### DEGREES OFFERED

#### COLLEGE OF ARTS AND SCIENCES

<table>
<thead>
<tr>
<th>Master of Arts</th>
<th>Master of Science</th>
<th>Doctor of Philosophy</th>
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<tbody>
<tr>
<td>Communication</td>
<td>Biological Sciences</td>
<td>Computer Science</td>
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<tr>
<td>English</td>
<td>Chemistry, Industrial</td>
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<tr>
<td>History</td>
<td>Computer Science</td>
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<tr>
<td>Political Science</td>
<td>Mathematical Science</td>
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<tr>
<td>Sociology, Applied</td>
<td>Microbiology</td>
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<tr>
<td>Other Master</td>
<td>Public Policy (M.P.P.)</td>
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#### COLLEGE OF BUSINESS ADMINISTRATION

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#### COLLEGE OF EDUCATION

<table>
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<td>Music Education</td>
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<td>Business Education</td>
<td>Physical Education</td>
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<td>Reading Education</td>
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<td>Science Education</td>
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<td>Visual Arts Education</td>
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<td>Exceptional Child</td>
<td>Vocational Education</td>
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<td>Foreign Language Education</td>
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<tr>
<td>Instructional Technology</td>
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**Educational Specialist and Doctor of Education**

Cooperative Degrees with Florida Atlantic University:
- Administration and Supervision
- Community College Teaching

Cooperative Degrees with University of Florida:
- Childhood Education
- Counselor Education (Doctorate only)
- Exceptional Child
- Instructional Leadership

#### COLLEGE OF ENGINEERING

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<td>Mathematics</td>
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<td>&amp; Computer Systems</td>
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#### Doctor of Philosophy

- Electrical Engineering
- Environmental Science
- Industrial Engineering
- Mechanical Engineering

#### COLLEGE OF HEALTH

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The University of Central Florida, under applicable rules of the Administrative Procedures Act, may change any of the announcements, information, policies, rules, regulations, or procedures set forth in this catalog. The catalog is edited periodically and cannot always reflect new and modified regulations. Statements in this catalog may not be regarded as binding obligations on the institution or the State of Florida.

The University of Central Florida is an Equal Opportunity Employer and assures equal access to educational programs and activities without regard to race, sex, age, handicap or national origin.

CORRESPONDENCE DIRECTORY

Address Correspondence to: Admission to Graduate Studies
University of Central Florida Gene Kearns
Orlando, Florida 32816 Graduate Admissions Office
Phone: (305) 275-2766

Financial Aid/Out-of-State Tuition Assistance
Contact College Dean’s Office

Housing: Manager, Student Housing
Phone: (305) 275-2171
To acquaint the student with the programs of study and the cost of attending the university, this public document was promulgated at an annual cost of $1.22 per copy.
ADMINISTRATION AND STAFF

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Associate Director ................................................ Alan G. Fickett
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Associate Dean ....................................... Jack Rollins, Jr.
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Associate Dean ....................................... Lance P. Jarvis
Assistant Dean ........................................ Wade R. Kilbride
Accountancy .......................................... Clarence G. Avery
Economics ............................................. Brian S. Rungeling
Finance ................................................. Edward A. Moses
Management ............................................. Richard C. Reidenbach
Marketing .............................................. Gordon W. Paul

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Associate Dean ....................................... Robert G. Cowgill
Assistant Dean ........................................ J. Nannette McLain
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Educational Foundations .............................. W.K. Esler

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Associate Dean ....................................... George F. Schrader
Assistant Dean ........................................ Bruce E. Mathews
Assistant Dean ........................................ J. Paul Hartman
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Electrical Engineering and Communication Sciences . B.E. Petrasenko
Engineering Mathematics and Computer Systems .... Gary E. Whitehouse
Industrial Engineering and Management Systems .... Gary E. Whitehouse
Mechanical Engineering and Aerospace Sciences .... D.R. Jenkins

College of Health
Dean ..................................................... Owen C. Elder, Jr.
Assistant Dean ........................................ Thomas S. Mendenhall
Communicative Disorders ............................. Dona Hedrick
THE UNIVERSITY

UNIVERSITY OF CENTRAL FLORIDA

The University of Central Florida opened in the Fall of 1968. Its original name, Florida Technological University, was changed by the Florida Legislature on December 6, 1978. This name-change reflects the changing role of the University in the Central Florida area. Initially, the University was developed in response to the Cape Kennedy space complex, but with its enthusiastic acceptance by the Central Florida community and its rapid growth, the University began to acquire a broader educational mission.

The University’s presently assigned role within the nine campus State University System of Florida is that of a general purpose institution offering degree programs at all levels of instruction. In addition, the University has the responsibility of assisting in the economic development of the Central Florida region, especially in the areas of high technology, electronics, and tourism.

STATEMENT OF PURPOSE

The University of Central Florida serves the people of Florida by providing graduate education in most general areas of study and in specifically selected technological and professional disciplines. Master’s degree programs are offered in over thirty areas of the University. Ph.D. programs are available in computer science and engineering. Additionally, cooperative doctoral programs in education are available through agreements with the University of Florida and Florida Atlantic University.

INSTITUTIONAL PHILOSOPHY

The University of Central Florida’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 UCF provides students with opportunities for research projects and independent study. Many projects involve community service and opportunities for student experience while receiving individual guidance from faculty.

In order to better serve the community, the University of Central Florida makes higher education easily available to the citizens of East Central Florida by operating off-campus centers.

EAST CENTRAL FLORIDA AREA

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

THE CAMPUS

The campus of UCF, located 13 miles east of downtown Orlando, consists of 1227 acres of land in a scenic setting of 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, more than 20 buildings have been built including the library, classroom buildings, laboratories,
residence halls, and student facilities. The Creative School for Children was built with funds contributed by the Edyth Bush Charitable Foundation of Winter Park and the UCF 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 12,000 students.

Living quarters in UCF's residence halls consist of double bedroom suites with a common living room and bath, functional furnishings, and maid service. Common laundry facilities and lounges for study and social activities are available. For more detailed information on campus housing, please contact the Director of Housing.

UNIVERSITY LIBRARY

The University Library provides materials and services to support the instructional and research needs of the University. Construction already underway on an expansion of the Library will effectively double the space available to faculty and students. The collection now numbers some 380,000 volumes and in excess of 15,000 periodical, newspaper, and serial publications placed on open shelves to encourage browsing. The library is a depository for U.S. and Florida state documents.

The Audiovisual Services Section provides a wide variety of AV equipment. Films and facilities to preview them are also located there. Other audiovisual materials, recordings, tapes, filmstrips, and mixed media kits are housed in the library proper.

UNIVERSITY OF CENTRAL FLORIDA FOUNDATION, INC.

Chartered in 1968, the UCF 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 to assist the University financially in the student 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 aimed at the advancement of the University and its objectives.

The foundation promotes and supports education by providing funds which are received from private sources. Contributions are deductible by donors as provided in Section 170 of the Internal Revenue Code.

TRAVELING SCHOLAR PROGRAM

The University participates in the Traveling Scholar Program, which enables a graduate student to take advantage of special resources available on a campus other than on his own. Examples include special course offerings, research opportunities, unique laboratories, and library collections. If approved, course work will apply to graduate credit at the student's home campus.

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

COOPERATIVE GRADUATE PROGRAMS

Cooperative or joint doctoral or specialist programs may be established between two universities, one with authorization to offer the doctoral program and the other without authorization to offer the doctoral program but authorized to offer a master's program.

Students interested in cooperative graduate programs should contact the UCF coordinator of the joint program. At present two such programs are authorized in the College of Education.

CENTRAL FLORIDA RESEARCH PARK

Currently under development, adjacent to and directly south of the UCF campus, is the Central Florida Research Park, where private industry and governmental agen-
cies will locate facilities to carry on research-orientated activities. While the first phase of the Research Park consists of 550 acres, there are additional land holdings that make it possible to expand future development to a total of almost 1400 acres.

It is anticipated that in the near future the Research Park, which is being developed by the Orange County Research and Development Authority in cooperation with UCF, will provide greatly expanded research opportunities for faculty and graduate students, as well as additional part-time and full-time employment for students and graduates.

ACCREDITATION

The graduate 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. The College of Business Administration is accredited by the American Assembly of Collegiate Schools of Business (AACSB). All teacher education programs are fully accredited by the Florida State Department of Education. UCF is listed with an 'A' rating in the Report of Credit Given by Educational Institutions.

FINANCIAL AID OFFICE

Programs administered by the Financial Aid Office include long-term loans and institutional emergency short-term loans. On-campus employment is also available. Information and application forms for out-of-state tuition waivers and teaching or research assistanships are available through the various colleges.
ACADEMIC CALENDAR
SUMMER SEMESTER 1982

FEBRUARY 8  Last day for receipt of applications and required supporting documents from international students.
APRIL 5  Last day for receipt of regular graduate applications and required supporting materials.
APRIL 26  Last day for receipt of readmission applications
MAY 6-7  *Registration by appointment. Student registration will close following the last appointment.
MAY 10  Classes begin for Summer Semester and Summer 'A' term.
MAY 14  Last day to adjust class schedule (end of Add/Drop).
MAY 14  Last day to apply for graduation for those completing requirements end of Summer Semester.
MAY 14  Last day for receipt of regular graduate applications and required supporting materials.
MAY 14  Last day for receipt of readmission applications
MAY 14  Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.
MAY 14  Last day to change from credit to audit.
MAY 14  Last day for removing temporary student status.
JUNE 7  Deadline for withdrawal. Last day to withdraw from the University or a course.
JUNE 18  End of Summer 'A' term, classes and exams.
JUNE 21  Classes begin for Summer 'B' term.
JULY 5  Independence Day holiday (University-wide).
JULY 16  Last day to remove an 'I' earned last semester.
JULY 30  Classes end for Summer Semester. Final exam given at discretion of instructor.
JULY 30  End of Summer 'B' term, classes and exams.
JULY 30  Final corrected thesis and dissertation copies due in Library.
AUGUST 2 (noon)  Grades due in Registrar's Office.

*AREA CAMPUS STUDENTS MUST CONTACT THE DIRECTOR OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

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SUMMER ‘A’ TERM 1982

FEBRUARY 8  Last day for receipt of applications and required supporting documents from international students.
APRIL 5  Last day for receipt of regular graduate applications and required supporting materials.
APRIL 26  Last day for receipt of readmission applications.
MAY 6-7  *Registration by appointment. Student registration will close following the last appointment.
MAY 10  Classes begin for Summer ‘A’ Term.
MAY 14  Last day to adjust class schedule (end of Add/Drop). Last day for refund.
MAY 14  Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.
MAY 14  Last day to apply for graduation for those completing requirements end of Summer Semester.
MAY 14  Last day to change from credit to audit.
MAY 28  Deadline for withdrawal. Last day to withdraw from a course for the University.
MAY 31  Memorial Day Holiday (University-wide).
JUNE 1  Last for removing temporary student status.
JUNE 16  Last day to remove an ‘I’ earned last semester.
JUNE 18  End of Summer ‘A’ Term, classes and exams.
JUNE 21 (NOON)  Grades due in Registrar’s Office.
*AREA CAMPUS STUDENTS MUST CONTACT DIRECTORS OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

SUMMER ‘B’ TERM 1982

MARCH 26  Last day for receipt of applications and required supporting documents from international students.
MAY 18  Last day for receipt of regular graduate applications and required supporting materials.
MAY 28  Last day for receipt of readmission applications.
JUNE 17  *Registration by appointment. Student registration will close following last appointment.
JUNE 21  Classes begin for Summer ‘B’ Term.
JUNE 23  Last day to adjust class schedule (end of Add/Drop). Last day for refund.
JUNE 23  Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.
JUNE 23  Last day to apply for graduation for those completing requirements end of Summer ‘B’ Term.
JUNE 23  Last day to change from credit to audit.
JULY 5  Independence Day Holiday (University-wide).
JULY 9  Last day to remove an ‘I’ earned last semester.
JULY 9  Deadline for withdrawal for Summer ‘B’ Term students only. Last day to withdraw from a course or the University.
JULY 19  Last day for removing temporary student status.
JULY 30  End of Summer ‘B’ Term, classes and exams.
AUGUST 2 (NOON)  Grades due in Registrar’s Office.
*AREA CAMPUS STUDENTS MUST CONTACT DIRECTORS OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.
FALL SEMESTER 1982

MAY 17  Last day for receipt of applications and required supporting documents from international students.
JUNE 14  Last day for receipt of regular graduate applications and required supporting materials.
JULY 19  Last day for receipt of readmission applications.
AUGUST 16  Academic year begins.
AUGUST 16-19  *Registration by appointment. Student registration will close following the last appointment.
AUGUST 23  Classes begin for Fall Semester.
AUGUST 27  Last day to adjust class schedule (end of Add/Drop).
AUGUST 27  Last day for refund.
AUGUST 27  Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.
AUGUST 27  Last day to apply for graduation for those completing requirements end of Fall Semester.
AUGUST 27  Last day to change from credit to audit.
SEPTEMBER 6  Labor Day holiday (University-wide).
SEPTEMBER 21  Last day for removing temporary student status.
OCTOBER 15  Deadline for withdrawal. Last day to withdraw from the University or a course.
OCTOBER 29  Homecoming celebration. Classes dismissed from 12:00 noon to 1:00 p.m.
NOVEMBER 11-12  Veterans' Day holiday (University-wide).
NOVEMBER 19  Last day to remove an 'I' earned last term.
NOVEMBER 25-26  Thanksgiving holidays (University-wide).
DECEMBER 10  Classes end for Fall Semester.
DECEMBER 13-16  Final examination period.
DECEMBER 16  Final corrected thesis and dissertation copies due in Library.
DECEMBER 17  Commencement.
DECEMBER 20 (noon)  Grades due in Registrar's Office.

*AREA CAMPUS STUDENTS MUST CONTACT DIRECTORS OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

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### SPRING SEMESTER 1983

**SEPTEMBER 30**  
Last day for receipt of applications and required supporting documents from international students.

**NOVEMBER 8**  
Last day for receipt of regular graduate applications and required supporting materials.

**DECEMBER 6**  
Last day for receipt of readmission applications

**JANUARY 3-4**  
*Registration by appointment. Student registration will close following the last appointment.*

**JANUARY 6**  
Classes begin for Spring Semester.

**JANUARY 13**  
Last day to adjust class schedule (end of Add/Drop).

**JANUARY 13**  
Last day for refund.

**JANUARY 13**  
Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

**JANUARY 13**  
Last day to apply for graduation for those completing requirements end of Spring Semester.

**JANUARY 13**  
Last day to change from credit to audit.

**JANUARY 14**  
Martin Luther King Day. Classes dismissed 11:00 a.m. to 1:00 p.m.

**FEBRUARY 4**  
Last day for removing temporary student status.

**MARCH 2**  
Deadline for withdrawal. Last day to withdraw from a course or the University.

**MARCH 3-4**  
Spring holidays.

**APRIL 6**  
Last day for removing an 'I' earned last semester.

**APRIL 22**  
Classes end for Spring Semester.

**APRIL 25-28**  
Final examination period.

**APRIL 28**  
Final corrected thesis and dissertation copies due in Library.

**APRIL 29**  
Commencement.  
Academic year ends.  
Grades due in Registrar's Office.

*AREA CAMPUS STUDENTS MUST CONTACT DIRECTORS OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.*

<table>
<thead>
<tr>
<th>JANUARY</th>
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<td>13 14 15 16 17 18 19</td>
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<td>20 21 22 23 24 25 26</td>
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<td>23 24 25 26 27 28 29</td>
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<td>30 31</td>
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</table>

<table>
<thead>
<tr>
<th>MARCH</th>
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<td>1 2 3 4 5</td>
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<tr>
<td>6 7 8 9 10 11 12</td>
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<td>10 11 12 13 14 15 16</td>
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<td>17 18 19 20 21 22 23</td>
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<tr>
<td>27 28 29 30 31</td>
<td>24 25 26 27 28 29 30</td>
</tr>
</tbody>
</table>
SUMMER SEMESTER 1983

**JANUARY 31**  
Last day for receipt of applications and required supporting documents from international students.

**MARCH 28**  
Last day for receipt of regular graduate applications and required supporting materials.

**APRIL 11**  
Last day for receipt of readmission applications.

**MAY 3**  
Last day for receipt of applications for Summer 'B' term.

**MAY 5-6**  
*Registration by appointment. Student registration will close following the last appointment.*

**MAY 9**  
Classes begin for Summer Semester or Summer 'A' term.

**MAY 13**  
Last day to adjust class schedule (end of Add/Drop).

**MAY 13**  
Last day for refund.

**MAY 13**  
Last day for late registration (late registration runs concurrently with Add/Drop). A $25 late fee will be assessed.

**MAY 13**  
Last day to apply for graduation for those completing requirements end of Summer Semester.

**MAY 13**  
Last day to change from credit to audit.

**MAY 30**  
Memorial Day holiday (University-wide).

**JUNE 6**  
Last day for removing temporary student status.

**JUNE 17**  
End of Summer 'A' term.

**JUNE 20**  
Classes begin for Summer 'B' term.

**JULY 4**  
Independence Day holiday (University-wide).

**JULY 8**  
Last day to remove an 'I' earned last semester.

**JULY 8**  
Deadline for withdrawal for Summer 'B' term students only.

**JULY 29**  
Final corrected thesis and dissertation copies due in Library.

**JULY 29**  
Classes end for Summer Semester and for Summer 'B' term. Final exam given at discretion of instructor. Grades due in Registrar's Office.

**AUGUST 1 (noon)**

*AREA CAMPUS STUDENTS MUST CONTACT DIRECTORS OF THE APPROPRIATE CAMPUS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.*

<table>
<thead>
<tr>
<th>MAY</th>
<th>JUNE</th>
<th>AUGUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4</td>
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<td>8 9 10 11 12 13 14</td>
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<tr>
<td>15 16 17 18 19 20 21</td>
<td>12 13 14 15 16 17 18</td>
<td>14 15 16 17 18 19 20</td>
</tr>
<tr>
<td>29 30 31</td>
<td>26 27 28 29 30</td>
<td>28 29 30 31</td>
</tr>
</tbody>
</table>
FROM PAY PHONE 275 · 2421

Traveling West on I-4, Expt Route 436 (Altamonte Springs) to University Blvd.

Traveling East on I-4, Expt Route 50 East to Route 520

From Intersection of I-4 and Hwy. 50 to Hwy. 520

From McCoy-Jetport to Campus

From Herndon Airport.

TO TITUSVILLE B & 1-95

TO COCOA

TO CORPUS CHRISTI

TO PENSACOLA

TO NASHVILLE
University of Central Florida

CAMPUS MAP

UNIVERSITY POLICE
Bldg. 17 Phone (305) 275 2422

1. ADMINISTRATION BLDG
2. LIBRARY BLDG
3. UTILITY PLANT/HVAC
4. SEWAGE PLANT
5. CHEMISTRY BLDG
6. SCIENCE AUDITORIUM
7. STUDENT CENTER
8. RESIDENCE A
9. RESIDENCE B
10. RESIDENCE C
11. RESIDENCE D
12. ENGINEERING BLDG
13. COMPUTER CENTER
14. HOWARD PHILLIPS HALL
15. RECREATIONAL SERVICES BLDG
16. PHYSICAL PLANT COMPLEX
17. CAMPUS POLICE BLDG
18. HUMANITIES & FINE ARTS BLDG
19. REHEARSAL HALL
20. BIOLOGICAL SCIENCES BLDG
21. EDUCATION COMPLEX & GYMNASIUM
22. CENTRAL RECEIVING PRINT SHOP
23. VISITORS INFORMATION CENTER
24. CREATIVE SCHOOL FOR CHILDREN
25. PHYSICAL EDUCATION SUPPORT BLDG
26. STUDENT SERVICES BLDG
27. STUDENT HEALTH CENTER
28. FUTURE NEWSPAPER
29. RESIDENCE E
30. RESIDENCE F
31. RESIDENCE G
32. COMMONS BUILDING

PAD
Rev. 1/82
ADMISSION TO THE UNIVERSITY AND GRADUATE STUDIES

Working with the Registrar, whose function is to process and insure completeness of records, the program coordinator and the dean of the college, in concert with the Dean of Graduate Studies, admit the prospective student to graduate study in the area for which he is applying. It should be noted that postbaccalaureate admission to UCF does not guarantee admission to Graduate Status in a Degree Program.

