Theories of the variations in personality in relation to culture and group life in tribal modern societies.</td>
</tr>
<tr>
<td>SOC 354</td>
<td>4</td>
<td>(4,0)</td>
<td>Sociology of Adolescence</td>
<td>An examination of the transition to adulthood in</td>
</tr>
</tbody>
</table>
various societies with primary emphasis on initiation and the contemporary American problems centering around the "adolescent crisis."

**SOC 360**

**SOC 362**
Contemporary Woman and Society: An interpretation of the changing role of woman in contemporary American society.

**SOC 380**

**SOC 401**
Sociology of Small Groups: PR: SOC 201. Study of interaction among individuals in social groups. Emphasis on the impact of interpersonal behavior on attitude dynamics, personality and self-concept, and decision-making.

**SOC 402**
Method and Theory in Anthropology: PR: SOC 310 and SOC 311. Central methodological and theoretical concerns of anthropology in its emergence as a separate discipline and field of study.

**SOC 403**
 Anthropological Linguistics: PR: SOC 310, SOC 311, and ENG 371. Survey of anthropological linguistic field techniques in non-native cultures and application of linguistic theories to study of socio-cultural systems.

**SOC 405**
Medical Sociology: Social organization of medical care: patterns of morbidity and mortality, social epidemiology and effects of disease, utilization of medical services, medical practice, programs and organizations.

**SOC 406**
Sociology of Aging: PR: SOC 201. An examination of the sociological aspects of aging in America including the needs of the aged and community resources to meet their needs.

**SOC 407**
The Family: PR: SOC 201. The family viewed functionally as a distinct social and cultural complex in the contemporary United States. Topics include: mate selection, marriage, adjustment, parenthood, post marriage.

**SOC 408**
Social Change in Developing Areas: PR: SOC 201 and one course in statistics. A study of growth problems in the emerging nations of Africa and Latin America.

**SOC 411**
Population: Concerned with the study of human population, its distribution, composition and change.

**SOC 412**
Field Experience and Seminar: PR: SOC 340, 341, 342, 343, 349, and 350. 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: PR: SOC 201. Principles governing the spatial distribution of human populations and activities within an area.

**SOC 420**
Political Sociology: Sociological analysis of political and para-political groups; socio-economic variables of voting behavior; power elites; societies and systems of government. (Same as PCL 424).
SOC 433  4 (4,0)
Sociology of Occupations and Professions: An examination of occupations and professions from the sociological perspective. Emphasized are professional and occupational socialization, marginality and choice as well as women and work.

SOC 435  4 (4,0)
Sociology of Education: PR: 201. This course examines the sociological dimensions of the educational institutions including the impact of social structure on learning and the role of education in social change.

SOC 451  4 (4,0)
Contemporary Social Movements: PR: SOC 201. Causes and effects of various social movements in American society compared to large-scale upheavals throughout the West. Considers various theories of explanation.

SOC 452  4 (4,0)
Sociology of Drug Abuse: PR: SOC 201 or C.I. The analysis of the sociocultural elements of the drug culture. This course will survey problems, impact on society, and possible solutions.

SOC 501  4 (4,0)
Proseminar in Sociology: PR: Six hours of Sociology and graduate level status or C.I. Study of culture, groups, demography, stratification, and culture and personality.

SOC 502  4 (4,0)
Proseminar in Sociology: PR: Six hours of Sociology and graduate level status or C.I. Study of social change, institutions, large organizations, and internal behavior.

SPANISH

SPA 101  4 (4,1) F
Elementary Spanish Language and Civilization: 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  4 (4,1) W
Elementary Spanish Language and Civilization: PR: SPA 101 or equivalent. Continuation of SPA 101.

SPA 103  4 (4,1) S
Elementary Spanish Language and Civilization: PR: SPA 102 or equivalent. Continuation of SPA 102.

SPA 201  4 (4,1) F
Intermediate Spanish Language and Civilization: PR: SPA 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of Spanish culture.

SPA 202  4 (4,1) W
Intermediate Spanish Language and Civilization: PR: SPA 201 or equivalent. Continuation of SPA 201.

SPA 203  4 (4,1) S
Intermediate Spanish Language and Civilization: PR: SPA 202 or equivalent. Continuation of SPA 202 with greater emphasis on Spanish civilization from the Middle Ages to the present.

SPA 301  4 (4,0) F
Spanish Conversation: PR: SPA 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.