ADMISSION PROCEDURE AND DOCUMENTS

APPLICATIONS

Applications for admission to the University for degree seeking or non-degree seeking graduate study may be obtained from the Graduate Admissions Office. Completed applications should be submitted to the same office.

UCF students who graduate with a baccalaureate degree and wish to continue their studies here must file an application for admission to the Graduate Degree Program or for Nondegree (postbaccalaureate) admission. No fee is required of returning UCF students who have previously paid an application fee.

OFFICIAL TRANSCRIPTS

To be granted admission to any status, all applicants must have on file in the Registrar's Office official transcripts showing a baccalaureate degree and the grades for the last 60 semester hours of undergraduate work. Final acceptance is not granted unless an applicant's official transcripts and necessary test scores are on file.

GRADUATE RECORD EXAMINATION (or GMAT)

The Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) is required for admission to degree seeking graduate status in all programs. Official copies must be mailed from the Educational Testing Service to the Admissions Office. The time limit of test scores at the point of admission varies with each college program as shown below:

**Arts and Sciences**
- Biology: 7 year limit
- Chemistry: No limit
- Communication: No limit
- Computer Science: No limit on Aptitude sections, but a two-year limit on the GRE Advanced Computer Science Test.
- English: No limit
- History: No limit
- Mathematics: 5 year limit
- Microbiology: 7 year limit
- Political Science: No limit
- Psychology: 7 year limit
- Public Policy: 5 year limit
- Sociology, Applied: 7 year limit

**Business Administration** programs have no limit unless the GMAT score is below 550 on a score over 5 years old.

**Education** programs have no limit.

**Engineering** programs have no limit.

**Health**—The Communicative Disorders program has a 7 year limit.
INTERNATIONAL STUDENTS

The international student must submit the Test of English as a Foreign Language (TOEFL) score, as well as transcripts, if the student is not a graduate from an accredited college or university in the United States. When the official test score is received in the Admissions Office, copies will be sent to the Graduate Program Coordinator who evaluates the student's record, the undergraduate institution, and the student's test score.

Each program has determined what minimum TOEFL score will be required, as shown below:

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>TOEFL</th>
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<tbody>
<tr>
<td>College of Arts and Sciences</td>
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<tr>
<td>Biological Science</td>
<td>500</td>
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<tr>
<td>Chemistry, Industrial</td>
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<tr>
<td>Communication</td>
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<tr>
<td>Computer Science</td>
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<tr>
<td>English</td>
<td>550</td>
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<td>History</td>
<td>575</td>
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<tr>
<td>Mathematical Science</td>
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<tr>
<td>Microbiology</td>
<td>500</td>
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<tr>
<td>Political Science</td>
<td>500</td>
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<td>Psychology</td>
<td>500</td>
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<tr>
<td>Public Policy</td>
<td>500</td>
</tr>
<tr>
<td>Sociology, Applied</td>
<td>500</td>
</tr>
<tr>
<td>College of Business Administration</td>
<td>575</td>
</tr>
<tr>
<td>College of Education</td>
<td>500</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>550</td>
</tr>
<tr>
<td>College of Health</td>
<td>500</td>
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</tbody>
</table>

RECORDS DEADLINE—Supporting Documents

All supporting admissions documents (e.g., transcripts and test scores not recorded on official transcripts) should be received by the Admissions Office no later than 15 days preceding the first day of classes. In some cases applicants may be allowed to register on a temporary basis (without all records) assuming it can be determined from available records or consultation with the students that they appear admissible.

RECORDS—Validity of Documents

All supporting admissions documents must be received directly from the issuing institution or testing agency and if the University finds that an applicant has made a false or fraudulent statement or a deliberate omission on his application, residency affidavit, health report, or any accompanying document or statement, that applicant 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.

MEDICAL HISTORY REPORT

All new students must furnish Medical History Reports on the approved University health form before registration will be allowed. The Medical History Report form will be mailed to the applicant with receipt of the Application for Admission.
ADMISSION TO THE UNIVERSITY

ADMISSION PROCESS
Admission to the University does not imply admission to Graduate status.

The admission process begins with the receipt of the application with fee at the Admissions Office. The Admissions Office acknowledges receipt of the application and fee and notifies the applicant of any deficiencies in his application (e.g., transcripts, GRE or GMAT test scores, etc.).

The application information is then forwarded to the Degree Program. Upon receipt, copies of transcripts and test scores are also forwarded to the Degree Program.

Applicants will receive their initial notice of acceptance to the University as non-degree seeking students and information for registration for classes from the Admissions Office. All inquiries for Degree Program information should be directed to the program coordinator or the department chairman.

READMISSION TO THE UNIVERSITY
A regularly admitted student who has not been registered during an academic term (other than Summer), must make application for readmission through the Admissions Office approximately one month before classes begin for the new semester. A readmitted student will be continued in his previous status.

REACTIVATION OF A STUDENT’S FILE
A student who has submitted an application for admission to the University of Central Florida, but never attended, may reactivate the original application within a period of one year. (No additional fee is required.) Please check current catalog for deadline date.

ADMISSION TO A GRADUATE PROGRAM
Upon receiving copies of all transcripts and standardized test information from the Admissions Office, the Degree Program coordinator will recommend denial or admittance on REGULAR or PROVISIONAL degree seeking Graduate status.

APPEALS PROCEDURE FOR REJECTED STUDENTS
Students who are rejected by a program but who meet the SUS minimum standards for admission to graduate status are allowed under Rule 6C-6.03 to appeal that decision. Those applicants may request reconsideration by written petition to the University within thirty days of the date of denial. The route of appeal will be first to the College Dean and then to the Graduate Council for recommendation to the Graduate Dean.

CONTINUOUS ATTENDANCE
Graduation policy allows a student to fulfill degree requirements as listed in any UCF catalog in force during the student’s most recent period of continuous attendance.

Continuous attendance is interrupted when a student drops out of school for any term other than Summer Term. Because students must occasionally interrupt their attendance for a brief period, a student will be considered to have interrupted his continuous attendance only if the interruption is for more than two consecutive terms (other than Summer). Therefore, students who do not attend for more than two consecutive terms will lose the option of fulfilling degree requirements under earlier catalogs.

WITHDRAWAL POLICY
Students may withdraw from classes until the end of the eighth week of any regular academic term or until the midpoint of any term. No withdrawal is permitted
after the above times except in extraordinary circumstances. Upon request, the course instructor shall provide the student with an assessment of the student's performance in the course prior to the last day for withdrawal. Students desiring to petition for a withdrawal after the deadline should go to the Office of Graduate Studies.

ADMISSION CLASSIFICATIONS

Admission to Graduate Status can be in either of two categories: Regular status or Provisional status. (Postbaccalaureate status is considered non-degree seeking.)

GRADUATE STATUS—REGULAR

The minimum system-wide requirements of the Board of Regents for admission to REGULAR Graduate status are listed below. Additional requirements are specified by individual degree programs. All students who wish degree seeking status must submit GRE (or GMAT) test scores as required.

(1) A baccalaureate degree or equivalent from an accredited University and an earned GPA of 3.0 or more (on a 4.0 maximum) while registered as an upper division undergraduate student (normally based on the last sixty semester hours), or a

Total score of 1,000 or higher on the Aptitude Test (quantitative-verbal sections) of the Graduate Record Examination (or a GMAT score of 450 or higher as needed) or an equivalent score on an equivalent measure approved by the Board of Regents.

OR

A previous graduate degree from an accredited institution.

Even though an applicant may qualify for minimum admission on the basis of his undergraduate grade point average or having a previous graduate degree, an official GRE or GMAT score must be on file before consideration for admission to Graduate Status.

(2) A student must be accepted by the Program Coordinator and the Dean of the College offering the particular Degree Program he seeks. Requirements in addition to the minimums stated above may be specified by the individual degree programs.

(3) Foreign students must demonstrate their proficiency in the English language as one of the conditions of admission. All foreign applicants whose primary language is not English and who have not earned a degree from an accredited American college or university, must take the TOEFL (Test of English as a Foreign Language). Evaluations of the TOEFL score will reside with the Program Coordinator.

GRADUATE STATUS—PROVISIONAL

A student who does not fulfill the academic conditions for REGULAR admission may be admitted provisionally upon recommendation of the dean of the college to which he seeks admission.

PROVISIONAL admissions may at no time exceed 10 percent of the graduate students admitted for any academic year in any single Degree Program.

PROVISIONAL students may be admitted to REGULAR status following satisfactory completion of 9 semester hours and upon recommendation by the program coordinator and College Dean, subject to approval by the Dean of Graduate Studies. If a student does not maintain a 3.0 GPA on his graduate Program of Study, he will be placed on ACADEMIC PROVISIONAL status for 9 semester hours; then reverted to postbaccalaureate status if his GPA is still unsatisfactory.
POSTBACCALAUREATE STATUS

A student admitted to this category may take graduate courses on a space available basis only, but is not thereby accepted to a formal graduate degree-seeking program. In fact, not all programs accept postbaccalaureate students. Individual programs may close graduate courses after the scheduled registration appointment times for GRADUATE status students. POSTBACCALAUREATE status students will then be admitted, as appropriate, on an individual basis. POSTBACCALAUREATE students take graduate courses for various reasons (e.g., requirements in a graduate program at another institution, personal improvement, meeting job requirements, and removing academic deficiencies). A maximum of 9 semester hours of postbaccalaureate work may be transferred into a degree program if a student is later admitted.

CHANGE OF MAJOR OR COLLEGE

When a student requests a change of major or college after having been admitted to a graduate program, the old program shall send the student to the new program. The new Program Coordinator will then admit him to the new program as a graduate student or change him to postbaccalaureate status, whichever is appropriate. Changes of majors for postbaccalaureate students are submitted by the College on a University Change of Major form.
DISMISSAL FROM THE GRADUATE PROGRAM

Students who fail to maintain satisfactory academic performance shall be reverted to postbaccalaureate status by the Program. In addition to unsatisfactory grades, other reasons for reverting a student to postbaccalaureate status include weak academic performance in the major field of endeavor, or poor performance in required examinations (e.g., end-of-the-program examination or thesis defense).

The student may appeal such a dismissal through the College to the Graduate Council. Only in exceptional cases shall the student be readmitted to the program by the Graduate Council. In such cases, the student's entire program shall be re-evaluated and a new Program will be submitted for consideration by the Graduate Council. It is entirely possible that additional courses will be required in the Program of Study before the student is allowed to continue in the Graduate Program.

SECOND MASTER'S DEGREE

Completion of one Master's program at UCF may qualify a student for admission to a second Master's degree. Individuals seeking a second Master's degree must complete the normal UCF Master's degree requirements for the second degree.

Up to 6 semester hours from a completed Master's program from UCF or any other institution may be transferred into a second Master's program if the courses are not more than seven years old when the second degree is completed.

It should be noted that UCF awards a particular type of degree only once (e.g., a Master of Arts in Communication precludes an M.A. in any other college or department). However, a transfer student with a graduate degree may pursue the same type of degree at UCF.
A student’s basic expenses at the University will be for tuition, fees, room and board (if used), textbooks and 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.

**GENERAL FEES AND COSTS**

**Application Fee** .................................................... $15.00  
A non-refundable fee is required with all applications for admission to the University.

Registration Fees are listed below for courses on the main campus, area campuses, and for Continuing Education courses. Minimum registration of one credit hour (at the level at which the student is classified) must be charged for students registering for zero hours (co-op students on work assignment, applicants for graduation during a semester that a student is not registered, etc.).

<table>
<thead>
<tr>
<th>Credits</th>
<th>Resident</th>
<th>Non-Resident</th>
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</thead>
<tbody>
<tr>
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<td>$28/hour</td>
<td>$ 91/hour</td>
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<tr>
<td>Graduate Level</td>
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<td>110/hour</td>
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<tr>
<td>Thesis and</td>
<td>41/hour</td>
<td>113/hour</td>
</tr>
<tr>
<td>Dissertation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credits</td>
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</tbody>
</table>

Upper division undergraduate courses are numbered 3000-4999. Graduate courses are those numbered 5000-6999, 7000 and above. Thesis courses are numbered 6970-6973; Doctoral Dissertation courses are numbered 7917 and 7980.

**Student Health Fee, per semester** ...................................... $18.00  
The Student Health Fee is assessed of all students except those enrolled exclusively in Continuing Education courses. The fee must also be waived for employees under the fringe benefit plan and for Intern Participation Certification holders. Students on training session under the Cooperative Education Program will be required to pay this fee. (University employees who use the Tuition Fee Waiver for class attendance may NOT elect to pay the fee, regardless of the number of hours taken.)

**Late Registration Fee** ................................................ $25.00  
This non-refundable fee is required of students who register during the late registration periods or fail to pay full fees by the established deadline.

**Vehicle Registration, per calendar year** ................................ $10.00  
This fee is required of everyone (including full-time, part-time, and courtesy students) operating a motor-powered vehicle on campus.

**Room and Board, per semester** .................................... $949.00-1,103.00  

**Charge for late payment of room and board** ......................... $15.00

**Intern Participation Holder** ....................................... $3.76

**I.D. Card Replacement** .............................................. $5.00

**REFUND OF FEES**
A refund of fees will be made under certain conditions upon presentation of a Certification of Withdrawal issued by the Registrar to the Student Accounts Office.  
A. A full refund will be issued under the following circumstances:  
1. Withdrawal is made before the end of the add/drop period.  
2. The course is cancelled by the University.  
3. A student is withdrawn from a course by the University for whatever reason.
B. A partial refund (25% of the total fees paid, less building and capital improvement fees) will be made when:

- Complete withdrawal from the University is made prior to the end of the fourth week of classes during a 16/17 week semester, or at the end of the first quarter of the term during a mini-semester or summer semester (rounded out to the end of the week in which the first quarter occurs).

C. Refunds may be made for exceptional circumstances at any time upon withdrawal from one or more courses. Up to 100% of tuition and registration fees may be refunded under circumstances determined by the University to be exceptional, including, but not limited to, sickness, death, involuntary call to military service, or administrative errors created by the University.

D. Liability Reduction

Students who have authorized deferments and therefore have not paid their total fees will be eligible to have their liability reduced (in lieu of refund) in the amounts and under the authorized circumstances outlined in the foregoing paragraphs.

**FLORIDA RESIDENCY REQUIREMENT**

For the purpose of assessing registration and tuition fees, a student shall be classified as a "Florida" or "non-Florida" student.

A "Florida student" is a person who has domicile and who shall have resided in the state of Florida for at least twelve (12) consecutive months immediately preceding the first day of classes of the academic term in which the student enrolls. In determining residency, the University may require evidence such as voter registration, driver's license, automobile registration, location of bank account, rent receipts or any other relevant materials that the applicant has maintained continuous residency. Physical presence for the entire twelve-month period need not be required so long as the conduct of the student, taken in total, manifests an intention to make Florida his or her permanent dwelling place. If such student is a minor, it shall mean that the parent or parents, or legal guardian of the student shall have domicile in and have resided in the state of Florida for the period stated above. "Florida student" classification shall also be construed to include students who hold an Immigration and Naturalization Form 1-151, Resident Alien Registration Receipt Card, or Cuban Nationals or Vietnamese Refugees who are considered as Resident Aliens, provided such students meet the residency requirement stated above and comply with the appropriate state regulations. The burden of establishing facts which justify classification of a student as a resident and domiciliary entitled to "Florida student" registration rates is on the applicant for such classification.

Additional information on Florida residency may be obtained from the Admissions office.
OFFICE OF GRADUATE STUDIES

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, although responsibility for the detailed operation of the various graduate programs is vested in the individual colleges.

ORGANIZATION OF GRADUATE STUDIES

Louis M. Trefonas .................................................... Dean
Roger Handberg ...................................................... Associate Dean
Leila Miller ............................................................. Staff Assistant
Gene Kearns ........................................................... Graduate Admissions Representative

THE GRADUATE COUNCIL

The Graduate Council is an advisory body to the Dean of Graduate Studies. Its functions are to:
- Recommend minimum university standards for admission to graduate programs and for granting graduate degrees.
- Review and make recommendations concerning all proposed new graduate programs.
- Act as the graduate curriculum committee to review and make recommendations to the Vice President for Academic Affairs concerning proposed new graduate courses; review and make final decisions on graduate course revisions and course deletions.
- Review and make recommendations concerning existing graduate programs at least every five years; review and make recommendations on the current operating procedures of all graduate programs.
- Review and make recommendations concerning appeals (by petition) from students for exceptions to University policies or admission decisions.

GRADUATE PROGRAMS

<table>
<thead>
<tr>
<th>Degree Art and Sciences</th>
<th>UCF Authorized Graduate Degree Programs and Coordinators</th>
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</thead>
<tbody>
<tr>
<td>MS Biological Science</td>
<td>Dr. Stout 275-2919 BIO 436</td>
</tr>
<tr>
<td>MS Chemistry, Industrial</td>
<td>Dr. Gupton 275-2246 CH 331</td>
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<tr>
<td>MA Communication</td>
<td>Dr. Fedler 275-2681 HFA 539</td>
</tr>
<tr>
<td>MS Computer Science</td>
<td>Dr. Cottrell 275-2341 HFA 445</td>
</tr>
<tr>
<td>MA English</td>
<td>Dr. Adicks 275-2212 HFA 426</td>
</tr>
<tr>
<td>MA History</td>
<td>Dr. Pauley 275-2224 HFA 505B</td>
</tr>
<tr>
<td>MS Mathematical Science</td>
<td>Dr. Andrews 275-2585 HFA 453</td>
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<tr>
<td>MS Microbiology</td>
<td>Dr. Stout 275-2143 BIO 436</td>
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<tr>
<td>MA Political Science</td>
<td>Dr. Lilie 275-2608 LIB 260</td>
</tr>
<tr>
<td>MS Psychology</td>
<td>Dr. Blau 275-2216 PH 314</td>
</tr>
<tr>
<td>MPP Public Policy</td>
<td>Dr. Holten 275-2603 PH 336</td>
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<tr>
<td>MA Applied Sociology</td>
<td>Dr. Brown 275-2227 HFA 451</td>
</tr>
<tr>
<td>Ph.D. Computer Science</td>
<td>Dr. Cottrell 275-2341 HFA 445</td>
</tr>
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</table>

Business Administration

MBA Business Administration
MA Applied Economics
MS Management (Accountancy major)

Education (See page 92) Dr. McLain 275-2436 ED 115
MED & MA Elementary, Secondary, and K-12
MS School Psychology
<table>
<thead>
<tr>
<th>Program</th>
<th>Dr. Name</th>
<th>Phone</th>
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<tr>
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<tr>
<td>Ed.D. Cooperative Doctoral Programs (UF and FAU)</td>
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<tr>
<td>Engineering</td>
<td>Dr. Mathews</td>
<td>275-2156</td>
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<td>MSE Civil Engineering</td>
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<tr>
<td>MS Computer Systems</td>
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<tr>
<td>MSE Electrical Engineering</td>
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<tr>
<td>MS Electrical Systems &amp; Sciences</td>
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<tr>
<td>MS Energy Systems</td>
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<tr>
<td>MS Engineering Administration</td>
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<tr>
<td>MSE Engineering Mathematics and Computer Systems</td>
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<tr>
<td>MSE Environmental Engineering</td>
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<tr>
<td>MS Environmental Sciences</td>
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UNIVERSITY GRADUATE REGULATIONS

The following are minimum University-wide standards for the operation of graduate programs. Additional requirements for each graduate program are described in the individual program description (e.g., see English, Psychology, etc.)

MASTER'S PROGRAMS

STUDENT'S RESPONSIBILITY

It is the student's responsibility to keep informed of all rules, regulations, and procedures required by the Office of Graduate Studies. Graduate Program regulations will not be waived or exceptions granted because a student pleads ignorance of the regulations or claims failure of his advisor to keep him informed.

EXCEPTION TO GRADUATE REGULATIONS

When unusual situations arise, petitions for exceptions to graduate regulations must be approved by the appropriate dean(s) prior to submission to the Dean of Graduate Studies. The Graduate Council will make recommendations to the Dean of Graduate Studies on all petitions, which will be reviewed on an individual basis.

MASTER'S COMMITTEE OR ADVISOR

Appointment of Committee or Advisor

It is the responsibility of the appropriate academic dean of the college or the coordinator of the program granting the degree to: (1) determine whether an advisory committee or an advisor will be used; (2) make the necessary appointments; and (3) inform the Dean of Graduate Studies accordingly. The Office of Graduate Studies reserves the right to place a representative on any advisory committee or to appoint a co-advisor.

Advisory Committee

A student seeking a degree requiring a thesis or one permitting considerable flexibility in course work, or a combination of the two, shall have an advisory committee of at least three members with designation of a chairman and/or thesis director being optional. This committee shall recommend to the Dean of Graduate Studies the design of the student's program; provide continual guidance for the student; and be the principal mechanism for the evaluation of the student's thesis and performance in any general examinations.

PROGRAM OF STUDY

A total Program of Study is in essence a contract between the student and the Degree Program specifying all degree requirements. It must be established prior to enrollment in the second term of the full-time graduate student. For a graduate student carrying a reduced load, the establishment of a Program of Study may be delayed up to the registration for the ninth graduate semester hour. A copy of the Program of Study must be completed for a student and sent to the Office of Graduate Studies within the first 10 hours of graduate work.

UCF EMPLOYMENT

Normally the employment of full-time graduate students will be limited to a half-time work load (20 hours/week).
COURSE REQUIREMENTS

COURSE LOADS
Normally, a full-time graduate student takes 6-9 hours per semester, with 12 semester hours being the maximum load.

Students applying for assistance under Public Law 89-358 (Veterans Readjustment Benefits Act of 1966) must check with the Veterans Certification Office. A graduate student must register for 6 semester hours to qualify for full-time status veterans benefits. A postbaccalaureate student who anticipates graduate status, must check with the Veterans Certification Office for up-to-date information.

TOTAL HOURS REQUIRED
A minimum of 30 semester hours (combined course work and thesis) is required.

THESIS DEGREES
At least 24 semester credits of course work must be earned exclusive of thesis.

NON-THESIS DEGREES
At least 50 per cent of the credits offered for the degree must be in a single field of concentration. A research report is required for this degree.

LANGUAGE REQUIREMENTS
Foreign language requirements shall be at the option of the individual departments or appropriate units consistent with their college regulations.

DIRECTED INDEPENDENT STUDIES COURSES
A maximum of three courses may be taken as Independent Study, for a total of no more than 6 semester hours.

APPLICABLE CREDITS AND COURSES

RESIDENCE CREDIT
At least 21 semester credits must be UCF credits. Residence credits may be earned through enrollment in courses physically offered on the main campus; or at the UCF area campuses (Cocoa, Daytona Beach, South Orlando); or at geographical locations where UCF courses are being taught by regular UCF faculty members.

CREDIT BY EXAMINATION
Examination credit may be utilized to satisfy program course requirements, but not credit hour requirements.

TRANSFER OF CREDIT
No more than a combined total of 9 semester hours of graduate credit may be transferred into the graduate program from either of the following sources:

a. Institutions within the State University System (SUS).

b. Work taken as a postbaccalaureate student at UCF.

A maximum of 6 semester hours earned at institutions not in the SUS, but which are fully accredited by a regional accrediting association of the Commission on Accreditation (e.g., the Southern Association of Colleges and Schools, etc.), may be transferred into a Graduate Program.

In all instances, only grades of B or better can be transferred. Correspondence courses are not acceptable toward a Graduate Program of Study; however, extension or continuing education courses may be accepted.

RECENCY OF CREDIT
Credit for courses completed more than seven years prior to the term in which a degree is earned may not be used toward degree requirements in all Colleges except Engineering which requires a College waiver for work over five years old.

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EXAMINATIONS

EVALUATION
All examination procedures and other evaluation of a student’s progress shall be the province of the individual department or appropriate unit operating within the framework of the college (or colleges for interdisciplinary programs).

COMPREHENSIVE EXAMINATION
An end-of-program comprehensive (final) examination, oral or written, is required of all students. This examination may consist of a thesis defense or an examination of course work material, or both, at the option of the department.

COURSE LEVELS OF GRADUATE WORK

6000 LEVEL COURSES. A minimum of one-half of the credit hours—including thesis hours—of an individual’s degree program must be in 6000-level courses, which are designed exclusively for graduate students. Exceptions to this requirement must be approved by the Graduate Council. Exception to this rule has been granted to Computer Science, and Mathematics and Statistics Programs.

5000 LEVEL COURSES. Courses at the 5000 level may be utilized toward satisfying the graduate degree requirements.

OTHER. Under special circumstances 4000-level courses may be applied toward a Master’s degree, but not in excess of 6 semester hours. Courses at the 3000 level or below shall not be utilized in a Graduate Program of Study unless permission is obtained from the Graduate Council prior to enrollment in the course.

ACADEMIC STANDARDS

GPA ON PROGRAM OF STUDY
A graduate student’s GPA shall be calculated on only those courses specified on the individual’s Program of Study filed with the Office of Graduate Studies (not including required prerequisites).

A minimum of a 3.0 GPA on the specified Graduate Program of Study is required to maintain Graduate Student status and for graduation.

In any term where the GPA drops below 3.0 in a Program of Study, a student will be changed to ACADEMIC PROVISIONAL status for a maximum of 9 semester hours. If he has not attained an overall graduate GPA of 3.0 on the Program of Study at the end of the 9 semester hours, he will be reverted to POSTBACCALAUREATE status. (Students admitted on PROVISIONAL status are similarly given 9 semester hours to attain a 3.0 GPA).

No graduate level courses with a grade of ‘D’ are acceptable in a Program of Study. In addition, no 4000 level courses with a grade of ‘C’ or lower are acceptable in the Program of Study.

Graduate students whose overall GPA falls below 2.0 will be reverted to postbaccalaureate status by the Office of Graduate Studies.

THESIS AND RESEARCH REPORT GRADES
For thesis and research report courses, satisfactory (S) or unsatisfactory (U) grade designations are used as temporary grades while the work is in progress.

Upon completion of thesis or research reports, a standard grade (A,B,C,etc.) will be awarded.
MAXIMUM HOURS OF UNSATISFACTORY GRADES

Unsatisfactory grades for Graduate students consist of grades below "B" and unresolved "I" grades. A student may earn a maximum total of 6 semester hours of unsatisfactory grades in his Program of Study. This does not imply that a course in which a student has received these grades cannot be repeated to provide a better grade. Both grades will be used in computing the GPA on the Program of Study. There is no forgiveness policy on graduate grades. Exceeding 6 semester hours of unsatisfactory grades in a specified graduate Program of Study is reason for immediate removal from Graduate Status.

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 no later than the date shown in the Academic Calendar of the term immediately following that in which the "I" was assigned. Failure to complete course requirements by that day may, at the discretion of the Instructor, result in the assignment of an "F" grade. It is the student's responsibility to arrange with the instructor for the changing of the "I" grade to receive credit. Both the new grade and the letter "I" will appear on the student's permanent record.

It is the student's responsibility to arrange with the instructor for the changing of the "I" grade to receive credit. Both the new grade and the letter "I" will appear on the student's permanent record. If the "I" grade is not changed by the established deadline, it becomes a part of the student's permanent record and no credit is given for the class. 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.

REVIEW OF PERFORMANCE

The primary responsibility for monitoring performance standards rests with the degree program. However, the Office of Graduate Studies may monitor a student's progress and may revert any student to Postbaccalaureate status if performance standards as specified above are not maintained.

A degree program may revert any graduate student to postbaccalaureate status at any time when, in its judgment, the individual is deemed incapable of successfully performing at required standards of excellence.

If a student is reverted to Postbaccalaureate status, reinstatement to Graduate Student status can occur only through a successful petition to the Graduate Council by the student.

DEGREE APPLICATION PROCESS

APPLICATION FOR DEGREE

Before the last day of the Add-Drop period in the student's last term, an Intent-to-Graduate form must be filed in the University Records Office. If the student does not graduate in that term, a new form must be filed at the beginning of the term of anticipated graduation. An extension can be obtained by telephoning the Records Office to have the old form updated if graduation is to be the following term.

CERTIFICATION FOR DEGREE

The College of the degree program must certify through the Office of Graduate Studies that all University and Program of Study requirements have been met.

REGISTRATION IN TERM OF GRADUATION

A student must be registered in any term in which UCF faculty or administrative and professional time will be required (e.g., review of thesis or research report by faculty or library staff, or for examinations, etc.). Therefore, unless the graduate program certifies to the Office of the Registrar that no UCF resources will be utilized, a student must be registered in the term of graduation.
DOCTORAL PROGRAMS

UNIVERSITY ADMISSIONS STANDARDS

Admission to graduate status does not constitute admission to a doctoral program. Eligibility for admission to a doctoral program is limited to superior students who have demonstrated intellectual ability, high achievement, and adequate preparation for advanced study and research in a chosen field. The decision to accept the student in a doctoral program is made by the Graduate Committee of the department concerned and the Dean of Graduate Studies on the basis of qualifying examinations and/or other criteria as specified by the individual department.

RESIDENCY REQUIREMENTS

Each student is expected to complete two continuous semesters in full-time graduate student status. Full-time is defined as a minimum of 9 hours per semester.

PROGRAM OF STUDY

A program of study (i.e., required course work) will be specified by the student’s department and approved by the Dean of Graduate Studies.

SPECIAL DEGREE REQUIREMENTS

Each student is expected to demonstrate knowledge of a foreign language or an appropriate competency in a related area germane to the dissertation. Appropriate competency must be carefully defined by the department and approved by the student’s committee and the Dean of Graduate Studies. Any course credit earned in attaining such a skill does not count toward minimum hour requirements.

DISSERTATION

Dissertations are required in all doctoral programs. An oral defense of the dissertation is required with copies of the approved dissertation being prepared in accordance with program requirements and sent to University Microfilms. Upon committee approval, the final unbound dissertation approved by the Library will be submitted in triplicate to the Office of Graduate Studies before the specified deadline. The designated original of the dissertation and one copy will be sent to the Library for hardbinding. The third copy (also unbound) of the dissertation will be forwarded to University Microfilms International by the Office of Graduate Studies. After this copy is returned and bound by the Library, the copy will be forwarded to the appropriate dean. The student must pay a nominal fee for binding and microfilming the dissertation and must sign an agreement authorizing the publication by microfilm. The student may choose to copyright the dissertation by paying a nominal fee.

Doctoral candidates who have completed all the requirements for the degree and have successfully completed the dissertation may request certification to that effect prior to the receipt of the degree. Such certification will be issued by the Dean of Graduate studies.

GENERAL EXAMINATIONS FOR ADMISSION TO CANDIDACY

General examinations are mandatory and are held at the completion of the student’s course work and prior to the dissertation stage. The student is expected to demonstrate substantial mastery of the subject matter, theory, bibliography, research and methodology of a significant part of the field. The examinations, which are to be written, will be established by the department in coordination with the Office of Graduate Studies. All written examination materials will be kept in the student’s permanent file.
DISSERTATION PROPOSAL
After passing the general examinations, the student must develop a dissertation proposal which will be defended in an oral examination conducted by the dissertation committee.

ADMISSION TO CANDIDACY
Admission to candidacy will occur after all general degree requirements are satisfied and the student has successfully defended his dissertation proposal.

DOCTORAL (DISSERTATION) COMMITTEE COMPOSITION
A committee, which will consist of a minimum of four faculty members (three from the college in which the program is located and one from outside that college), must be approved by the Dean of Graduate Studies. Departments may specify in greater detail the distribution of the three in-college members. All members should be in fields related to the dissertation topic. All members vote on acceptance or rejection of the dissertation. The dissertation must be approved by a majority of the committee.

TIME LIMITATION
A student has seven years from the date of admission to the doctoral program to complete the dissertation. If a student passes the seven-year deadline, the general examinations must be repeated.

COURSE REQUIREMENTS
The course requirements for a doctoral degree will consist of lectures, seminars, discussions and independent study. Each program of study will include a minimum of 72 semester hours of graduate credit beyond the baccalaureate degree, 57 semester hours of which must be exclusive of the dissertation, with at least 6 semester hours of course work outside the student's department and no more than 12 semester hours of independent study (including independent study hours counted towards a master's degree). The particular plan of study, which may vary from student to student, should be formulated jointly by the student and the appropriate committee or advisor in the department.

TRANSFER CREDIT
The number of transfer credit hours to be applied to the minimum course requirement for a doctoral degree at UCF (up to a maximum of 30 semester hours of credit) will be determined on a case-by-case basis by the graduate committee of the department at the time the student is admitted to the program.

POST-CANDIDACY ENROLLMENT
Post-candidacy status is attained once a student has satisfied all the requirements for the Ph.D. except the doctoral dissertation. The student must continue to enroll for at least one semester hour of research or dissertation credit each semester after attaining post-candidacy until the oral defense of the dissertation has been completed. Post-candidacy enrollment status is allowable for a maximum of four (4) years subject to the seven (7) year time limitation.

NOTE: The post-candidacy enrollment requirement of at least one semester hour, while generally satisfactory to encourage reasonable progress towards the degree for students not in residence, shall be interpreted as requiring enrollment in at least three semester hours of research or dissertation credit each semester by those students who are in residence at UCF and placing substantial time demands on their major professors.

DISSERTATION DEFENSE
The Dean of Graduate Studies or his designee will attend all dissertation defenses.
STUDENT AFFAIRS

HOUSING POLICY

Enrolled single students paying registration fees for a minimum of nine semester hours may apply for assignment to University residential units. Priority of assignment is given first to current residents and second to new students admitted in good standing. Any single student applicant who has been admitted to the University may submit an application requesting housing and food service for a specific term. 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.

INTERNATIONAL STUDENT SERVICES

The International Student Office serves as a clearing-house for international student affairs, and as a focal point for international student concerns. The office aids international students by offering assistance in locating off-campus apartments and banking. Counseling on personal, financial, academic and cross-cultural communication matters is available. Liaison is maintained with the Immigration and Naturalization Service. Further information may be obtained from the International Student Office, Administration Building, Room 225.

STUDENT HEALTH SERVICE

A Student Health Service is maintained on an outpatient basis for routine and emergency health needs and to promote health education. The service is staffed by doctors and registered nurses when classes are in session. Medical care in the students' living quarters is not provided. Every student who pays the health fee is entitled to the benefits outlined in the Health Service brochure.

Blood is available when needed for students, staff, faculty and their immediate families through the Student Health Service.

Medical records are confidential communications and will be treated as such insofar as the law permits.

MINORITY STUDENT SERVICES

The Office of Minority Student Services is responsible for coordinating special programs, projects, and special services for minority students. The Office cooperates with Student Services in the recruitment, admission, and retention of minority students, and is responsible for monitoring and facilitating the academic progress of minority students. Minority Student Services also assists in arranging cultural and social programs to enhance the development of the individual.

UNIVERSITY COUNSELING AND TESTING CENTER

The University Counseling and Testing Center offers a professional staff of counselors to aid students in selecting vocational-educational objectives, overcoming learning difficulties, solving problems of personal-social adjustment, and dealing with marital or other problems. A full range of tests is available along with the use of an occupational library. All aspects of counseling and testing are confidential.

STUDENT ACTIVITIES

Personal development may, in part, be enhanced through informed, experienced, dedicated participation in the University and community. The University sponsors a variety of cultural and entertainment programs which will contribute to the student's social, cultural, recreational, and academic development. Additionally, opportunity is provided to become a member of occupational, professional, social, and honorary organizations.
STUDENT GOVERNMENT

The purpose of the Student Government at the University is to represent student opinion; advance the cause of students both socially and academically; promote communication, cooperation and understanding among students; and to insure that Student Government shall continue to be used as a democratic instrument of change. Additionally, Student Government is authorized to determine the allocation of the activity and service fee.

There are many services available to students through their Student Government, including discount movie and dinner theater tickets, babysitting referral, consumer affairs, carpool, legal aid, and dental aid.

STUDENT CENTER/STUDENT UNION

The Student Center and Student Union give students opportunities for social and cultural activities. These facilities, with their many programs, services, and gathering places, serve students, faculty, staff, University patrons, alumni, and guests. These facilities are funded by activity and service fees.

The Student Center contains food service facilities, an auditorium, conference and meeting rooms, art gallery, game room, arts and crafts center, and lounge areas.

The new Student Union contains the University bookstore, food service facilities, and lounge/meeting rooms.

OFFICE OF AREA CAMPUS SERVICES

The Office of Area Campus Services, as the official liaison for Student Affairs and student services, maintains contact and communication with the directors of the campuses in Brevard, Daytona Beach, and South Orlando. The office insures that student services are provided and that communication between the main campus and the area campuses is maintained.

OFFICE OF EVENING STUDENT SERVICES

The Evening Student Services Office, which is located in Room 282 in the Administration Building is open from 5 p.m.-9 p.m., Monday through Thursday evenings. If problems cannot be resolved there, they are referred to the appropriate office.

HANDICAPPED STUDENT SERVICES

The Office of Handicapped Student Services provides information and orientation to campus facilities and services, assistance with handicapped parking permits, counseling, referral to campus services, and assistance with registration for students who are handicapped.

Services are available to students whose disabilities include, but are not limited to, mobility, visual or hearing impairment; manual dexterity or speech impairment; specific learning disability (such as dyslexia); epilepsy; diabetes; or mental or psychological disorder.

Students who have a disability or handicap are requested to contact the office. All information is confidential and will be used only to assist the student.

CREATIVE SCHOOL FOR CHILDREN

The Creative School for Children provides an educational program, including kindergarten, for children 2 through 5 years old. The daily program is planned and executed by Florida certified teachers. The children receive a wide variety of experiences in art, music, language, motor skills, science, math, social studies, perceptual development, socialization and self-discovery. Planned and spontaneous field trips and special family programs are a part of the yearly schedule. The school conducts a Summer Day Camp for elementary school children during the summer term.
CLASSROOM RESPONSIBILITY

Students are responsible for maintaining 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.

STUDENT CONDUCT

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

When a student is involved in an offense resulting in criminal charges prior to 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.

CONFIDENTIALITY OF STUDENT RECORDS

The University policy which governs confidentiality and access to student records is provided in the student handbook, A Guide to Knight Life. The policy explains in detail the procedures to be used by the institution for compliance with the Family Educational Rights and Privacy Act of 1974 as amended. Copies of the policy may be obtained from the Office of Student Affairs. This office also maintains a directory of records which lists all educational records maintained on students by the University.

OFFICE OF VETERANS AFFAIRS

The Office of Veterans Affairs is for students who are utilizing veterans benefits 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. Counseling for personal and academic problems is provided as well as referral to various agencies in the community. Veterans must be certified through this Office to receive VA educational benefits. Veterans’ academic progress is monitored on a continuous basis.