SPA 303  4 (4,0)
Spanish Composition: PR: SPA 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.
Survey of Spanish Literature I: PR: SPA 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance and Baroque.

Survey of Spanish Literature II: PR: SPA 203 or equivalent. Main literary currents and works of the eighteenth and nineteenth centuries.

Survey of Spanish Literature III: PR: SPA 203 or equivalent. Main literary currents and works from the Generation of 1898 to the present.

Survey of Latin-American Literature I: PR: SPA 203 or equivalent. Main literary currents and works from the colonial period to the nineteenth century.

Survey of Latin-American Literature II: PR: SPA 203 or equivalent. Main literary currents and works of the nineteenth century.

Survey of Latin-American Literature III: PR: SPA 203 or equivalent. Main literary currents and works of the twentieth century.

Spanish Short Story: A study of representative 19th and 20th Century Spanish short stories and their authors.

Spanish Phonetics and Diction: PR: SPA 303 or equivalent. Spanish phonology with emphasis on phonic groupings.

Advanced Spanish Conversation: PR: SPA 301. Advanced conversation on directed topics from various disciplines: Literature, art, psychology, philosophy, music, business and the sciences.

Advanced Spanish Composition: PR: SPA 303. Readings and written imitations of modern literary styles in the form of themes, sketches, poems and original stories.


Cervantes I: PR: SPA 311. Don Quixote (Part I).

Cervantes II: PR: SPA 311. Don Quixote (Part II).


SPA 452 4 (4,0)
Twentieth Century Spanish Literature: PR: SPA 313. Contemporary Spanish drama and poetry.

SPA 481 4 (4,0)
Stylistics: PR: SPA 301 or equivalent. An intense study of textural criticism. An examination of the relationship between language and literature; explications and linguistic analysis of literary texts.

SPEECH

SPE 101 3 (3,0) F,W,S,Su
Fundamentals of Oral Communication: Use of the body and voice; participation in various speaking situations; planning, organizing, and delivering public speeches.

SPE 102 1 (0,1) F,W,S,Su
Speech Improvement Laboratory: Individual and group practice for students with speech fright and delivery problems. Recommended for all students who want to improve their speaking skills.

SPE 230 3 (3,0) F,W,S
Interpretation I: Analysis of thought, development of imagination; oral presentation of literary forms. (Recommended for students majoring in English and preparing to teach literature. (Same as THA 230).

SPE 261 5 (4,3) W,Su
English Phonetics and American Dialects: Physiological description and visual notation of speech sounds; regional dialects of American English.

SPE 262 4 (4,0) W
Psychology of Oral Communication: Psychological principles involved in the communicative process with application to individuals and groups.

SPE 265 4 (4,0) W

SPE 330 3 (3,0)
Interpretation II: PR: THA 230 or C.I. Selecting and abridging literary material for platform use; preparation and presentation of program for special and general occasions. (Same as THA 330)

SPE 336 3 (3,0)

SPE 360 4 (4,0) F
Argumentation and Debate: PR: SPE 101 or C.I. Study and practice in the preparation and delivery of argumentative speeches emphasizing argument, evidence and organization.

SPE 361 4 (4,0) W,Su
Persuasion: Motivation: PR: SPE 101 or C.I. A study of motivational factors involved in persuasive speaking to secure belief and action.

SPE 362 4 (4,0) S
Platform Speaking: PR: SPE 101 or C.I. Advanced training in selecting and organizing materials for various types of speeches. Practice in thinking and speaking before audiences; contemporary speeches as examples.

SPE 364 5 (5,2) F
Physiological Bases of Speech and Hearing: An introduction to the anatomical, physiological, and physical elements underlying the communication process.

SPE 365 2 (2,0) F,W
Parliamentary Procedure: Principles and rules governing participation and
leadership in the conduct of formal business meetings.

**SPE 366**  
**Speech Composition:** PR: SPE 101 or C.I. Study and practice in the preparation and delivery of speeches from manuscripts with emphasis on the development of oral style.

**SPE 371**  
**Speech and Human Relations:** Introduction to semantics; symbols and meaning and the relationship with human behavior.

**SPE 473**  
**Directing Extracurricular Speech Activities:** Debate, extemporaneous speech and other speech events; selection and training of contestants; interschool and intramural speech activities.

**STATISTICS**

**STAT 201**  
**Principles of Statistics:** Introduction to statistical concepts in modern society. Basic principles, frequency distributions, measures of location and dispersion, probability, probability distributions, statistical inference.