All veterans and dependents are urged to contact the Office at an early stage in the process of applying for admission.

VETERANS BENEFITS

Veteran-students eligible to receive VA educational benefits must make initial contact with the Veterans Certification Office.

Those students with an undergraduate degree who are classified as postbaccalaureate must carry at least twelve (12) semester hours for full VA benefits, nine (9) semester hours for three-fourths, and six (6) semester hours for one-half. Five (5) semester hours or less will be reimbursed to the veteran at cost of instruction only. Those accepted in a graduate degree-seeking program are required to carry six (6) semester hours for full benefits, four (4) to five (5) for three-fourths, and three (3) semester hours for one-half.

Veterans intending to enroll in a dual program with the option of receiving VA benefits, must contact the Veterans Affairs Office.

Those on co-op status may choose to draw VA benefits for their period of eligibility either under the Institutional or the Cooperative Program.
RECREATIONAL SERVICES

Recreational Services offers a variety of sports and recreational opportunities to students, faculty, and staff at the University. Included in the program are intramural sports leagues and tournaments, coed sports, organized recreation/fitness opportunities, unstructured open recreation and competitive sports clubs. Sports activities range from traditional flag football, basketball, soccer, golf and bowling to Ultimate (Frisbee Football), innertube waterpolo, floor hockey, and a Turkey Trot. For the fitness minded, there are physical fitness classes, a Rec-Milers Club and ample equipment which may be checked out and used on the University recreational facilities. A handbook which provides full information, rules, and regulations on all activities is available from the Office of Recreational Services.

INSTRUCTIONAL RESOURCES

The primary purpose of the Instructional Resources office is to improve instruction. In meeting both academic and administrative needs of the University, the department provides graphic, photographic, radio, and television production in addition to a wide range of consultative services in an effort to bridge the gap between technology and instruction.

UNIVERSITY BOOKSTORE

The University Bookstore carries required textbooks, supplemental books, and associated supplies for all UCF courses. In addition, a complete line of school and art supplies, sundries, paperbacks, gifts, and other items of interest is available. A Customer Service Desk provides for special orders such as class rings. During the last three days of each semester, the Bookstore has a 'buy-back' period for used textbooks. Student I.D. cards must be presented as identification when selling books.

UCF AREA CAMPUSSES

The University of Central Florida offers a number of upper division and graduate level courses at three area locations in Central Florida. Contact the area campus for information as to the current courses and program offerings.

UCF BREVARD CAMPUS
1519 Clearlake Road
Cocoa, Florida 32922
(305) 632-4127

UCF DAYTONA BEACH CAMPUS
215 South Clyde Morris Boulevard
Daytona Beach, Florida 32014
(904) 255-7423

UCF SOUTH ORLANDO CAMPUS
7300 Lake Ellenor Drive
Orlando, Florida 32809
(305) 855-0881
The remainder of the catalog lists the Graduate Programs now available at the University of Central Florida. These are arranged first by College, and then by the individual Program. Within each Program there is a listing of the faculty, a description of the program, the requirements necessary for graduation, and a list of the courses available.

A number of general statements about the course numbering system should make the descriptions more understandable.

**CLASSIFICATION OF COURSES**

- **3000-4999** are junior and senior level courses and are designed primarily for advanced undergraduate students. Selected 4000-4999 courses may serve the needs of the individual graduate students if approved for inclusion in an individual program of graduate study by a supervisory committee approved by the Dean of Graduate Studies.
- **5000-5999** are beginning graduate level courses.
- **6000-6999** are courses open only to graduate students.
- **7000** are doctoral level courses.

**FLORIDA STATEWIDE COURSE NUMBERING SYSTEM**

The course numbers appearing in the catalog are part of a statewide system of prefixes and numbers developed for use by all public postsecondary and participating private institutions in Florida. One of the major purposes of this system is to make transferring to another institution easier by identifying courses which are equivalent, no matter where they are taught in the state. All courses designated as equivalent will carry the same prefix and last three digits.

The classifying and numbering of courses was done by community college and university faculty members in each academic discipline. Their work was reviewed by faculty members in all of Florida's postsecondary institutions who made suggestions and criticisms to be incorporated into the system.

The course numbering system is, by law, descriptive and not prescriptive. It in no way limits or controls what courses may be offered or how they are taught. It does not affect course titles or descriptions at individual schools. It seeks only to describe what is being offered in postsecondary education in Florida in a manner that is intelligible and useful to students, faculty and other interested users of the system.

It should be noted that a receiving institution is not precluded from using non-equivalent courses for satisfying certain requirements.

**GENERAL RULE FOR COURSE EQUIVALENCIES**

All undergraduate courses bearing the same alpha prefix and last three numbers (and alpha suffix, if present) have been agreed upon to be equivalent. For example, an introductory course in sociology is offered in over 40 postsecondary institutions in Florida. Since these courses are considered to be equivalent, each one will carry the designator SOC-000.

**FIRST DIGIT**

The first digit of the course number is assigned by the institution, generally to indicate the year it is offered—i.e., 1 indicates freshman year, 2 indicates sophomore year. In the sociology example mentioned above, one school which offers the course in the freshman year will number it SOC 1000; a school offering the same course in
the sophomore year will number it SOC 2000. The variance in the first number does not affect the equivalency. If the prefix and last three digits are the same, the courses are substantially equivalent.

TITLES
Each institution will retain its own title for each of its courses. The sociology courses mentioned above are titled at different schools "Introductory Sociology," "General Sociology," and "Principles of Sociology." The title does not affect the equivalency. The courses all carry the same prefix and last three digits; that is what identifies them as equivalent.

LAB INDICATORS
Some courses will carry an alpha suffix indicating a lab. The alpha suffixes "L" and "C" are used as follows to indicate laboratories:

"L" means either (a) a course, the content of which is entirely laboratory or (b) the laboratory component of a lecture-lab sequence at a different time/place from the lecture course.

"C" means a combined lecture-lab course in which the lab is offered in conjunction with the lecture at the same time and place.

Examples: PSY 6318 (lecture only)
ENV 6017L (lab only)
PCB 6235C (lecture & lab combined)

SPECIAL COURSES
In addition to the regular courses listed in this catalog, special courses may be available. Consult an academic advisor for details.

In order to register for any of the special numbers below, a student must present an authorization form obtained from the Department.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Graduate Courses</th>
<th>Prof Courses</th>
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<td>Directed Independent Research</td>
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<td>Special Topics/Seminars</td>
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<td>Internships, Practicums, Clinical Practice</td>
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<td>Study Abroad</td>
<td>5957</td>
<td>6958</td>
</tr>
<tr>
<td>Thesis</td>
<td></td>
<td>6971</td>
</tr>
<tr>
<td>Thesis—Specialist</td>
<td></td>
<td>6973</td>
</tr>
<tr>
<td>Doctoral Research</td>
<td></td>
<td>7919</td>
</tr>
<tr>
<td>Doctoral Dissertation</td>
<td></td>
<td>7980</td>
</tr>
</tbody>
</table>

These courses may be assigned variable credit. Some may be repeated upon approval.

ABBREVIATIONS IN COURSE DESCRIPTIONS
PR denotes a PREREQUISITE course which must be earned prior to enrollment in the listed course.
CR denotes a COREQUISITE course which must be taken concurrently with or prior to the listed course.
C.I. denotes that registration is contingent upon the consent of the instructor.

HOURS CODE
Each course listed is followed by a code which shows hours of credit and contact hours.

Example: ECI 5215C Hydraulic Engineering 3 cr (2,3)

ECI 5215C carries 3 hours of credit, but requires 5 contact hours which consist of 2 hours in class and 3 hours laboratory or field work.
The College of Arts and Sciences consists of seventeen academic departments, eleven of which offer graduate degrees: Biological Sciences, Chemistry, Communication, Computer Science, English, History, Mathematics and Statistics, Political Science, Psychology, Public Service Administration and Sociology. The specific programs for the various degrees are listed below:

**DOCTOR OF PHILOSOPHY**

Computer Science

**MASTER OF ARTS**

Communication
English
History
Political Science
Sociology

**MASTER OF SCIENCE**

Biological Science
Chemistry, Industrial
Computer Science
Mathematical Science (An optional track in Statistical Computing is offered)
Microbiology
Psychology (Clinical and Industrial/Organizational Programs are offered)

**MASTER OF PUBLIC POLICY**

Public Policy

The course work and research requirements of the programs are designed with the intent of offering students the opportunity for educational advancement and professional training. A research report, thesis, or dissertation is required in most of the programs and is offered as an option in others.

Each department is headed by a chairperson who reports to the Dean of the College. A Graduate Program Coordinator is designated for each program and is the key contact on questions of admission and degree requirements. Consult the individual degree program listings for descriptions of requirements and courses offered by each program.
BIOLOGICAL SCIENCES

I. Jack Stout, Graduate Program Coordinator
Office: BIO 436, Phone 275-2919

O. M. Berringer, Jr., Ph.D. ........................................... Professor
L. L. Ellis, Ph.D. ....................................................... Professor
J. L. Koevenig, Ph.D. .................................................. Professor
D. T. Kuhn, Ph.D. ....................................................... Professor
H. A. Miller, Ph.D. ..................................................... Professor
F. F. Snelson, Jr., Ph.D. .............................................. Chairman and Professor
H. O. Whittier, Ph.D. .................................................. Professor
R. J. Wodzinski, Ph.D. ................................................ Professor
J. F. Charba, Ph.D. .................................................... Associate Professor
L. M. Ehrhart, Ph.D. .................................................. Associate Professor
R. N. Gennaro, Ph.D. ................................................ Associate Professor
R. J. Laird, Ph.D. ....................................................... Associate Professor
J. A. Osborne, Ph.D. .................................................. Associate Professor
I. J. Stout, Ph.D. ....................................................... Associate Professor
M. J. Sweeney, Ph.D. ................................................ Associate Professor
H. C. Sweet, Ph.D. ..................................................... Associate Professor
W. K. Taylor, Ph.D. .................................................. Associate Professor
D. H. Vickers, Ph.D. ................................................ Associate Professor
R. S. White, Ph.D. .................................................... Associate Professor
D. W. Washington, Ph.D. ........................................... Assistant Professor
ADMISSION

Minimal requirements for admission are a grade point average (GPA) of at least 2.7 for the last 60 semester hours of undergraduate study and a score of at least 1000 on the combined quantitative-verbal sections of the Graduate Record Examination (GRE). In addition, the Department requires 3 letters of recommendation and a written statement of past experience and research, area of interest, and immediate and long-range goals. Personal interviews are helpful but not required. Foreign students are required to submit a TOEFL score of at least 500.

Applicants who fail to meet either the minimum program GPA or GRE requirement may occasionally be accepted if there is other convincing evidence of potential for high achievement and success. Applicants failing to satisfy minimum program criteria should submit a GRE Advanced Biology Test score at or above the 50th percentile. In no case will GRE scores (verbal, quantitative, or advanced) older than seven years be accepted.

Applicants need not have an undergraduate degree in a biological science but are expected to have the equivalent of 16 semester hours credit in the biological sciences, including at least 3 credit hours each in botany, microbiology, and zoology; plus 6 hours in organic chemistry; and basic college mathematics and statistics. After acceptance, minor deficiencies can be remedied by enrollment at the first opportunity in an appropriate course.

PROGRAMS IN BIOLOGICAL SCIENCES

The Master of Science degree in Biological Sciences is offered with the following areas of specialization: Biology, Botany, Limnology, and Zoology. There are three options available: (1) a thesis option which includes a minimum of 30 semester hours of courses; (2) a non-thesis option which includes a minimum of 40 semester hours of courses; (3) the Master of Science degree in Microbiology requiring a thesis option and a minimum of 30 semester hours of courses. It is listed separately, immediately following this section.

MASTER OF SCIENCE DEGREE REQUIREMENTS—
BIOLOGICAL SCIENCES

THESIS OPTION

A student selecting the biology thesis option will take the following courses:

Group A (13-14 hours from three of the four courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB 5046C</td>
<td>Advanced Ecology</td>
<td>5</td>
</tr>
<tr>
<td>PCB 5675</td>
<td>Evolutionary Biology</td>
<td>4</td>
</tr>
<tr>
<td>PCB 6585C</td>
<td>Advanced Genetics</td>
<td>5</td>
</tr>
<tr>
<td>PCB 6746C</td>
<td>Organismal Physiology</td>
<td>4</td>
</tr>
</tbody>
</table>

Group B (8 hours—both courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 6938</td>
<td>Biology Seminar</td>
<td>2</td>
</tr>
<tr>
<td>BSC 6971</td>
<td>Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Group C (8-9 hours minimum)

Restricted electives acceptable to the student’s graduate committee. 8-9 hours

Total Minimum Hours Required: 30

NON-THESIS OPTION

A student selecting the biology non-thesis option will take the following courses:

Group A (13-14 hours from three of the four courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB 5046C</td>
<td>Advanced Ecology</td>
<td>5</td>
</tr>
<tr>
<td>PCB 5675</td>
<td>Evolutionary Biology</td>
<td>4</td>
</tr>
<tr>
<td>PCB 6585C</td>
<td>Advanced Genetics</td>
<td>5</td>
</tr>
<tr>
<td>PCB 6746C</td>
<td>Organismal Physiology</td>
<td>4</td>
</tr>
</tbody>
</table>
Group B (4 hours—both courses)
BSC 6918 Research Report 2 hours
BSC 6938 Biology Seminar 2 hours

Group C (22-23 hours minimum)
Restricted electives acceptable to the student's graduate advisor. 22-23 hours
Total Minimum Hours Required 40

BIOLOGICAL SCIENCE COURSES

APB 5581 Applied Microbiology 3 cr (3,0)
PR: MCB 3013 or C.I. Biochemistry of industrial processes including: economics, screening, scale up, quality control and applied genetics.

BOT 5495C Bryology 3 cr (2,3)
PR: BOT 3309C 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 5705C Plant Biosystematics 4 cr (2,6)
PR: BOT 4713C or C.I. Evolutionary relationships, plant taxa and populations utilizing cytological, morphological, and biochemical techniques.

BOT 6146C Terrestrial Vegetation 4 cr (2,6)
PR: 8 hours in biological sciences or science teaching experience or C.I. Classification and identification among terrestrial plant groups and their natural association in the field. Major reference sources reviewed.

MCB 5205 Infectious Process 3 cr (3,0)
PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.

MCB 5505C Virology 3 cr (2,3)
PR: MCB 3013C and BCH 4054. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification.

MCB 6417 Microbial Metabolism 3 cr (3,0)
PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and synthesis.

PCB 5046C Advanced Ecology 5 cr (3,4)
PR: Ecology, statistics and 2 years of biological science. Population and community ecology with emphasis on growth, regulation, species interactions, succession, and community classification.

PCB 5675 Evolutionary Biology 4 cr (3,2)
PR: PCB 3043 and PCB 3063 or C.I. Review of concepts in evolutionary biology. Emphasis on evolution at and below the species level; consideration of genetics and ecological factors in divergence and speciation.

PCB 5806 Endocrinology 3 cr (3,0)
PR: PCB 4723 and BCH 4053 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.

PCB 6049 Contemporary Studies in Biology 2 cr (2,0)
PR: Graduate standing. Analysis of current publications and developments in theory and concepts of biological sciences. May be repeated for credit as content is variable.

PCB 6235C Immunochrometry 3 cr (2,3)
Concepts of antibody diversity, affinity for an antigen, kinetics of the antibody and antigen response and thermodynamic consideration.

PCB 6585C Advanced Genetics 5 cr (3,6)
PR: PCB 3063 or C.I. Current advances in molecular, developmental, cytological, and human genetics will be stressed.
PCB 6746C Organismal Physiology 5 cr (4,3)
PR: PCB 3023 or C.I. Modern experimental methods of detailed study of specific phases of the physiology of higher vertebrates.

ZOO 5463C Herpetology 4 cr (2,6)
PR: 6 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution and life histories.

ZOO 5475C Ornithology 4 cr (2,6)
PR: 6 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution, and life histories.

ZOO 5483C Mammalogy 4 cr (2,6)
PR: 6 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution and life histories.

ZOO 5815 Zoogeography 3 cr (3,0)
PR: 8 hours of zoology or C.I. Principles and concepts concerning regional patterns of animal distributions of the world, both past and present.

BSC 6918 Research Report 2 cr
BSC 6971 Thesis 1-6 cr

MICROBIOLOGY

I. Jack Stout ............................. Graduate Program Coordinator
Office: BIO 436, Phone 275-2919

R. J. Wodzinski, Ph.D. .......................... Professor
J. F. Charba, Ph.D. .......................... Associate Professor
R. N. Gennaro, Ph.D. ......................... Associate Professor
M. J. Sweeney, Ph.D. ......................... Associate Professor
R. S. White, Ph.D. ......................... Associate Professor

MASTER OF SCIENCE DEGREE REQUIREMENTS—MICROBIOLOGY

MICROBIOLOGY THESIS PROGRAM

Group A (23 hours—all courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>APB 5581</td>
<td>Applied Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BSC 6938</td>
<td>Biology Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MCB 5205</td>
<td>Infectious Processes</td>
<td>3</td>
</tr>
<tr>
<td>MCB 5505C</td>
<td>Virology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 6417</td>
<td>Microbial Metabolism</td>
<td>3</td>
</tr>
<tr>
<td>MCB 6938</td>
<td>Microbiology Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MCB 6971</td>
<td>Thesis</td>
<td>6</td>
</tr>
<tr>
<td>PCB 6235C</td>
<td>Immunochemistry</td>
<td>3</td>
</tr>
</tbody>
</table>

Group B (7 hours minimum)

Restricted electives acceptable to student's graduate committee. 7 hours

Total Minimum Semester Hours Required: 30

MICROBIOLOGY COURSES

APB 5581 Applied Microbiology 3 cr (3,0)
PR: MCB 3013C or C.I. Microbial biochemistry of industrial processes including: economics, screening, scale up, quality control and applied genetics.
MCB 5205 Infectious Process 3 cr (3,0)
PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.

MCB 5505C Virology 3 cr (2,3)
PR: MCB 3013C and BCH 4054. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification.

MCB 6417 Microbial Metabolism 3 cr (3,0)
PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and synthesis.

PCB 6049 Contemporary Studies in Biology 2 cr (2,0)
PR: Graduate Standing. Analysis of current publications and developments in theory and concepts of biological sciences. May be repeated for credit as content is variable.

PCB 6235C Immunochemistry 3 cr (2,3)
Concepts of antibody diversity, affinity for an antigen, kinetics of the antibody and antigen response and thermodynamic consideration.

MCB 6971 Thesis 1-6 cr

CHEMISTRY, INDUSTRIAL

John T. Gupton ........................................ Graduate Program Coordinator
Office: CH 331, Phone 275-2246

G. L. Baker, Ph.D. ....................................... Professor
C. A. Clausen, Ph.D. .................................... Professor
G. N. Cunningham, Ph.D. ........................... Professor
G. R. Hertel, Ph.D. ...................................... Professor
J. P. Idoux, Ph.D. ........................................ Associate Dean and Professor
F. E. Juge, Ph.D. ........................................ Associate Vice President and Professor
G. Mattson, Ph.D. ........................................ Chairman and Professor
W. W. McGee, Ph.D. .................................. Professor
L. M. Trefonas, Ph.D. ................................. Vice President and Dean and Professor
F. B. Kujawa, Ph.D. .................................. Associate Professor
B. C. Madsen, Ph.D. ........................................ Associate Professor
J. T. Gupton, Ph.D. .................................. Assistant Professor
M. D. Hampton, Ph.D. ............................... Assistant Professor

ADMISSION

Minimal requirements for admission include a grade point average (GPA) of 3.0 for the last 60 semester hours of undergraduate study or a score of at least 1000 on the combined quantitative-verbal sections of the Graduate Record Examination (GRE). In addition, the Departmental evaluation relies on letters of recommendation. Proficiency examinations may be required. Results may be used to aid in planning the student’s Program of Study. Deficiencies may require remedial course work.

PROGRAM IN INDUSTRIAL CHEMISTRY

The Master of Science Degree at the University of Central Florida is aimed particularly at preparing students for careers in the chemical industry, or in related
fields which utilize chemical processing techniques. The curriculum is designed to provide a broad overall perspective of the industry and an awareness of economic and engineering considerations while placing the primary emphasis upon chemistry and the application of chemical principles to the development of products and processes.

MASTER OF SCIENCE DEGREE REQUIREMENTS—INDUSTRIAL CHEMISTRY

REQUIRED COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 5710</td>
<td>Chemical Structure I</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHM 5711</td>
<td>Chemical Structure II</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 5240</td>
<td>Chemical Dynamics I</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 5241</td>
<td>Chemical Dynamics II</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 5250</td>
<td>Chemical Synthesis I</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 5251</td>
<td>Chemical Synthesis II</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 6260C</td>
<td>Laboratory Principles of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industrial Chemistry</td>
<td>4 hours</td>
</tr>
<tr>
<td>CHS 6261</td>
<td>Chemical Processes</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

19 Semester Hours

RESTRICTED ELECTIVE

Three hours of an approved elective may be substituted for three hours of research. Restricted electives include courses in business, computer science, engineering and statistics in keeping with the student's particular needs, interests and background and as approved by the advisory committee.
RESEARCH—a research report is required.
CHM 6918 Research 11 hours

EXAMINATION REQUIREMENTS
Satisfactory completion of a final examination is required.
Total Minimum Semester Hours Required 30

CHEMISTRY COURSES

CHM 5710 Chemical Structure I
PR: CHM 3211, 3121C, and 3411; or equivalent. Concepts in molecular structure and the relationships between structure and the chemical and physical properties of a substance.

CHM 5711 Chemical Structure II
PR: CHM 5710. Continuation of CHM 5710.

CHS 5240 Chemical Dynamics I
PR: CHM 5711 or equivalent. Dynamics of chemical reactions and physical processes including equilibrium systems catalysis, transport processes and physical phenomena at interfaces.

CHS 5241 Chemical Dynamics II
PR: CHS 5240. Continuation of CHS 5240.

CHS 5250 Chemical Synthesis I
PR: CHM 5711, and 3411; 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.

CHS 5251 Chemical Synthesis II
PR: CHS 5250. Continuation of CHS 5250.

CHS 6260C Laboratory Principles of Industrial Chemistry
PR: C.I. A laboratory study of the basic operations utilized in the chemical industry to synthesize and purify chemical products.

CHS 6261 Chemical Process Development
PR: C.I. Consideration of various factors involved in development of a chemical process including determination of technical and economic feasibility, optimizing conditions and planning the development program.

CHM 6918 Research 1-11 cr

COMMUNICATION
Fred Fedler ................................. Graduate Program Coordinator
Office: HFA 539, Phone 275-2681 or 275-2839

R. Arnold, Ph.D. ....................................... Professor
R. W. Buchanan, Ph.D. .......................... Chairman and Professor
F. E. Fedler, Ph.D. ................................. Professor
J. G. Hoglin, Ph.D. .................................. Professor
R. Hosokawa ...................................... Professor
B. C. Kissel, Ph.D. ................................. Professor
M. D. Meeske, Ph.D. ............................. Professor
T. O. Morgan, Ph.D. .............................. Professor
M. T. O'Keefe, Ph.D. ............................. Professor
K. P. Taylor, Ph.D. ............................... Professor
W. K. Grasty, Ph.D ....................................... Associate Professor
A. Pryor, Ph.D .......................................... Associate Professor
L. A. Tanzi, Ph.D ........................................ Associate Professor
E. B. Wycoff, Ph.D ....................................... Associate Professor
J. F. Butler ............................................. Assistant Professor
R. H. Davis, Ph.D ........................................ Assistant Professor
W. J. Hall ............................................... Assistant Professor
P. D. Hightower, Ph.D. ................................ Assistant Professor
F. L. Johnson ........................................... Assistant Professor
R. Smith ............................................. Assistant Professor

ADMISSION

Minimal requirements for admission are a grade point average (GPA) of 3.0 for the last 60 semester hours of undergraduate study and a minimum score of at least 750 on the verbal-quantitative sections of the Graduate Record Examination (GRE). Alternatively, a GPA of 2.50-2.99 combined with a GRE of 1000 would also be acceptable.

PROGRAMS IN COMMUNICATION

The Master of Arts in Communication program is designed to offer strong preparation in communication theory and in research methodology. Both theoretical and applied research strategies are emphasized. The faculty's major interests include: advertising, public relations, speech, general communication, film, and journalism. The Department also houses The Institute for the Study of the Trial.

MASTER OF ARTS DEGREE REQUIREMENTS—COMMUNICATIONS

The general requirement of 35 semester hours, including a thesis, covers a basic core of courses in theory, methodology, media, and organizational communication. Additionally, selected courses may be taken to strengthen a chosen field in conjunction with specific career interests or doctoral studies. Comprehensive exams are given covering the required courses. The curriculum includes the following course elements:

REQUIRED COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 6300</td>
<td>Introduction to Graduate Study in Communication</td>
<td>3 hours</td>
</tr>
<tr>
<td>COM 6312</td>
<td>Research Methods</td>
<td>3 hours</td>
</tr>
<tr>
<td>MMC 6603</td>
<td>Communication and Society</td>
<td>4 hours</td>
</tr>
<tr>
<td>SPC 6219</td>
<td>Modern Communication Theory</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

ELECTIVES

Electives must be chosen mainly from 5000- and 6000-level courses with no more than 6 hours of 4000-level courses:

RESTRICTED ELECTIVES

At least one of the courses from each area listed below:

Organizational Communication:
- COM 6121 | Communication Management | 3 hours
- SPC 6442 | Small Group Communication | 3 hours

Communication Effects:
- MMC 6811 | Effects of Advertising on Society | 3 hours
- SPC 6545 | Studies in Persuasion | 3 hours

Other Electives (approved by student's committee)

THESIS

4 Semester Hours
Possible options for 4000-level electives:

**Communications**
- MCC 4700 Mass Media and Popular Culture 3 hours
- SPC 4440 Group Dynamics 3 hours
- SPC 4330 Nonverbal Communication 3 hours

**Journalism**
- ADV 4000 Principles of Advertising 3 hours
- ADV 4003 Advertising Layout and Preparation 4 hours
- ADV 4101 Advertising Copy and Campaigns 4 hours
- ADV 4103 Radio-Television Advertising 3 hours
- JOU 4104 Public Affairs Reporting 4 hours
- JOU 4300 Feature Writing 4 hours
- JOU 4306 Critical Writing 3 hours
- JOU 4310 Freelance Writing 4 hours
- JOU 4602 Color Photography 4 hours
- PUR 4000 Public Relations 3 hours
- PUR 4800 Public Relations Campaigns 3 hours

**Radio-Television**
- RTV 4402 Broadcast Criticism 3 hours
- RTV 4403 Radio, Television and Society 3 hours
- RTV 4404 International Broadcasting 3 hours
- RTV 4600 Non-Commercial Broadcasting 4 hours
- RTV 4700 Broadcast Regulations 3 hours
- RTV 4800 Broadcast Management 3 hours

**Speech**
- SPC 4633 Rhetoric of Social and Political Action 3 hours
- SED 4371 Directing Extracurricular Activities 3 hours

**Total Minimum Semester Hours Required:** 35

**COMMUNICATIONS COURSES**

**COM 6121 Communication Management** 3 cr (3,0)
Analysis and development with reference to particular media. Organizational theory, structure and behavior. Management principles and operations.

**COM 6300 Introduction to Graduate Study in Communication** 3 cr (3,0)
Introduction to graduate study and methods of research in the communication field.

**COM 6312 Research Methods** 3 cr (3,0)
Planning, implementation, and design of research studies.

**COM 6426 Informational and Educational Systems** 3 cr (3,0)
PR: C.I. A study of the sources, processing, and transmittal of educational and informational materials (software) which are used in educational broadcast systems, information retrieval systems, learning machines, etc.

**COM 6908 Independent Study** 1-3 cr

**COM 6918 Research** 1-3 cr

**COM 6971 Thesis** 3 cr (3,0)

**MMC 6603 Communication and Society** 4 cr (4,0)
The importance of the mass media, their structure and role. Also, current issues, criticisms and interaction with government.

**MMC 6611 Effects of Advertising on Society** 3 cr (3,0)
An in-depth study of advertising's effects on consumer behavior, societal mores and media economics.
SPC 5200 Evolution of Communication Theory 3 cr (3,0)
General Survey - major communication trends from classical era to the present. Comparison of Aristotelian and non-Aristotelian rhetorics. Contributions of principal figures will be discussed.

SPC 6219 Modern Communication Theory 3 cr (3,0)
Comparative analysis of theories and models of human communication, behavior systems, encoding and decoding processes, interaction variables, and social context.

SPC 6442 Small Group Communication 3 cr (3,0)
A study of communication and its effect on small group behavior.

SPC 6545 Studies in Persuasion 3 cr (3,0)
Survey and evaluation of experimental research in persuasion.

COMPUTER SCIENCE
Larry K. Cottrell ........................................... Graduate Program Coordinator
Office: HFA 445, Phone 275-2341

T. J. Frederick, Ph.D. ..................................... Chairman and Professor
C. Hughes, Ph.D. ........................................... Professor
A. Mukhopadhyay, Ph.D. .................................... Professor
R. C. Brigham, Ph.D. ...................................... Associate Professor
J. R. Driscoll, Ph.D. ...................................... Associate Professor
R. D. Dutton, Ph.D. ...................................... Associate Professor
H. Gerber, Ph.D. .......................................... Associate Professor
R. Guha, Ph.D. ............................................. Associate Professor
D. A. Workman, Ph.D. .................................... Associate Professor
B. Andrews, Ph.D. ......................................... Assistant Professor
M. A. Bassiouni, Ph.D. .................................... Assistant Professor
L. K. Cottrell, Ph.D. ..................................... Assistant Chairman and Assistant Professor
F. Gomez, Ph.D. ............................................. Assistant Professor
S. D. Lang, Ph.D. ......................................... Assistant Professor

ADMISSION
Admission is based on satisfying the regular University requirements and Department requirements. The minimum University requirements consist of the following:
   a. A baccalaureate degree from an accredited institution and an earned grade point average (GPA) of at least 3.0 in the last two years of undergraduate work or a combined score of 1000 or more on the quantitative-verbal sections of the Graduate Record Examination (GRE) OR
   b. A previous graduate degree from an accredited institution. (NOTE: The GRE is a University requirement.)

Departmental Requirements
Each student is required to submit a score on the GRE Advanced Computer Science Test that is not more than two years old at the time of admission to regular graduate status. International students must obtain a minimum score of 520 on the TOEFL exam.
An undergraduate degree in Computer Science is desirable, but not required. Applicants without a strong undergraduate background in Computer Science will be required to demonstrate an understanding of the material covered in the following courses:

CDA 4102  Introduction to Computer Architecture
CNM 4110  Numerical Calculus
COT 4001  Discrete Computational Structures
COP 4550  Programming Languages I
COP 4620  Programming Systems

A student without this background would normally be required to successfully complete at least two of the courses listed above. The remaining courses must then be taken after admission to regular graduate status, but may not be used in the graduate program of study. Alternately, the student may choose to demonstrate the knowledge of these courses by scoring well on the Advanced GRE in Computer Science. It is estimated that more than 85% of this exam deals directly with the material covered in these courses.

Admission to the Ph.D. program in Computer Science is formalized by the University upon the recommendation of the Computer Science Graduate Committee. In addition to satisfying the regular University requirements, the Department requires that the applicant pass the Ph.D. Qualifying Examination and find a qualified faculty member in Computer Science willing to chair the student’s advisory committee. Any transfer credits toward requirements for the Ph.D. program must be approved by the University and the Department. Normally, these credits must correspond to equivalent requirements and performance levels expected for the program.

PROGRAMS IN COMPUTER SCIENCE

The Master of Science degree is available with the student choosing one of the following three options: a general option; a software engineering option; or a management information systems option.

The Department of Computer Science offers a Ph.D. degree in Computer Science. Students receive a broad background in the areas of programming systems/languages, information systems, computer architecture, and computational methods before specializing in a research area.

Research interests of the faculty include computer architecture, VLSI systems, microprocessors, programming languages, operating systems, artificial intelligence, computer assisted instruction, data base management systems, storage/retrieval systems, computer graphics, interactive graphic system of instruction, distributed processing/networking and computational complexity.

MASTER OF SCIENCE DEGREE REQUIREMENTS—COMPUTER SCIENCE

The requirements for each of the three available options are listed below:

GENERAL OPTION

Required Courses (Students must receive an A or B grade) 12 Hours

In these four courses.

a. CDA 5106  Advanced Computer Architecture I 3 hours
b. CIS 5012  Information & File Systems Analysis 3 hours
c. CNM5142  Computational Methods/Linear Systems 3 hours
   or
d. COT 5314  Computational Complexity 3 hours
   or
COP 5554  Programming Languages II 3 hours
   or
COP 5613  Operating System Design Principles 3 hours
### SOFTWARE ENGINEERING OPTION:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA 5106</td>
<td>Advanced Computer Architecture I</td>
<td>3</td>
</tr>
<tr>
<td>COP 5554</td>
<td>Programming Languages II</td>
<td>3</td>
</tr>
<tr>
<td>COP 5613</td>
<td>Operating System Design Principles</td>
<td>3</td>
</tr>
<tr>
<td>COP 5662</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>COP 5682</td>
<td>Software Tools</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research Project**

3 Hours

**Restricted Electives**

Must include at least two of the following courses:

- COP 6555 Software Science 3 hours
- COP 6582 Theories of Programming Language Semantics 3 hours
- COP 6614 Operating Systems 3 hours
- COP 6672 Program Correctness and Verification 3 hours
- COP 6642 Introduction to the Theories of Translation 3 hours

**Approved Electives**

May include graduate courses outside Computer Science.

Total Minimum Semester Hours Required: 30

### MANAGEMENT INFORMATION SYSTEMS (MIS) OPTION:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 5012</td>
<td>Information &amp; File Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CIS 5041</td>
<td>Information Organization &amp; Retrieval</td>
<td>3</td>
</tr>
<tr>
<td>CIS 5234</td>
<td>Computational Techniques in MIS</td>
<td>3</td>
</tr>
<tr>
<td>CIS 6122</td>
<td>Data Base Management Systems</td>
<td>3</td>
</tr>
<tr>
<td>COP 5662</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research Project**

3 Hours

**Restricted Electives**

Group A (two courses, at least one at 6000-level)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 6124</td>
<td>Data Base Management Systems Theory</td>
<td>3</td>
</tr>
<tr>
<td>COP 5554</td>
<td>Programming Languages II</td>
<td>3</td>
</tr>
<tr>
<td>COP 5613</td>
<td>Operating System Design Principles</td>
<td>3</td>
</tr>
<tr>
<td>COP 6555</td>
<td>Software Science</td>
<td>3</td>
</tr>
<tr>
<td>CRM 5115</td>
<td>Economics of Computers</td>
<td>3</td>
</tr>
<tr>
<td>CRM 5131</td>
<td>Managing the Computer Professional</td>
<td>3</td>
</tr>
</tbody>
</table>

Group B (two courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 5117</td>
<td>Management Information Systems I</td>
<td>3</td>
</tr>
<tr>
<td>MAN 5051</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MAN 5830</td>
<td>Introduction to MIS</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6814</td>
<td>Quantitative Analysis for Business Decisions</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Minimum Semester Hours Required: 30
Regardless of the option chosen, the plan of the student must satisfy the following:

a. The program must contain at least 30 semester hours.
b. Grades received in these hours must be letter grades of A, B, or C with no more than 6 hours of C work and a grade point average of 3.0 or better.
c. The program can contain no more than 6 hours of 4000-level courses (chosen from CIS 4112, CIS 4324, and CDA 4144), no courses below the 4000-level, and exactly 3 hours of research (6918).
d. The program can contain no more than 6 hours (or two courses) of Independent Study (4906, 5907, 6908).
e. No course may be applied toward the degree which was completed more than 7 years prior to the date of graduation.
f. Each student must also complete a research project, normally done over at least two semesters. The total credit earned by the student for the research project is exactly 3 hours which could be distributed over several semesters under the course number 6918 (with appropriate acronym designating the area, e.g., COP 6918), but the student must enroll for at least one hour of 6918 in the semester graduation is to occur.

DOCTOR OF PHILOSOPHY DEGREE REQUIREMENTS—COMPUTER SCIENCE

REQUIRED COURSES

All students planning to apply for the doctoral program must take the following required courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA 5106</td>
<td>Advanced Computer Architecture I</td>
<td>3</td>
</tr>
<tr>
<td>CIS 5012</td>
<td>Information and File System Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CNM 5142</td>
<td>Computational Methods/Linear Systems</td>
<td>3</td>
</tr>
<tr>
<td>COP 5554</td>
<td>Programming Languages II</td>
<td>3</td>
</tr>
<tr>
<td>COP 5613</td>
<td>Operating System Design Principles</td>
<td>3</td>
</tr>
<tr>
<td>COT 5314</td>
<td>Computational Complexity</td>
<td>3</td>
</tr>
</tbody>
</table>

PH.D. QUALIFYING EXAMINATION

The Qualifying Examination is taken only when the student has obtained regular graduate status in Computer Science and has completed no more than 27 semester hours of course work including the courses required for the examination as listed below. The purpose of this examination is to determine the student’s knowledge in four important areas of Computer Science—hardware, software, theory, and applications—as well as to determine the potential of the student to pursue an area of specialization and to do research.

The Qualifying Examination will consist of four written exams in the general areas described below:

Hardware: CDA 5106, Advanced Computer Architecture
Software: COP 5554, Programming Language or COP 5613, Operating System Design Principles
Theory: CNM 5142, Computational Methods/Linear Design or COT 5314, Computational Complexity
Applications: CIS 5012, Informational and File Systems Analysis

To be admitted to the Ph.D. program, the student must pass the general portion in all four areas and the extended portion in at least one area. It is then the student’s obligation to find a qualified faculty member in Computer Science willing to chair the advisory committee. The student and the committee will then formulate a plan of study to determine the advanced graduate level courses and other degree requirements which must be completed.
Each examination will require the student to answer two sets of questions. The general set of questions relates directly to the content of the 5000-level courses shown above. The second set of questions, which requires no further preparation beyond the 5000-level courses, may cast concepts into new molds and require more creative thought. Some questions may relate to more than one of the above content areas.

Each examination will be three hours in length and will be given on four consecutive days. Each faculty member contributing to a given examination will grade that part of the examination. All faculty involved in a given examination will reach a pass/fail decision on each of the two sets of questions. The Computer Science Graduate Committee will then evaluate the results for each student, with the following options:

If the student passes the general portion in all four areas and also passes the extended portion in at least one area, he may be admitted to the Ph.D. program upon obtaining the consent of a qualified faculty member in Computer Science to chair the Advisory Committee.

If the student does not pass the examinations as stated above, he must retake the entire set of four examinations at the next scheduled offering. If the student does not pass on the second attempt, admission to the Ph.D. program is denied.

The Qualifying Examination will be offered twice each year—during the first week of September and the second week of January.

Upon successful completion of the Qualifying Examination, the student must select the members of his Advisory Committee which is chaired by a Computer Science graduate faculty member. The term ‘graduate faculty’ refers to those faculty eligible to serve as major advisors for doctoral dissertations and/or on a research committee. The student and the committee will then formulate a plan of study to determine the advanced graduate level courses and other degree requirements which must be completed.