**STAT 301**  
**Fundamentals of Probability and Statistics:** PR: Four years of high school mathematics or MATH 106 or MATH 110 or equivalent. Course introducing probability and statistical inference including: estimation, hypothesis testing, binomial and normal distributions, small samples, regression and correlation.

**STAT 332**  
**Statistical Quality Control:** Statistical concepts and methods applied to the control of quality of manufactured products. (Same as IEMS 332).

**STAT 335**  
**Probability and Statistics for Engineers:** PR: MATH 323. Axioms of probability; combinatorial and geometrical probability; probability distributions; measures of location and dispersion; sampling and sampling distributions; estimation and tests of hypothesis; engineering applications. (Same as ENGR 371).

**STAT 341**  
**Mathematical Statistics I:** PR: MATH 323 and a course in statistics. Sample space, probability axioms, distribution functions, sampling distributions, interval estimation, hypothesis testing, multivariate normal, regression and correlation, linear models, analysis of variance, distribution-free methods.

**STAT 342**  
**Mathematical Statistics II:** PR: STAT 341. Continuation of STAT 341.

**STAT 401**  
**Statistical Methods I:** PR: One course in statistics or graduate standing. Statistics in research; methods of analyzing data; statistical concepts and models; estimation; tests of hypotheses; regression and correlation; analysis of variance and covariance; statistical design.

**STAT 402**  
**Statistical Methods II:** PR: STAT 401. A continuation of STAT 401.

**STAT 411**  
**Experimental Design:** PR: STAT 402. Methods of constructing and analyzing designs for experimental investigations; concepts of blocking, randomization, and replication; confounding in factorial experiments; incomplete block designs.

**STAT 415**  
**Regression Analysis:** PR: MATH 317 and STAT 401. Least squares techniques in multiple regression; matrix methods; general linear model; residual analysis; transformations; orthogonal polynomials; stepwise and stagewise procedures; non-linear estimation.
STAT 421 3 (3,0)  
Survey Design: 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 477 3 (3,0)  

STAT 501 3 (3,0)  
Statistical Analysis: PR: A course in statistical methods and a course in mathematical statistics. This course relates the ideas of probability and statistics, including distribution theory, to the collection and analysis of data.

STAT 535 3 (3,0)  
Probability for Engineers: PR: STAT 335. Engineering application of probability, combinatorial analysis, sample space, events, probability, discrete and continuous random variables, and probability distribution. (Same as IEMS 502).

STAT 536 3 (3,0)  
Statistics for Engineers: PR: STAT 335. Engineering application of statistics, significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation. (Same as IEMS 503).

STAT 547 3 (3,0)  
Applied Probability: PR: A course in mathematical statistics. Axioms of probability theory. Discrete random variables and probability distributions; Demoivre-Laplace limit theorem; laws of large numbers; Markov chains; emphasis on applications.

STAT 601 3 (3,0)  
Multivariate Statistical Methods: PR: STAT 501. The concepts of statistical relationships among several variables and methods of estimating and testing such relationships.

STAT 621 3 (3,0)  
Spectral Analysis and Time Series Analysis: PR: STAT 547. Stochastic models for observations taken at discrete or continuous time points; methods of analysis for such data.

STAT 631 3 (3,0)  

STAT 647 3 (3,0)  
Probability and Statistics: PR: STAT 547. Probability and measure theory; distributions of continuous random variables; characteristics functions; sequences and sums of random variables; the central limit problem.

THEATRE

THA 180 3 (3,0) F,S  
Study of Drama and Theatre: Nature of drama and the theatre and basic principles of play analysis.

THA 210 4 (4,0) W,Su  
Cinema Survey: A broad cultural approach to cinema as theatre. Satisfies Section II, Cultural and Historical Foundations, in the Environmental Studies Program.
THA 230 3 (3.0) F,W,S
Interpretation I: Analysis of thought; development of imagination; oral presentation of literary forms. (Recommended for students majoring in English and preparing to teach literature. Same as SPE 230.)

THA 240 4 (4.0) W

THA 241 4 (2.4) W
Stage Carpentry: Special approaches to construction, painting, rigging, and operation of stage scenery.

THA 242 4 (2.4) S
Stage Properties: Design, construction, operation, and management of stage properties. History, style, and decoration of practical, scenic, and hand properties.

THA 280 4 (4.0)
Acting I: Prepares the beginning actor for University Theatre Productions. Emphasis on movement, motivation, voice, characterizational techniques, makeup, and other basic requirements for acting.

THA 290 3 (0,15) F,W,S,Su
Theatre Practicum I: PR: C.I. Open to all students interested in participating in productions of University Theatre. May be repeated for credit.

THA 310 4 (4.0) F
History of the Motion Picture: Development of the film industry; its social and economic impact. (Same as COM 310).

THA 330 3 (3.0)
Interpretation II: PR: THA 230 or C.I. Selecting and abridging literary material for platform use; preparation and presentation of program for special and general occasions. (Same as SPE 330).

THA 331 3 (3.0)
Theater History I: Development of theatre art from the earliest times through the sixteenth century.

THA 332 3 (3.0)
Theatre History II: Development of theatre art from the Renaissance through the neo-classic period to the beginning of the Romantic Period.

THA 333 3 (3.0)
Theatre History III: Development of theatre art from the Romantic Period to the modern theatre.

THA 335 4 (4.0) W
Stage Diction: A consideration of the role of the human voice in the art of acting: articulation, pronunciation drills, practice in vocal characterization.

THA 336 3 (3.0)

THA 341 4 (4.0)
Drama Development I: A study of dramatic works in translation of the Greeks, Roman and Medieval Theatre. Extensive readings in the plays of these periods should be expected.

THA 342 4 (4.0)
Drama Development II: A study of dramatic works in translation of the 16th and 17th centuries. Continuation of THA 341.

THA 343 4 (4.0)
Drama Development III: Continuation of THA 341-342 tracing the development of dramatic works in translation of the 18th and 19th centuries.
THA 350
Theatrical Costume: History and Theory: Historical costume for theatre purposes: period costumes in relation to social and cultural development. Fabric, silhouette, color and decoration as related to theatrical characterizations.

THA 351
Costume and Makeup Techniques: Analysis, design, construction, and management of costume and makeup in the theatre.

THA 375
Modern Stage Movement: Modern movement patterns, analysis, improvisation, and exercise to improve the flexibility and control of the actor's physical means of expression.

THA 380
Directing I: 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.

THA 381
Scene Design I: Study and practice of scene design; perspective drawing, fundamentals of design, and techniques of scene painting. (Service on crew as required).

THA 382
Stage Lighting: PR: Junior standing. Study of stage lighting techniques, practices, and equipment. (Service on light is required).

THA 390
Theatre Practicum II: PR: THA 290 or C.I. Primarily an activity course. Student will serve in some position of responsibility in production. May be repeated for credit.

THA 422
High School Play Directing: 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: Trends in theatrical production and dramatic literature in Italy, France, Germany, Russia, and the Scandinavian countries.

THA 424
Principles of Motion Picture Art: PR: THA 310 or C.I. Aesthetic consideration of the motion picture as art, through the viewing of films, reading assignments, and discussion.

THA 425
Dramatic Criticism: PR: C.I. Analysis of the nature of past and present day criticism of the drama; practical work in such criticism.

THA 431

THA 434
Modern Motion Picture Technique: PR: THA 310 or C.I. An examination of the techniques of motion picture as art; directing, acting, editing, writing, cinematography.

THA 441
THA 486 4 (4,0) W, even years
American Theatre I: An examination of the influences on the American drama and theatre. Trends in theatrical production and dramatic types.

THA 487 4 (4,0) S, even years
American Theatre II: A continuation of THA 486, with emphasis placed upon the aesthetic and literary development of the theatre in this century.

THA 488 3 (3,0)
Creative Dramatics and Children's Theatre: An introduction to the bases of theatre production for and by young people. The production of children's theatre, play selection, scenery, costumes, management, and touring.

THA 489 4 (4,0) S
Performance Styles: Instruction and experiences in traditional styles of acting and their application to the modern theatre.

Z

ZOOL 100 4 (3,4) F,S
General Zoology: Introduction to zoology; structure, function and representative groups; current concepts in zoological sciences.

ZOOL 322 4 (2,6)
Vertebrate Histology: PR: ZOOL 100. Anatomy, structure and function of major cell types and tissues.

ZOOL 324 5 (3,4) F,W
Human Anatomy: PR: BIOL 110 or equivalent. Structure of the human body. Not open to students in ZOOL 326, ZOOL 327 or equivalent.