**PLAN OF STUDY**

The plan of study will consist of a minimum of seventy-two semester hours of graduate credit, including eighteen semester hours for the required six courses used for the Ph.D. Qualifying Examination. The remainder of the credits must include a minimum of twenty-four semester hours of advanced (6000-level) graduate courses with a special emphasis on the doctoral area of specialization and an adequate treatment of other major areas of computer science and related disciplines.

**CANDIDACY EXAMINATION**

The Candidacy Examination will consist of two parts: (1) a four-hour written examination in the specialty area as defined by the plan of study, to be designed by the chairperson in consultation with the members of the Research Committee, and (2) a presentation of a written doctoral research prospectus to the Committee with an oral review of the proposal.

**RESEARCH COMMITTEE**

The formation of a Research Committee should occur as soon as the student has identified a potential research area. This committee will consist of no more than five faculty members, three of whom must be Computer Science graduate faculty and at least one of whom must be from outside the College of Arts and Sciences.
RESIDENCE REQUIREMENT
Students in the Ph.D. program are normally expected to be full-time students. At the very least, students must spend at least two (2) consecutive semesters as a full-time student at UCF (that is, registered for a minimum of nine hours each of the two terms). At least one of the semesters used for the residency requirement must occur while the student holds candidacy status.

TIME LIMITATION
The student has seven years from the beginning of regular graduate status in the Ph.D. program to complete all requirements for the Ph.D. degree.

SPECIAL DEGREE REQUIREMENTS
Each student is expected to demonstrate competency in an area relevant to his research. This must be carefully defined by the student’s committee and approved by the Computer Science Graduate Committee and the Office of Graduate Studies.

DISSERTATION AND ORAL DEFENSE
Each student must write a dissertation on his research which describes a significant original contribution to the field of Computer Science. The oral defense of the dissertation is administered by the Research Committee which makes a critical inquiry into the work reported in the dissertation and into the areas of knowledge that are immediately relevant to the research. All members vote on acceptance or rejection of the dissertation. The dissertation must be approved by a majority of the committee. Upon approval, the final dissertation must be deposited in the Department and in triplicate to the Office of the Graduate Studies before the final deadline of the term in which the student plans to graduate.

COMPUTER SCIENCE COURSES

CAP 5612 Computer Based Educational Systems 3 cr (3,0)
PR: COP 4550 or equivalent. The design and implementation of computer based educational systems. Selected projects using high-level programming languages.

CAP 5623 Heuristic Programming 3 cr (3,0)
PR: COP 4550, COT 4001. An introduction to basic artificial intelligence concepts including problem solving, knowledge representations, knowledge based systems, natural language understanding by computer.

CAP 5670 Introduction to Intelligent Systems 3 cr (3,0)
PR: COP 4550 or equivalent. Origin/evolution of machine intelligence; heuristic and epistemological approaches to artificial intelligence; what computers can and cannot do; symbiotic role of human computers.

CAP 5722 Computer Graphics Systems I 3 cr (3,0)
PR: COP 3404 or equivalent. Architecture of graphics processors; display hardware; principles of programming and display software; problems and applications of graphic systems.

CAP 5746 Simulation/Performance of Computer Systems 3 cr (3,0)
PR: CDA 5106 and COP 5613. Performance measurement of hardware and software systems, simulation techniques, monitoring programs.

CAP 6646 Computer Understanding of Natural Language 3 cr (3,0)
PR: CAP 5623. A study of the different approaches to build programs to 'understand' natural language. The theory of parsing, knowledge representation, memory and inference will be studied.

CAP 6672 Intelligent Systems 3 cr (3,0)
PR: CAP 5670. Study of computer systems exhibiting intelligent attributes, particularly learning; basic concepts related to characteristics, capabilities, design and principles of operation; discussion of relevant philosophical/social issues.
CAP 6723 Computer Graphic Systems II 3 cr (3,0)
PR: CAP 5722. Modeling design and analysis of graphics systems; data structures, numerical techniques, algorithms and optimum seeking methods for various problems in computer graphics.

CDA 5106 Advanced Computer Architecture I 3 cr (3,0)
PR: CDA 4102. Evolution of computer architecture; memory organization; cache; virtual memory; high speed processor design; pipeline multi-functional and array machines; special architecture case studies; overview of channel architecture.

CDA 5182 Architecture and Design of VLSI 3 cr (3,0)
PR: CDA 4102 or equivalent. Overview of VLSI technology. Logical design of basic subsystems; integrated system design tools; design of a VLSI computer system.

CDA 6107 Advanced Computer Architecture II 3 cr (3,0)
PR: CDA 5106. Multiprocess systems; interconnection network; stack architectures; high-level language architecture; design languages; performance evaluation.

CDA 6108 Current Topics In Computer Architecture 3 cr (3,0)
PR: CDA 6107. Associative machine architectures; non-numeric and database machines; data flow architecture; fault tolerant architecture.

CDA 6166 Computer Communications Networks Architecture 3 cr (3,0)
PR: CDA 5106. Introduction to networking; architecture of circuit, message and packet switching networks; local computer networks architecture; modems, protocols.

CDA 6168 Computer Networks Design and Distributive Processing 3 cr (3,0)
PR: CDA 6166 and COP 5613. Computer communications networks design considerations, network operating system, distributive processing.

CDA 6184 VLSI Algorithms and Architecture 3 cr (3,0)
PR: CDA 5182. VLSI algorithms, algorithms on regular geometries, hierarchically organized machines; Illustrative algorithms: Matrix, DFT, recurrence evaluation, pattern matching, searching, sorting, graph, etc.; area-time complexity issues.

CIS 5012 Information and File Systems Analysis 3 cr (3,0)
PR: COP 4530 or equivalent. Logical and physical information system design. Analysis of file systems. Introduction to data management systems.

CIS 5041 Information Organization and Retrieval 3 cr (3,0)

CIS 5234 Computational Techniques in Management Information Systems 3 cr (3,0)
PR: CIS 4112. The role of computers in management information systems; analysis, design approaches, processing methods and data management; use of state-of-the-art software in design and development.

CIS 6122 Data Base Management Systems 3 cr (3,0)

CIS 6124 Data Base Management Systems Theory 3 cr (3,0)
PR: CIS 6122. Theory of data models, data languages and data base management systems.

CNM 5142 Computational Methods/Linear Systems 3 cr (3,0)
PR: CNM 4110 and MAS 3113. Mathematical models for linear systems, linear programming, the simplex method, integer and mixed-integer programming, introduction to nonlinear optimization and linearization.

CNM 5148 Computational Methods/Applications 3 cr (3,0)
PR: CNM 4110. Computational solution techniques for algebraic equations, ODE and PDE models of applications selected from science, engineering, applied mathematics and computer science.
CNM 6144 Computational Methods/Analysis I  
PR: CNM 5142. Analysis of direct and iterative solutions of systems of linear equations, eigenvalues and vectors and roots of nonlinear equations, error analysis.

CNM 6145 Computational Methods/Analysis II  

COP 5554 Programming Languages II  
PR: COP 4550 and COT 4001. A formal study of programming language design and specification, BNF grammars, models of semantics, compilers and interpreters.

COP 5613 Operating System Design Principles  
PR: COP 4620 or equivalent. The structure and functions of operating systems, process communications techniques, scheduling algorithms, deadlocks, memory management, virtual systems, protection and security.

COP 5632 Software Engineering  
PR: COP 4550. Study of design techniques for large software systems, modularization, task assignment, management techniques, implementation techniques, testing, quality control, documentation and maintenance.

COP 5682 Software Tools  
PR: COP 4620 and COP 5554. Systems programming languages, concurrent programming, design and implementation of software development/maintenance tools. A large programming project is required.

COP 5655 Software Science  
PR: COP 5554 or equivalent. Basic principles of software science including program level, effort, impurity classes and execution. Language comparison project using tools of software science; semantic characterization of languages.

COP 5658 Theories of Programming Language Semantics  
PR: COP 5554. Models and theories of semantics. Lambda calculus, denotational semantics, attributed grammars, operational semantics, Vienna Definition Language.

COP 6614 Operating Systems  
PR: COP 5613. Techniques in the design and implementation of operating systems. Case studies of several experimental and commercial operating systems.

COP 6615 Operating Systems Theory  
PR: COP 5613. Scheduling and queuing theory as applied to the control of computer systems.

COP 6642 Introduction to the Theory of Translation  
PR: COP 5554. Language theory, the theory of translation and parsing, finite automata and pushdown acceptors.

COP 6643 Compiler Construction  
PR: COP 6642. Techniques in the design and implementation of compilers. A project is required.

COP 6672 Program Correctness and Verification  
PR: COT 4001. Mathematical techniques and automated theorem proving for program verification; inductive assertions for partial and total correctness, proving correctness of flowchart programs and recursive programs.

COT 5127 Formal Languages and Automata Theory  
PR: COT 4001. Classes of formal grammars and their relation to automata, normal forms, closure properties, decision problems, LR(k) grammars.

COT 5305 Design and Analysis of Algorithms  
PR: COT 4001. Classifications of algorithms, e.g., recursive, divide-and-conquer, greedy, etc. Data structures and algorithm design and performance. Time and space complexity analysis.
COT 5314 Computational Complexity 3 cr (3,0)
PR: COT 4001. Properties of algorithms, computational equivalence of machines, time-space complexity measures, examples of algorithms of different complexity, classification of algorithms, classes P and NP.

COT 5324 Computability Theory 3 cr (3,0)
PR: COT 4001. Models of computable procedures. Equivalence of models; unsolvable problems; hierarchies of unsolvability; applications to other areas of computer science including formal languages, automata theory, operating systems, automated theorem proving and program verification.

COT 6202 The Theory of Parsing and Translation 3 cr (3,0)
PR: COP 5554. Methods of top-down and bottom-up parsing, LL(k), recursive descent, precedence, bounded-context, SR(s,k), SLR(k), LALR(k), LR(k), parser compression and generation.

COT 6206 Abstract Formal Systems 3 cr (3,0)
PR: COT 5127. Abstract families of grammars and languages, algebraic automata theory, Petri nets, program schemata, L-systems.

CRM 5115 Economics of Computers 3 cr (3,0)
PR: CIS 5012. The computer industry, terms and conditions of sale and rental, cost and effectiveness of computer systems. Determining value, demand and price of computer services.

CRM 5131 Managing the Computer Professional 3 cr (3,0)
PR: CIS 5012 and MAN 5051 or C.I. The programming group, team and project tasks, personality factors, motivating, training, experience.

CAP, CDA, CIS, CNM, COP or COT prefixes are used for the following:
6918 Research
7919 Doctoral Research
7980 Doctoral Dissertation

ENGLISH
Richard Adicks ................................ Graduate Program Coordinator
Office: HFA 426, Phone 275-2212
R. R. Adicks, Ph.D. ........................................ Professor
R. A. Browne, C.E.F. ........................................ Professor
S. E. Omans, Ph.D. ........................................... Acting Chairman and Professor
R. E. Umphrey, Ph.D. ........................................ Professor
W. C. Wyatt .................................................. Professor
J. J. Donnelly, Ph.D. ........................................ Associate Professor
R. S. Grove, Ph.D. ........................................... Associate Professor
G. J. Schiffhorst, Ph.D. ..................................... Associate Professor
M. E. Sommer, Ph.D. ........................................ Associate Professor
B. W. Barnes, Ph.D. ......................................... Assistant Professor

ADMISSION
Minimal requirements for admission are a grade point average (GPA) of 3.0 for the last 60 semester credit hours earned as an undergraduate or a total score of 1000 on the aptitude section of the Graduate Record Examination (GRE). Foreign students must score at least 550 on the Test of English as a Foreign Language (TOEFL).

Other criteria for admission are a baccalaureate degree in English or its equivalent, at least a year's study of a foreign language, and approval by the Graduate Committee of the Department of English. Students are expected to have read widely in British and American literature, be highly competent in writing, and be familiar with the vocabularies of literary criticism and grammar.
A student with a baccalaureate degree in a subject other than English may qualify for Graduate status by presenting a score of at least 540 on the Advanced GRE Test in Literature and completing survey courses in British and American Literature.

PROGRAM IN ENGLISH

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 composition and creative writing.

The faculty of the Department of English have published research in Shakespearean drama, literature from the Renaissance to the present, and socio-linguistics, while others have published fiction and poetry. The result is a program which presents students with a wide variety of intellectual and cultural experiences.

MASTER OF ARTS DEGREE REQUIREMENTS—ENGLISH

Each student must take at least 30 hours, including one course in linguistics on the 4000 level or higher, and four core courses. A thesis is optional. Near the end of the degree program, each candidate writes a comprehensive examination based on a prescribed reading list.

Most classes meet in the evenings for the benefit of teachers and others who must attend part-time.

REQUIRED COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIT 6009</td>
<td>Literary Genres</td>
<td>3</td>
</tr>
<tr>
<td>LIT 6105</td>
<td>World Literature</td>
<td>3</td>
</tr>
<tr>
<td>LIT 6365</td>
<td>Movements in Literature</td>
<td>3</td>
</tr>
<tr>
<td>LIT 6535</td>
<td>Major Authors</td>
<td>3</td>
</tr>
<tr>
<td>LIN 5137</td>
<td>Linguistics (or equivalent)</td>
<td>3</td>
</tr>
</tbody>
</table>
ENGLISH COURSES

ENG 5018 Literary Criticism 3 cr (3,0)
Historical survey of major critics from classical antiquity to the modern era.

ENG 5028 Rhetoric and Literature 3 cr (3,0)
Investigates the development of written strategies of persuasion. Traces their relation to practical and imaginative literature. Applications to classroom teaching of literature and composition.

ENL 5176 Restoration and 18th Century English Drama 3 cr (3,0)

ENL 5226 Studies in Renaissance Non-Dramatic Literature 3 cr (3,0)
An examination of the poetry and prose of its major figures.

ENL 5236 The Age of Dryden and Pope 3 cr (3,0)
Prose, poetry, drama and literary traditions of British neoclassicism.

ENL 5335 Studies in Shakespeare 3 cr (3,0)
A selection of representative plays with emphasis on Shakespeare's development as an artist: aesthetics of dramatic literature.

ENL 5347 The Age of Milton 3 cr (3,0)
Emphasis on the non-dramatic works of John Milton. Selections from the non-dramatic works of other 17th Century figures.

LAE 6375 Practicum: The Teaching of Composition 3 cr (3,0)
Close work with an experienced instructor in teaching an undergraduate composition course, combined with regular group meetings for discussion of problems of teaching composition.

LIN 5137 Linguistics 3 cr (3,0)
Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.

LIN 6932 Problems in Linguistics 3 cr (3,0)
PR: LIN 5137. Study of the application of linguistics to various aspects of teaching and communication.

LIT 5097 Studies in Contemporary Fiction 3 cr (3,0)
Fiction in the last 20 years in the United States and Britain.

LIT 5366 The Romantic Revolt (19th Century Literature) 3 cr (3,0)
The romantic revolt in poetry and prose; English, American, and Continental literature, 1798-1832.

LIT 5367 The Experience of Realism 3 cr (3,0)
The development of realism in 19th Century British literature.

LIT 6008 Literary Genres 3 cr (3,0)
Provenance, structure and critical problems in a specific genre such as tragedy, the epic, the novel, or the lyric.

LIT 6105 World Literature 3 cr (3,0)
The study of the influence on British and American literature of selected foreign works read in translation.
LIT 6305 Media and Popular Literature 3 cr (3.0)
Study of the literary content of contemporary media; popular fiction, such as science fiction, detective fiction and historical fiction. Application to classroom teaching.

LIT 6365 Movements in Literature 3 cr (3.0)
The study of a movement such as naturalism, romanticism, or classicism, or of a literary period such as the Baroque or the Southern Renaissance.

LIT 6535 Major Authors 3 cr (3.0)
Study of a single author or of two or three associated authors, with emphasis on biography, bibliography, and style.

HISTORY
Bruce F. Pauley ................................ Graduate Program Coordinator
Office: HFA 605B, Phone 275-2224

T. Colbourn, Ph.D. ................................ President and Professor
B. F. Pauley, Ph.D. ................................... Professor
J. H. Shofner, Ph.D. ................................. Chairman and Professor
P. W. Wehr, Ph.D. .................................. Professor
R. C. Crepeau, Ph.D. ................................. Associate Professor
J. L. Evans, Ph.D. ................................... Associate Professor
E. B. Fetscher, Ph.D. ................................. Associate Professor
E. F. Kallina, Jr., Ph.D. .................. Associate Professor
T. D. Greenhaw, Ph.D. .................. Assistant Professor

ADMISSION
Minimal requirements for admission to the program are a grade point average (GPA) of 3.0 for the last 60 semester hours of undergraduate study and a score of at least 500 on the verbal section of the Graduate Record Examination (GRE).

PROGRAM IN HISTORY
The Master of Arts in History has two options: the thesis option and the non-thesis option. The program is aimed at providing for the academic growth of secondary school teachers, providing qualified teachers for community colleges, and contributing to the professional or personal enrichment of the students. Departmental areas of American-oriented research include European immigration, ethnic and racial minorities, popular culture and local history. Other fields include twentieth-century mass movements, Nazism and anti-Semitism in Central Europe, and English activities during the eighteenth century.

MASTER OF ARTS DEGREE REQUIREMENTS—HISTORY
Either option (thesis or non-thesis) requires 36 semester hours with no graduate credit given for any grade lower than 'B.' Specific requirements for each option are:

THESIS OPTION
- HIS 6159 Historiography 3 hours
- HIS 6971 Thesis 1-6 hours
- Area of Concentration (American or European) 18 hours
- Outside Area of Concentration in History 9 hours
- Electives 3 hours
NON-THESIS OPTION

HIS 6159 Historiography 3 hours
HIS 6946 Teaching Practicum 3 hours
Area of Concentration (American or European) 18 hours
Outside Area of Concentration 9 hours
Electives 3-6 hours
Total Minimum Semester Hours Required: 36

EXAMINATION REQUIREMENTS

Each candidate for the Master of Arts in History must pass written and oral examinations during the term in which the degree is to be awarded. The examinations will test the candidate's knowledge of history. It will include a thesis defense when that option is chosen.

Students electing the non-thesis track shall be expected to participate in several seminars, each of which will require a research paper. Since each paper will require that the student demonstrate knowledge of research techniques, of bibliographic methods, and of effective writing style, the research and writing skills normally expected in a thesis will not be ignored in this program.

HISTORY COURSES

NOTE: All graduate colloquia listed below require intensive reading in the literature of a given field, class discussions, and the preparation of papers. The prerequisites for 5000-level courses are senior standing and the consent of the instructor. All seminars listed below involve supervised research and the writing of term papers. The consent of the instructor is required for every seminar.

AMH 5116 Colloquium in U. S. Colonial History 3 cr (3,0)
AMH 5137 Colloquium in U. S. Revolutionary Period 3 cr (3,0)
Covers the years: 1763-1789.
AMH 5149 Colloquium in Early U. S. History, 1789-1815 3 cr (3,0)
Covers the early national period.
AMH 5169 Colloquium Age of Jackson 3 cr (3,0)
AMH 5176 Colloquium in Civil War and Reconstruction 3 cr (3,0)
AMH 5219 Colloquium in Late 19th Century U. S. 3 cr (3,0)
AMH 5296 Colloquium in 20th Century U. S. 3 cr (3,0)
AMH 5391 Colloquium in U. S. Cultural History 3 cr (3,0)
AMH 5407 Colloquium in American South 3 cr (3,0)
Covers topics of Southern history from colonial origins to the present.
AMH 5446 Colloquium in U. S. Frontier 3 cr (3,0)
AMH 5515 Colloquium in U. S. Diplomatic History 3 cr (3,0)
AMH 6117 Seminar in Colonial U. S. 3 cr (3,0)
Covers years: 1492-1763.
AMH 6138 Seminar in American Revolution
Covers years: 1763-1789.