ZOOL 326 4 (2,6) F
Comparative Vertebrate Anatomy I: PR: ZOOL 100. The vertebrate animals; relationship of organs and systems; and their phylogenetic significance.

ZOOL 327 4 (2,6) F
Comparative Vertebrate Anatomy II: PR: ZOOL 326. Continuation of ZOOL 326.

ZOOL 334 5 (4,3) W,S
Human Physiology: PR: BIOL 110 or equivalent. The physiology and interrelationships of organ systems of the human body.

ZOOL 340 4 (2,6) S, odd years
Vertebrate Zoology: PR: 8 hours of zoology or C.I. Emphasis on evolution and classification followed by an introduction to vertebrate ecology, natural history and behavior.

ZOOL 370 5 (3,6)
Animal Parasitology: PR: ZOOL 100. Identification and life histories of representative parasitic protozoa and helminths emphasizing host-parasite relationships; techniques of animal examination.

ZOOL 423 5 (3,6) S, even years
Embryology: PR: 12 hours of biology. Embryology of the vertebrates; fertilization of egg; stages of cleavage; development of organs and systems.

ZOOL 430 5 (4,3) F, even years
Animal Physiology: PR: Biol 332 or C.I. Functions of body processes occurring in animals with emphasis on vertebrate physiology.

ZOOL 442 5 (3,6) W
Invertebrate Zoology: PR: 12 hours of biology or C.I. Taxonomy, anatomy and ecology of the invertebrate animals.
General Entomology: PR: ZOOL 100. Introduction to insects; their identification, biology and ecology.

Ichthyology: PR: 8 hours of zoology or C.I. Introduction to the biology of the fishes, their classification, evolution and life histories.

Zoogeography: PR: BIOL 350 or C.I. Principles and concepts concerning regional patterns of distribution of the animals of the world, both past and present.

Vertebrate Ethology: PR: ZOOL 100. Classical ethology, modern experimental ethology and behavioral ecology are considered.

Endocrinology: PR: ZOOL 330 and CHEM 441 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.

Ornithology: PR: 8 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution and life histories.

Herpetology: PR: 8 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution and life histories.

Mammalogy: PR: 8 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution and life histories.

Fishery Biology: PR: BIOL 450 and ZOOL 445. The biology and management of important commercial and game fishes; case histories of selected fisheries and analysis of methodology.

Principles of Zoological Systematics: PR: BIOL 460 and 15 hours of zoology courses of 300 level or above. Theory and practice of taxonomy and classification of animals; introduction to the international Code of Zoological Nomenclature.

Aquatic Invertebrates: PR: ZOOL 442 or C.I. A faunistic survey of major invertebrate groups associated with aquatic environments in Florida.

Field Zoology: PR: 12 hours in biological sciences, or science teaching experience or C.I. Classification and identification among major animal groups with emphasis on field experience. Major references sources reviewed.
FACULTY

The date indicates the first year of employment at Florida Technological University.

ABBOTT, DAVID W.
(1968), B.A., M.S., Ph.D. (University of Massachusetts)
Chairman, Department of Psychology and Professor of Psychology

ADICKS, RICHARD R., JR.
(1968), B.A.E., M.A., Ph.D. (Tulane University)
Professor of English

ALLEN, WILLIAM D.
(1969), B.S., M.S.W., Ph.D. (Ohio State University)
Professor of Sociology

ANDERSON, B. BETTY
(1968), B.A., M.A., Ed.D. (University of Maryland)
Associate Professor of Education

ANDREWS, LARRY C.
(1972), B.S., M.S., Ph.D. (Michigan State University)
Assistant Professor of Mathematical Sciences

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., Ed.D. (Oklahoma State University)
Associate Professor of Education

ARMSTRONG, LEE H.
(1968), B.A., M.S., Ph.D. (Florida State University)
Assistant Professor of Mathematical Sciences

ARNOLD, ROBERT L.
(1968), B.A., M.A., Ph.D. (Ohio University)
Professor of Communication

AVERY, CLARENCE G.
(1972), B.S.B.A., M.S.A., Ph.D. (University of Illinois), C.P.A.
(State of Illinois, State of Ohio)
Chairman, Department of Accountancy and Professor of Accountancy

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., Ph.D. (Rensselaer Polytechnic Institute)
Assistant Professor of Engineering Science

BARR, MURRAY P.
(1968), B.S., M.S. (Adelphi University)
Assistant Professor of Mathematical Sciences

BARR-JOHNSON, VIRGINIA
(1971), B.A., M.Ed., Ph.D. (Florida State University)
Associate Professor of Education

BARNES, MADELYN
(1975), B.A., M.A. (University of South Florida)
Visiting Assistant Professor of English

BARUCKY, JERRY M.
(1973), B.A., M.A. (Bowling Green University of Ohio)
Assistant Professor of Aerospace Studies
BATES, HARRY E.  
(1975), B.S., M.S., Ph.D. (University of Florida)  
Visiting Assistant Professor of Physics

BAUER, CHRISTIAN S., JR.  
(1970), B.S.I.E., M.S.E., Ph.D. (University of Florida)  
Assistant Professor of Engineering and Director, Transportation Systems Institute

BEADLE, JAMES S.  
(1968), B.S., M.S., Ph.D. (Michigan State University)  
Associate Professor of Education

BECK, JAMES K.  
(1970), B.S.A.E., M.S.E. (Florida Technological University)  
Assistant Professor of Engineering

BENNETT, GLADYS H.  
(1974), B.S., M.Ed., Ph.D. (Syracuse University)  
Associate Professor of Communication

BERGNER, JOHN F., JR.  
(1975), B.S., M.S.P.H., Ph.D. (University of Maryland)  
Chairman, Department of Allied Health Sciences and Professor of Allied Health Sciences

BERRY, WALDRON  
Associate Professor of Business Administration

BIRD, ROBERT C.  
(1971), B.S., M.Ed., Ph.D. (Florida State University)  
Assistant Professor of Education

BLAU, BURTON I.  
(1972), B.A., M.A., Ph.D. (Southern Illinois University)  
Associate Professor of Psychology

BLEDSOE, CAROL C.  
(1970), B.S., M.A. (University of Oklahoma)  
Assistant Dean for Academic Affairs and Assistant Professor of Communication

BLEDSOE, ROBERT L.  
(1968), A.B., M.A., Ph.D. (University of Florida)  
Associate Professor of Political Science

BLOCK, DAVID L.  
(1968), B.S., M.S., Ph.D. (Virginia Polytechnic Institute), P.E. (Florida)  
Assistant Dean, College of Engineering and Professor of Engineering

BOGUMIL, WALTER A., JR.  
(1972), B.S., M.B.A., Ph.D. (University of Georgia)  
Acting Assistant Dean, College of Business Administration and Assistant Professor of Business Administration

BOLEMON, JAY S.  
(1968), B.S., Ph.D. (University of South Carolina)  
Associate Professor of Physics

BOLLET, ROBERT M.  
(1973), B.S., M.S., Ed.D. (Ball State University)  
Assistant Professor of Education

BOLTE, JOHN R.  
(1968), B.A., M.A., M.S., Ph.D. (State University of Iowa)  
Associate Vice President for Academic Affairs and Professor of Physics

BRENNAN, JOHN J.  
(1968), B.S., M.S., Ph.D. (Georgia Institute of Technology)  
Associate Professor of Physics
BREWER, VIRGIL L.
Assistant Professor of Finance

BRIGHAM, ROBERT C.
(1970), B.S., M.S., Ph.D. (New York University)
Associate Professor of Mathematical Sciences

BROPHY, JAMES C.
(1969), B.A., Ph.D. (Vanderbilt University)
Associate Professor of Psychology

BRODIE, LYMAN A.
Visiting Instructor of Music

BROWN, WILLIAM R.
(1972), B.S., M.S., Ph.D. (Purdue University)
Assistant Professor of Sociology

BROWNE, ROLAND A.
(1968), B.A., M.A., C.E.F. (Queen's University, Canada)
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BRUMBAUGH, DOUGLAS K.
(1969), B.S., M.Ed., Ed.D. (University of Georgia)
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BUCHANAN, RAYMOND W., JR.
(1970), B.A., M.A., Ph.D. (Louisiana State University)
Chairman, Department of Communication and Associate Professor of Communication

BUDINA, JOHN W., JR.
(1968), A.B., M.B.A., Ph.D. (St. Louis University)
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B Burr, D.E. SCOTT
(1972), B.A., M.A., Ph.D. (University of Colorado)
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BURROUGHS, WAYNE A.
(1969), B.A., M.A., Ph.D. (University of Tennessee)
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BUSCH, MARILYN F.
(1971), B.S., M.A. (University of Missouri), C.P.A. (Florida)
Instructor in Accountancy