AMH 6179 Seminar in Civil War and Reconstruction
Papers will be presented and defended in class.

AMH 6218 Seminar in Late 19th Century U. S.
Covers selected topics on the farmer and labor movements and the growth of industrialization.

AMH 6356 Seminar in U. S. Politics
Covers selected topics in American political history.

AMH 6393 Seminar in U. S. Cultural History

AMH 6408 Seminar in American South
Papers will be presented and defended in class.

AMH 6447 Seminar in U. S. Frontier

AMH 6499 Seminar in Local History
Supervised research and writing of term papers on selected topics in city, county and regional history.

AMH 6516 Seminar in U. S. Diplomatic History
Covers years 1776-to the present.

EUH 5237 Colloquium: Europe from 1815-1848

EUH 5238 Colloquium: Europe from 1848-1914

EUH 5247 Colloquium: Europe, 1919-1939

EUH 5285 Colloquium: Europe Since WW II

EUH 5517 Colloquium: Tudor-Stuart England

EUH 5527 Colloquium in 18th Century England
Covers Hanoverian Britain.

EUH 5579 Colloquium in Soviet Russia
Covers Russian history from 1911-present.

EUH 5595 Colloquium in Czarist Russia

EUH 5608 Colloquium European Intellectual History

EUH 6248 Seminar in Fascist Dictators
Compares the causes, characteristics and failures of fascist movements and dictators in Germany, Italy, Austria and other European countries from 1918-1945.

EUH 6288 Seminar in Europe after World War II

HIS 6159 Seminar in Historiography
Selected topics in the study of history. May be repeated for credit on consent of instructor.

HIS 6946 Teaching Practicum
Student observation, participation, direction, and leadership in a college survey course.

HIS 6971 Thesis
1-6 cr (1-6,0)
MATHEMATICAL SCIENCE
Larry C. Andrews .................................. Graduate Program Coordinator
Office: HFA 453, Phone 275-2585

A. M. Dutton, Ph.D. .................................. Professor
B. Ostle, Ph.D. .................................. Professor
A. J. Pettofrezzo, Ph.D. ............................... Professor
H. Sherwood, Ph.D. .................................. Professor
P. N. Somerville, Ph.D. ............................... Professor
L. C. Andrews, Ph.D. ................................. Associate Professor
J. M. Anthony, Ph.D. ............................... Chairman and Associate Professor
L. H. Armstrong, Ph.D. ............................... Associate Professor
R. C. Brigham, Ph.D. ................................ Associate Professor
M. N. Heinzer, Ph.D. ................................ Associate Professor
E. Norman, Ph.D. .................................... Associate Professor
P. J. O'Hare, Ph.D. .................................. Associate Professor
C. P. Rautenstrauch, Ph.D. ......................... Associate Professor
M. D. Taylor, Ph.D. ................................ Associate Professor
M. P. Barr ........................................... Assistant Professor
S. J. Bean, Ph.D. ..................................... Assistant Professor
R. M. Caron, Ph.D. .................................. Assistant Professor
L. A. Franklin, Ph.D. ............................... Assistant Professor
J. W. Hurst .......................................... Assistant Professor
R. C. Jones, Ph.D. .................................. Assistant Professor
L. C. Malone, Ph.D. ................................ Assistant Professor
R. Rodriguez, Ph.D. ................................ Assistant Professor
F. Salzman, Ph.D. .................................. Assistant Professor

ADMISSION
Admission requirements are the standard University criteria of a 3.0 grade point average (GPA) for the last 60 semester hours of credit earned towards the baccalaureate or a Graduate Record Examination (GRE) score of at least 1000 for the combined verbal-quantitative sections. The GRE must be less than 5 years old. Additionally, students entering the graduate program with regular status are assumed to have a working knowledge in such areas as calculus, differential equations, linear algebra (or matrix theory), with statistics and computer programming at the undergraduate level. Students interested in the statistical computing track (see below) should have completed COP 2511, COP 4530, MAC 3313, STA 4164, STA 4322, or equivalents. Those students who find they are not adequately prepared in one or more of these areas can select appropriate courses from the undergraduate curriculum to make up such deficiencies. Applicants not qualified for regular status may be initially admitted to the University in a postbaccalaureate status.

PROGRAM IN MATHEMATICAL SCIENCE
The Master of Science degree program in Mathematical Science is an interdisciplinary program intended to provide a broad base in applied mathematics, statistics, and computer science. In addition, a track in Statistical Computing is available. The program is available in the evening hours to accommodate the working student.

MASTER OF SCIENCE DEGREE REQUIREMENTS—MATHEMATICAL SCIENCE
The Mathematical Science degree requires a total of 30 credit hours, with a minimum of 24 hours of course work, in either the Basic Program or the Statistical Computing Track.
A. MATHEMATICAL SCIENCE—BASIC PROGRAM

REQUIRED COURSES 24 Semester Hours

A minimum of 24 semester hours must include graduate level mathematics, statistics, and computer science courses which are approved by the student’s committee. Suggested courses in these areas are listed below:

Suggested mathematics courses:
- MAA 5405 Techniques of Complex Variables 3 hours
- MAA 5211 Advanced Calculus 4 hours
- MAP 6406 Methods of Mathematical Analysis 4 hours

Suggested statistics courses:
- STA 5206 Statistical Analysis 3 hours
- STA 6236 Regression Analysis 3 hours
- STA 6447 Applied Probability 4 hours
- STA 6707 Multivariate Statistical Methods 3 hours
- STA 6857 Applied Time Series Analysis 3 hours

Suggested computer science courses:
- CNM 5142 Computational Methods/Linear Systems 3 hours
- CNM 6144 Computational Methods/Analysis 3 hours
- CNM 6145 Computational Methods/Analysis II 3 hours

RESTRICTED ELECTIVES

Electives may be chosen from approved mathematics, statistics or computer science courses which are taught by the Department of Mathematics and Statistics or the Department of Computer Science. Graduate courses outside these departments may also be used if approved by the student’s committee.

Total Minimum Semester Hours Required: 30

B. MATHEMATICAL SCIENCE—STATISTICAL COMPUTING TRACK

REQUIRED COURSES 12 Semester Hours

- STA 6236 Regression Analysis 3 hours
- STA 6246 Linear Models 3 hours
- CIS 5012 Information and File Systems Analysis 3 hours
- STA 6938 Special Topics (Statistical Computing) 3 hours

RESTRICTED ELECTIVES (3 of the following courses are required):

- STA 6707 Multivariate Statistical Methods 3 hours
- STA 6857 Applied Time Series Analysis 3 hours
- CNM 5142 Computational Methods/Linear Systems 3 hours
- CNM 6144 Computational Methods/Analysis I 3 hours
- STA 6938 Special Topics 3 hours

Other courses will be selected by the student in consultation with his advisor subject to the approval of the student’s graduate committee.

Total Minimum Semester Hours Required: 30

THESIS OR RESEARCH REPORT 2-6 Semester Hours

Anywhere from 2 to 6 semester hours of credit may be given for the writing of a paper on an appropriate topic. Ordinarily a paper which is of sufficient magnitude to justify awarding more than 4 hours of credit is considered a thesis. Otherwise it is considered a research report.

An oral defense of the thesis will be required of those students who elect to write a thesis.
EXAMINATION REQUIREMENTS
A final examination for either option may be given at the discretion of the student’s committee.

MATHEMATICAL SCIENCE COURSES

MAA 5211 Advanced Calculus 4 cr (4,0)

MAA 5405 Techniques of Complex Variables 3 cr (3,0)
PR: MAC 3314. Analytic functions; integration in the complex plane; Laurent series and residue calculus, inversion of Laplace transforms; conformal mappings; application in engineering and the physical sciences.

MAP 5426 Special Functions 3 cr (3,0)
PR: MAP 3302 or C.I. Series and integral representations, generating functions, recurrence relations and orthogonality properties of the special functions. Emphasis on Bessel, Legendre, hypergeometric functions, other special functions.

MAP 6406 Methods of Mathematical Analysis 4 cr (4,0)
PR: MAA 5211 or C.I. Fourier series, linear operators, integral equations, eigenvalue problems, calculus of variations.

MAP 6424 Transform Methods 3 cr (3,0)
PR: MAA 5405. Laplace, Fourier, Hankel and other integral transforms, inversion theorems; the Z transform; applications to physical problems.

MAP 6445 Approximation Techniques 3 cr (3,0)
PR: MAA 4228 or MAA 5211 or C.I. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.
STA 5206 Statistical Analysis 3 cr (3,0)
PR: A course in statistical methods and a course in statistical theory. This course relates the ideas of probability and statistics, including distribution theory, to the collection and analysis of data.

STA 6236 Regression Analysis 3 cr (3,0)
PR: MAS 3113, STA 4163 and STA 4164, or C.I. General linear model, model aptness and remedial measures, regression through the origin, independent and dependent indicator variables, multicollinearity, biased regression.

STA 6246 Linear Models 3 cr (3,0)
PR: MAS 3113, STA 4322 and STA 4164 or C.I. Theoretical development of full rank linear statistical models, least squares and maximum likelihood estimation, internal estimation, hypothesis testing, introduction to less than full rank models.

STA 6447 Applied Probability 4 cr (4,0)

STA 6707 Multivariate Statistical Methods 3 cr (3,0)

STA 6857 Applied Time Series Analysis 3 cr (3,0)

POLITICAL SCIENCE
Stuart A. Lilie .................................. Graduate Program Coordinator
Office: LIB 260, Phone 275-2608

R. Handberg, Ph.D. .................................. Associate Dean and Professor
H. Kennedy, Ph.D. .................................. Professor
R. Bledsoe, Ph.D. .................................. Associate Professor
S. A. Lilie, Ph.D. .................................. Chairman and Associate Professor
W. S. Maddox, Ph.D. .................................. Associate Professor
M. Stern, Ph.D. .................................. Associate Professor
M. W. Whisler, Ph.D. .................................. Associate Professor
J. Johnson-Freese, Ph.D. .................................. Assistant Professor
W. Q. Morales, Ph.D. .................................. Assistant Professor

ADMISSION
Minimum admission requirements are:
a. Submission of a quantitative-verbal Graduate Record Examination (GRE) score of at least 1000 or a 3.0 average in an undergraduate major in Political Science or a related discipline (subject to approval of the department). NOTE: A student must take the GRE, even if his undergraduate GPA is above a 3.0.

b. Submission of three letters of recommendation from individuals capable of assessing the applicant’s ability to undertake graduate work successfully.

Admission to regular graduate status in Political Science must be approved by the Department of Political Science.
PROGRAM IN POLITICAL SCIENCE

The Master of Arts in Political Science degree program is sufficiently flexible to meet a range of student needs including (1) preparing students to enter positions in government or the private sector in which the ability to comprehend, influence, and respond to government policy is critical; (2) providing education for teachers in the community colleges; (3) providing education for secondary school teachers seeking higher degrees; and (4) providing an M.A. opportunity for students who wish to pursue a Doctorate in political science elsewhere. Although the emphasis of the M.A. is in American politics and institutions, courses are available in international relations, comparative politics, and political theory.

MASTER OF ARTS DEGREE REQUIREMENTS—POLITICAL SCIENCE

The degree program in Political Science can be either a thesis or a non-thesis degree with the thesis option requiring a total of thirty hours and the non-thesis option requiring a total of thirty-three hours. The distribution of required courses, electives, and thesis hours are listed below:

<table>
<thead>
<tr>
<th>REQUIRED COURSES</th>
<th>6 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS 6734</td>
<td>Research Methods</td>
</tr>
<tr>
<td>POS 6746</td>
<td>Quantitative Methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTRICTED ELECTIVES</th>
<th>12 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of at least four of the following seminars required:</td>
<td></td>
</tr>
<tr>
<td>INR 6007</td>
<td>Seminar in International Politics</td>
</tr>
<tr>
<td>CPO 6007</td>
<td>Seminar in Comparative Politics</td>
</tr>
<tr>
<td>POS 6045</td>
<td>Seminar in American National Politics</td>
</tr>
<tr>
<td>POS 6207</td>
<td>Seminar in Political Behavior</td>
</tr>
<tr>
<td>POT 6007</td>
<td>Seminar in Political Theory</td>
</tr>
<tr>
<td>POS 6197</td>
<td>Seminar in Subnational Politics</td>
</tr>
<tr>
<td>PUP 6007</td>
<td>Seminar in Public Policy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDITIONAL ELECTIVES</th>
<th>6 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>May be taken in either Political Science or a cognate area.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THESIS OR NON-THESIS OPTIONS</th>
<th>6 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis Option</td>
<td>Complete a thesis (POS 6971) for 6 hours credit on a topic acceptable to the directing professor and committee.</td>
</tr>
<tr>
<td>Total Minimum Thesis Option Hours Required:</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Thesis Option</th>
<th>9 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete nine additional hours. Three of these hours must be in Political Science; the remaining six hours may be in a cognate area.</td>
<td></td>
</tr>
<tr>
<td>Total Minimum Non-Thesis Option Hours Required:</td>
<td>33</td>
</tr>
</tbody>
</table>

Note: Students seeking to use this degree to enter community college teaching or to pursue a Doctorate at a later time are strongly urged to opt for the thesis track.

EXAMINATION

Satisfactory performance on a comprehensive examination designed to measure knowledge and ability developed during the student’s program of study is required. The examination will usually be administered after satisfactory completion of 24 hours in the thesis option or 27 hours in the non-thesis option.
### POLITICAL SCIENCE COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPO 6007</td>
<td>Seminar in Comparative Politics</td>
<td>3 cr</td>
<td>Study of the institutions, functions, and problems of selected major foreign political systems and the methodology of comparative politics.</td>
</tr>
<tr>
<td>INR 6007</td>
<td>Seminar in International Politics</td>
<td>3 cr</td>
<td>Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods.</td>
</tr>
<tr>
<td>POS 6045</td>
<td>Seminar in American National Politics</td>
<td>3 cr</td>
<td>Examines the operation of U.S. national political institutions by focusing on elements of the system, such as judicial process or interactions between branches of government.</td>
</tr>
<tr>
<td>POS 6127</td>
<td>Issues in State Public Policy</td>
<td>3 cr</td>
<td>PR: C.I. Analysis of policy issues occurring in the American states with attention given to a single state and comparative studies.</td>
</tr>
<tr>
<td>POS 6157</td>
<td>Issues in Urban Public Policy</td>
<td>3 cr</td>
<td>PR: C.I. Study of characteristic policy issues which arise in urban political systems, and of various public responses to those issues.</td>
</tr>
<tr>
<td>POS 6197</td>
<td>Seminar in Subnational Politics</td>
<td>3 cr</td>
<td>Analysis of institutions, processes, and interrelationships of governmental units below the national level, with examination of factors contributing to conflict and cooperation among subnational units.</td>
</tr>
<tr>
<td>POS 6207</td>
<td>Seminar in Political Behavior</td>
<td>3 cr</td>
<td>A review of theory and findings in regard to mass political behavior, including participation attitudes, communication, and electoral behavior.</td>
</tr>
<tr>
<td>POS 6237</td>
<td>Public Opinion and Policy Formation</td>
<td>3 cr</td>
<td>PR: C.I. A substantive and theoretical approach to understanding relationships between public opinion and public policy, including opinion/linkage models as well as opinion measurement.</td>
</tr>
<tr>
<td>POS 6734</td>
<td>Research Methods</td>
<td>3 cr</td>
<td>Methods of research design and execution, including both conceptualization and data gathering.</td>
</tr>
<tr>
<td>POS 6746</td>
<td>Quantitative Methods</td>
<td>3 cr</td>
<td>PR: POS 6734 or C.I. Applications and analysis of problems in the use of statistical data. Emphasis on methods of analysis.</td>
</tr>
<tr>
<td>POS 6918</td>
<td>Directed Independent Research</td>
<td></td>
<td>Variable Credit</td>
</tr>
<tr>
<td>POS 6938</td>
<td>Special Topics/Seminars</td>
<td>3 cr</td>
<td>This course title covers all special topics courses which are not listed in the catalog with a course number.</td>
</tr>
<tr>
<td>POS 6946</td>
<td>Supervised Teaching Internship</td>
<td></td>
<td>Variable Credit</td>
</tr>
<tr>
<td>POS 6971</td>
<td>Thesis</td>
<td></td>
<td>Variable Credit</td>
</tr>
<tr>
<td>POT 6007</td>
<td>Seminar in Political Theory</td>
<td>3 cr</td>
<td>An examination of analytic and normative theories of politics and society, using selected topics as a substantive focus.</td>
</tr>
<tr>
<td>PUP 6007</td>
<td>Public Policy and Political Analysis</td>
<td>3 cr</td>
<td>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.</td>
</tr>
<tr>
<td>PUP 6057</td>
<td>Issues in National Public Policy</td>
<td>3 cr</td>
<td>PR: C.I. Study of the establishment and evaluation of selected national issues and priorities, means of implementation, and impacts of government programs.</td>
</tr>
<tr>
<td>PUP 6058</td>
<td>Issues in International Public Policy</td>
<td>3 cr</td>
<td>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.</td>
</tr>
</tbody>
</table>
ADMISSION
In addition to the minimum admission criteria set forth by Graduate Studies, three standard letters of reference (at least one from an academic source) must be initiated by the student and sent by the reference directly to the Department. A Departmental admissions committee reviews the student's credentials and notifies the student of its decision. Admission to the programs occurs only in the Fall Semester. Completed applications are due in the Department by April 1.

COMPETENCY REQUIREMENTS
Certain competencies are required of all students.

a. **General.** All students must demonstrate competency in specified foundation areas as shown below. All students are strongly encouraged to have an undergraduate course in statistics.

b. **Clinical Program.** Competency in areas of Abnormal, Developmental, Learning, Personality, Physiological Psychology, and in Tests and Measurement may be satisfied by either of the following methods:
1. Undergraduate course work in one or more of the above areas with an earned grade of A or B, no longer than 5 years previous to admission to the program (or taken concurrently with the graduate program).
2. An Advanced Psychology GRE (Code 81) score of 600 or greater, achieved no longer than 5 years previous to admission to the program.

c. **Industrial/Organizational Program.** Competency in areas of Developmental, Learning, Motivation, Personality and Social Psychology may be satisfied by either of the following methods:
1. Undergraduate course work in one or more of the above areas with an earned grade of A or B, no longer than 5 years previous to admission to the program (or taken concurrently with the graduate program).
2. An Advanced Psychology GRE (Code 81) score of 600 or greater, achieved no longer than 5 years previous to admission to the program.
PROGRAMS IN PSYCHOLOGY

There are two different Master of Science programs in Psychology.

The Master of Science Degree Program in Clinical Psychology is concerned with the application of psychological principles to individuals. Major areas of emphasis include psychological assessment or evaluation skills, intervention or counseling and psychotherapy skills, plus an academic foundation in research methods. The program was initiated for the purpose of providing training and preparation at the Master's level for individuals desiring to deliver psychological services through community agencies. Clinical psychologists are involved in mental health rehabilitation through individual, marital, family and group psychotherapy, as well as crisis intervention and specialized therapeutic procedures. Psycho-diagnosis, consultation, education and administration are also roles frequently assumed by the clinical psychologist.

The Master of Science Degree Program in Industrial/Organizational Psychology is concerned with the application of psychological principles to organizations. Major areas of emphasis include selection and training of employees, job satisfaction, test theory and construction, assessment center technology, statistics and experimental design and a variety of current topics.

Industrial/Organizational psychologists are involved in many issues of critical importance to society including fairness in the selection and treatment of employees, and the creation of work environments which maximize the satisfaction and commitment of employees.