BUSSMAN, JOHN F.
(1971), B.S., M.A., D.B.A. (Florida State University), C.P.A. (Florida)
Assistant Professor of Accountancy

BUTLER, M. JEAN
(1971), R.R.A., B.S., M.S.M. (Rollins College)
Assistant Professor of Allied Health Sciences

BUTLER, JOHN F.
(1971), B.A., M.A. (Florida Technological University)
Visiting Instructor of Communication

CALLARMAN, WILLIAM G.
Director, Management Program and Assistant Professor or Business Administration

CALONIUS, L. ERIK
(1975), B.A., M.S. (Columbia University)
Instructor of Communication
CARLUcci, Jack P.
(1975), A.B., J.D. (University of Chicago Law School)
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CARON, RICHARD M.
(1972), B.A., Ph.D. (Louisiana State University)
Assistant Professor of Mathematical Sciences

CARROLL, WAYNE E.
(1971), B.S.E., M.S., Ph.D. (Virginia Polytechnic Institute)
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CAUSEY, DENZIL Y., JR.
(Tennessee)
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CERVONE, ANTHONY V.
(1968), B.A., Ph.D. (St. Louis University)
Chairman, Department of Foreign Languages and Professor of Foreign Languages

CHAMBERS, GENE T.
Visiting Assistant Professor of Finance

CHARBA, JULIUS F.
(1969), B.S., M.S., Ph.D. (Washington State University)
Associate Professor of Biological Sciences

CHAVDA, JAGDISH J.
(1972), B.F.A., M.F.A. (Michigan State University)
Assistant Professor of Art

CLARK, EUGENE A.
(1969), Ph.B., M.A. (Florida Technological University)
Assistant Professor of Education and Basketball Coach

CLARKE, WENTWORTH
(1970), B.S., M.S., Ed.D. (University of Nebraska)
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CLAUSEN, CHRIS A., III
(1969), B.S., Ph.D. (Louisiana State University)
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CLELAND, TROY S.
(1969), B.S., M.S., Ph.D. (Florida State University)
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COLEMEN, DANIEL R.
(1972), B.S., M.S., Ph.D. (Florida State University)
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COMISH, NEWEL W.
(1968), B.S., M.S., Ph.D. (Ohio State University)
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(1973), B.S., M.A.T., Ph.D. (Florida State University)
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(1970), B.S., M.A., Ed.D. (Florida State University)  
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COLLAGE AMERICA

by Dolores Vickers
Winnie Richmond
Julie Johnson

The United States was conceived and grew as a result of ideas, so too did this wall hanging. Jonathan Locke articulated democratic concepts and ideas, Franklin spoke and printed those ideas, but Tom Payne in "Common Sense" preceded them both, by being the first to print the concept of revolt. In a similar manner, Collage America became what you now see. Julie said, "Let's do a Bicentennial quilt." Dolores studied not only history but the method of articulation of the historical facts, and Winnie synthesized the idea and the research into a cohesive direction. Thus, the three individuals, as they began to develop their story, became a miniscule reflection of the thousands of people who came together to work, discourse, explore and subsequently build the United States.

What one perceives here, is not merely a reflection of our 200 years as a country, it is a part of that very 200 years. America is overwhelming, as we gaze into our rearview mirror of its history, so too one is overwhelmed at first glimpse of this fabric mosaic.

Each event in our past as a nation is vital to the understanding of what we conceive of as the United States of America. The beauty of quilts is not only dependent upon their separate patches and blocks, but even more so on design. This contemporary portrait of America has synthesized the pattern of history and the design of quilting in an exploratory, yet thoughtful spirit. It is this very subtle integration of sequence, design and exploration which is the substance, emotion and message of this unique wall hanging. This message is at once powerful — larger than life; yet private, individual and personal. It seems to exert a magnetic influence on all who see it, as if it reaches out and includes the viewer's own experience and background.

The wall hanging is divided both sequentially and topically. The time sequence begins in the optical center with the Declaration of Independence (1776), and continues outward in all directions until reaching the borders where current events are depicted (1976).

The topical themes begin at the top with migration, then progress clockwise to economics and politics in the upper right segment. Invention and technology complete the right side. The historical episodes of war are located in the lower section, followed clockwise by human and civil rights. The remaining upper left area depicts national expansion and growth, including America's efforts toward world peace.
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