MASTER OF SCIENCE DEGREE REQUIREMENTS—CLINICAL PSYCHOLOGY

The Clinical M.S. degree program is a two-year, four-semester program for full-time students with no summer course work. The program consists of a minimum of 42 semester hours of work as follows:

<table>
<thead>
<tr>
<th>Academic Course Work</th>
<th>27 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs and Practica</td>
<td>6 hours</td>
</tr>
<tr>
<td>Internship (see details of program)</td>
<td>6 hours</td>
</tr>
<tr>
<td>Thesis or Specialty Paper</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Total Minimum Semester Hours Required: 42

QUALIFYING EXAMINATION

At the conclusion of all specified first-year course work and as a prerequisite for Internship (usually before the start of the Fall, 2nd Year), students are expected to take the Qualifying Examination which is a broad integration of the student's knowledge and comprises two sections: Psychological Assessment and Psychological Intervention.

CLINICAL INTERNSHIP REQUIREMENT

The purpose of the internship requirement is to provide the Clinical Psychology M.S. candidate with a comprehensive, practically-based experience under direct supervision. A public agency or non-profit institution offering services to individuals, with non-discriminatory practices (including ability to assume financial responsibilities) is the prototype. The intern is assigned to an acceptable agency for two consecutive academic semesters. An additional commitment of two hours per week is required for the group of interns to meet with a Departmental faculty member for
review, feedback and discussions. The intern participates in a wide variety of psychological assessment procedures, including intellectual, personality, educational, neuropsychological and differential diagnosis. A major portion of the training is in the area of psychotherapy/counseling.

The intern is expected to make a presentation at least once during the internship at the agency's biweekly formal seminars.

Given the community-based structure of the agency, it is desirable for the intern to have some exposure to the consultation role. It is believed that supervision by qualified and experienced personnel is the primary learning mode by which the intern develops his professional expertise and augments the classroom material previously acquired.

Facilities are provided by the intern or agency for audio and/or video tape recording of selected assessment and intervention experiences. The intern is provided with a system for maintaining an accurate account of his activity during the week. In addition, an Internship Expectation form is completed by the intern and supervisors. A maximum of 20 percent of the training time may be assigned to special services within the agency, or upon approval, in an area of interest to the intern at another facility.

RESEARCH REPORT OR THESIS
Each student will satisfactorily complete either a library review research paper or an empirical research project. An oral defense is required.

MASTER OF SCIENCE DEGREE REQUIREMENTS—INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

The Industrial/Organizational M.S. degree program is a four semester program for full-time students with no summer course work. The program consists of a minimum of 40 semester hours of work as follows:

| Academic Class Work | 26 hours |
| Practica and Labs   | 6 hours  |
| Thesis              | 8 hours  |
| **Total Minimum Semester Hours Required:** | **40** |

QUALIFYING EXAMINATIONS
The I/O program includes two qualifying examinations. The first is administered at the end of the first two semesters of course work and covers all course content. The second examination is administered near the end of the program and covers material from the total program.

PRACTICA
Practica assignments serve to provide the student with experience in an applied setting while also aiding the organization in which the practicum occurs to meet some specific project need. Practica possibilities generated by the I/O faculty and students, may involve settings in private industry; federal, state, or local government; educational institutions; or consulting firms.

Practica assignments involve two semester commitments ranging from 12-15 hours per week on the part of the student. Depending on the nature of the assignment, this time may be distributed among the organization, library, field work, etc., in a variety of ways.
For each practicum a meeting is held between the student, the supervising faculty member, and a representative of the organization in which the work will be accomplished. Behavioral objectives are agreed upon and it is expected that the student will carry out these objectives during the assigned time.

Each practicum placement is supervised by a faculty member and the student is also responsible to the ‘contact’ person in the organization where the work is occurring.

Full-time students are typically assigned practica projects during the Fall and Spring terms of their second year.

RESEARCH REPORT OR THESIS

The I/O program requires that the student complete an empirical research thesis with an oral defense.

CLINICAL PSYCHOLOGY COURSES

CLP 6441 Psychological Assessment I 3 cr (2,2)
PR: Graduate admission and C.I. Theories and techniques of psychological assessment with primary emphasis on intellectual assessment, interviewing skills and report writing.

CLP 6445 Psychological Assessment II 3 cr (2,2)
PR: CLP 6441, Graduate admission and C.I. Theories and techniques of psychological assessment with primary emphasis on objective and projective techniques of personality assessment, interviewing skills and report writing.

CLP 6456 Clinical Intervention I 3 cr (2,2)
PR: Graduate admission and C.I. Introduction to Counseling Theory. Experiential Laboratory.

CLP 6457 Clinical Intervention II 3 cr (2,2)

CLP 6458 Clinical Intervention III 3 cr (2,2)
PR: CLP 6456, CLP 6457. Graduate admission and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique.

CLP 6459 Clinical Intervention IV 3 cr (2,2)
PR: CLP 6441, 6445, 6456, 6457, 6458, graduate admission and C.I. Survey of theory and techniques in crisis intervention, family therapy, couples therapy, and sex therapy.

CLP 6932 Ethical and Professional Issues in Clinical Psychology 2 cr (2,0)
PR: Graduate admission, C.I. and Internship. Examination of APA Code of Ethics as applied to clinical situations. Topics include confidentiality, commitment procedures, licensing laws.

CYP 6948 Psychology Internship 2-4 cr (2,20)
PR: Graduate admission, 2nd year status and C.I. Supervised placement in community setting for 8-20 hours per week. (May be repeated for credit.)

PSB 6446 Advanced Abnormal and Clinical Psychopharmacology 3 cr (3,0)
PR: Graduate admission and C.I. Diagnosis of psychopathology and drug treatment of these disorders. Examination of the efficacy of psychoactive drugs.

PSY 6216 Advanced Research Methodology I 4 cr (3,2)
PR: Graduate admission and C.I. Logic and procedures of psychological research and evaluation; application of experimental and non-experimental techniques in analyzing psychological variables; review of relevant psychological research.

PSY 6918 Research Report
PSY 6946 Psychology Practicum 1 cr (0.1)
PR: Graduate admission and C.I. Supervised practice in assessment and/or intervention techniques. (Will be repeated for credit.)

PSY 6971 Thesis

INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY COURSES

INP 6215 Assessment Centers and Leadership 3 cr (3.0)
PR: Graduate admission and C.I. Survey of assessment center methodology and application and of leadership theory and practice.

INP 6317 Organizational Psychology and Motivation 3 cr (3.0)
PR: Graduate admission and C.I. Review of theories, research and application of psychological principles to organizational settings and human motivation.

INP 6605 Training and Performance Appraisal 3 cr (3.0)
PR: Graduate admission and C.I. Survey of theories, research and practice in the areas of Industrial/organizational training and performance appraisal.

INP 6939 Current Topics and Applied Problems in Industrial/Organizational Psychology 3 cr (3.0)
PR: Graduate admission and C.I. Survey of current topics in Industrial/Organizational psychology with emphasis on applied problems.

INP 6946 Industrial Psychology Practicum I 3 cr (1.6)
PR: Graduate admission and C.I. Supervised placement in setting.

INP 6947 Industrial Psychology Practicum II 3 cr (3.0)
PR: Graduate admission and C.I. Supervised research in industry. (May be repeated for credit.)

PSY 6216 Advanced Research Methodology I 4 cr (3.2)
PR: Graduate admission and C.I. Logic and procedures of psychological research and evaluation; application of experimental and non-experimental techniques in analyzing psychological variables; review of relevant psychological research.

PSY 6217 Advanced Research Methodology II 4 cr (3.2)
PR: PSY 6216, Graduate admission and C.I. Structure and planning of complex psychological experiments; internal and external validity; application of advanced experimental procedures in analyzing psychological variables; review of relevant psychological research.

PSY 6308 Psychological Testing I 3 cr (3.0)
PR: Graduate admission and C.I. Theory of test construction including test reliability and validity.

PSY 6318 Applied Testing and Selection 3 cr (3.0)
PR: Graduate admission and C.I. Issues in selecting employees and an examination of currently used tests in Industry.

PSY 6971 Thesis
PUBLIC POLICY

N. Gary Holten .................................. Graduate Program Coordinator
Office: PH 336, Phone 275-2603

F. K. Gibson, Ph.D. .................................. Associate Professor
N. G. Holten, Ph.D. .................................. Chairman and Associate Professor
J. H. Ammons, Ph.D. .................................. Assistant Professor
J. S. Duffey ............................................. Assistant Professor
R. M. Jones ............................................. Assistant Professor
R. J. Korstad ............................................. Assistant Professor

ADMISSION

In addition to the standard admission criteria to Graduate Studies, with the Graduate Record Examination (GRE) scores no more than five years old, it will be necessary to submit three letters of recommendation from individuals capable of assessing the applicant's ability to successfully undertake graduate work.

An undergraduate degree in Political Science or Public Administration is desirable. Individuals with strong backgrounds in related disciplines may be admitted to the program although additional course work may be required to remove deficiencies. Students must have some basic course work in Statistics, Computer Science, Economics, and American National Government. Students whose native language is other than English are required to have a minimal TOEFL score of 550.

PROGRAM IN PUBLIC POLICY

The Department of Public Service Administration offers 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 and administration. The program offers an opportunity for students to acquire knowledge and master techniques essential to the design, implementation, administration, and evaluation of policy programs at all levels of government.

MASTER OF PUBLIC POLICY DEGREE REQUIREMENTS

The student must complete a basic core program of 23 hours. Upon completion of the core a student may elect to specialize in a particular cognate area or complete a generalist administration program. The program of study is developed in consultation with the student's major professor and approved by the graduate committee of the Department. A minimum of three courses totaling not less than nine (9) semester hours must be completed for a cognate field outside of the Department. A minimum of three courses totaling not less than eleven (11) hours is required for the general administration cognate. A student may select a policy analysis cognate from the Department of Political Science provided prior program approval is obtained from both departments. A minimum of thirty-six (36) hours is required for completion of the program.
### MINIMUM CORE REQUIREMENTS

**Core Courses:**
- **Policy and Administration**
  - PAD 6037 Public Organizations 4 hours
  - PAD 6307 Policy Implementation 4 hours

**Analytical Tools:**
- PAD 6701 Analytical Techniques for Public Administration 4 hours
- POS 6734 Research Methods OR 3 hours
- SOC 6501 Social Research 3 hours

**Public Management Skills:**
- PAD 6227 Public Budgeting 4 hours
- PAD 6417 Human Resource Management 4 hours

**SPECIALIZED SKILL OR COGNATE AREA:** Variable - 9 hour minimum
A minimum of three courses which concentrate on a specific skill area germane to the practice of public policy administration may be drawn from other departments.

**RESEARCH REPORT**
Four semester hours of credit must be earned for an investigatory research project that results in a research report acceptable to the Department's Graduate Committee.

Total Minimum Semester Hours Required: 36

**EXAMINATION**
A comprehensive written examination covering the required core courses must be successfully completed before the submission of the research report. The examination may not be undertaken prior to the completion of the 23-hour core component. An oral examination will be administered by the departmental Graduate Committee upon completion of the student's research report.

### PUBLIC POLICY COURSES

**CCJ 5485 Issues in Justice Policy** 4 cr (4,0)
Examination of selected issues of public policy regarding the functions and roles of criminal justice agencies vis a vis other government departments or agencies and public purposes.

**PAD 5807 Administrative Practice in the Public Sector** 4 cr (4,0)
The application of various theoretical concepts to the 'real world' of public administration. Policy formulation and execution is examined through the case study model.

**PAD 6037 Public Organizations** 4 cr (4,0)
An examination of the nature of public organizations and the impact of bureaucratic behavior on public policy formulation, implementation, and administration.

**PAD 6227 Public Budgeting** 4 cr (4,0)
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 6307 Policy Implementation** 4 cr (4,0)
Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.
PAD 6417 Human Resource Management 4 cr (4,0)
The administrator as manager and motivator of public employees with particular emphasis upon organizational behavior and contemporary public service legislation.

PAD 6701 Analytic Techniques for Public Administration 4 cr (4,0)
Analysis of rational choice theories, incremental decision-making, and a variety of techniques for public administration models.

PAD 6934 Issues in Public Administration 4 cr (4,0)
PR: C.I. Analysis of both substantive and theoretical issues confronting the broad spectrum of contemporary public administration.

SOCIOMETRY, APPLIED
William R. Brown ............................................ Graduate Program Coordinator
Office: FA-451, Phone 275-2227

W. D. Allen, Ph.D. ............................................. Professor
C. M. Unkovic, Ph.D. ........................................ Professor
B. Wright, Ph.D. ............................................. Professor
W. R. Brown, Ph.D. ....................................... Chairman and Associate Professor
D. R. Dees, Ph.D. ......................................... Associate Professor
J. E. Hodgin, Ph.D. ......................................... Associate Professor
J. T. Washington, Ph.D. ............................... Associate Professor
I. J. Cook, Ph.D. ............................................ Associate Professor
R. S. Miller, Ph.D. ........................................ Assistant Professor
A. Stearman, Ph.D. ........................................ Assistant Professor
W. D. Tropf, Ph.D. ........................................ Assistant Professor

ADMISSION
In addition to the standard admission criteria to Graduate Studies, the Department requires complete transcripts of past university/college work and three letters of reference including at least one from an academic source familiar with the applicant’s abilities.

The Graduate Record Examination (GRE) scores should be no more than seven years old.

Before a student can be admitted to the program, the following requirements must be met: either a B.A. or B.S. in Sociology. If the baccalaureate degree is in another field, successful completion of undergraduate courses in sociological theory, social research methods, and statistics are necessary.

Applicants’ records will be reviewed on an individual basis for academic deficiencies. Supplemental course work may be recommended. Note also that there is no automatic connection between acceptance as a postbaccalaureate student and acceptance into this degree granting program. Consult the Program Coordinator whenever questions arise.

PROGRAM IN APPLIED SOCIOLOGY
The purpose of the Master of Arts in Applied Sociology graduate program is to train individuals to effectively apply sociological principles and research skills in a variety of organizational settings. As examples of applied research areas, our graduate faculty are involved in evaluation of programs and organizations, assessment of community needs, demography, human relations, and social systems analysis.
The program is designed to lead to a terminal Master's degree for those individuals seeking employment in non-academic settings, although some students eventually intend to seek a doctorate in Applied Sociology.

---

**MASTER OF ARTS DEGREE REQUIREMENTS—APPLIED SOCIOLOGY**

The degree program requires 36 hours including the thesis. The required courses, electives, practicum, and thesis credit hours are distributed as follows:

<table>
<thead>
<tr>
<th><strong>REQUIRED COURSES</strong></th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 6481</td>
<td>Social Systems Analysis and Evaluation 2 hours</td>
</tr>
<tr>
<td>SOC 6486</td>
<td>Principles of Applied Sociology 2 hours</td>
</tr>
<tr>
<td>SOC 6501</td>
<td>Social Research 3 hours</td>
</tr>
<tr>
<td>SOC 6510</td>
<td>Research Analysis 3 hours</td>
</tr>
<tr>
<td>SOC 6825</td>
<td>Group Dynamics 2 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>RESTRICTED ELECTIVES</strong></th>
<th>4 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 6302</td>
<td>Community Development and Planned Change 2 hours</td>
</tr>
<tr>
<td>SOC 6426</td>
<td>Complex Organizations 2 hours</td>
</tr>
<tr>
<td>SOC 6487</td>
<td>Program Design and Development 2 hours</td>
</tr>
<tr>
<td>SOC 6515</td>
<td>Advanced Social Research 2 hours</td>
</tr>
<tr>
<td>SOC 6555</td>
<td>Grant Writing 2 hours</td>
</tr>
<tr>
<td>SOC 6872</td>
<td>Human Relations in the Applied Setting 2 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NON-RESTRICTED ELECTIVES</strong></th>
<th>4 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A student may select 4 or more hours of non-restricted course work in consultation with his advisor.</td>
<td></td>
</tr>
</tbody>
</table>

**PRACTICUM** of actual field experience is required. Minimum of 8 hours
THESIS based on actual field experience is required. Minimum of 4 hours

Total Minimum Semester Hours Required: 36

EXAMINATION REQUIREMENTS
A comprehensive written examination of the core courses and an oral defense of the thesis are mandatory requirements. An oral examination of core courses is required only if the student's committee feels it is warranted.

APPLIED SOCIOLOGY COURSES

SOC 6302 Community Development and Planned Change 2 cr(2,0)
PR: SOC 6486, Graduate status and C.I. The study of organization, structures, and processes of communities and neighborhoods. Strategies of directed change.

SOC 6426 Complex Organizations 2 cr(2,0)
PR: SOC 6486 and C.I. Study of social interaction, power, and mobility within complex social organizations.

SOC 6481 Social Systems Analysis 2 cr(2,1)
PR: SOC 6486, Graduate status and C.I. Examination, analysis of goals, objectives and change in social systems. Techniques of system needs assessment.

SOC 6486 Principles of Applied Sociology 2 cr(2,0)
PR: Graduate status and C.I. Introduction to methods and theories of applied sociology.

SOC 6487 Program Design and Development 2 cr(2,1)
PR: SOC 6486, SOC 6481 and C.I. Determination of system design requirements, techniques of establishing standards for desired output, and implementation of program objectives and goals.

SOC 6501 Social Research 3 cr(2,1)
PR: Graduate status and C.I. Research methodology, including problem conceptualization, research proposals, data collection and analysis, and presentation of findings.

SOC 6510 Research Analysis 3 cr(2,1)
PR: SOC 6486, SOC 6501, Undergraduate Statistics, Graduate status and C.I. Development of various research designs to analyze and interpret existing data from organizations in the community.

SOC 6515 Advanced Social Research and Evaluation 2 cr(1,2)
PR: SOC 6501, SOC 6510, and C.I. Advanced methods of social research in applied sociology with emphasis on evaluation research.

SOC 6565 Grant Writing 2 cr(2,0)
PR: SOC 6486, SOC 6501, and C.I. Identification of funding sources, formats, and community response and background information in the development and management of grant applications.

SOC 6825 Group Dynamics 2 cr(2,1)
PR: SOC 6486, Graduate status and C.I. Examination of social processes in small groups; dynamics of interaction and network analysis.

SOC 6872 Human Relations in the Applied Setting 2 cr(2,0)
PR: SOC 6486, Graduate status and C.I. An analysis of the problems of ethnic, economic, and minority groups in social settings.
COLLEGE OF BUSINESS ADMINISTRATION

L.P. Jarvis .............................................. Graduate Program Coordinator
Office: PH 202, Phone 275-2186

C.L. Eubanks ........................................... Dean
L.P. Jarvis ........................................... Associate Dean
W.R. Kilbride .......................................... Assistant Dean

The College of Business Administration offers three professional programs leading to the Master's degree: Master of Business Administration, Master of Science in Accountancy, and Master of Arts in Applied Economics. All graduate programs in business are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

FACULTY

Accountancy
C.G. Avery, Ph.D. ...................................... Chairman and Professor
C.H. Brandon, Ph.D. .................................... Associate Professor
W.L. Johnson, Ph.D. .................................... Associate Professor
T.E. Phillips, Ph.D. .................................... Associate Professor
J.H. Salter III, Ph.D. .................................. Associate Professor
L.J. Savage, Ph.D. ...................................... Associate Professor
T.L. Campbell, D.B.A. .................................. Assistant Professor
S.R. Cossaboom, Ph.D. ................................. Assistant Professor
P.R. Grierson, Ph.D. .................................... Assistant Professor
D.W. Scarlett, L.L.M. ................................... Assistant Professor

Economics
R.E. Hicks, Ph.D. ....................................... Professor
W.J. Klages, Ph.D. ...................................... Professor
B.A. Rungeling, Ph.D. .................................. Chairman and Professor
F.A. Raffa, Ph.D. ....................................... Associate Professor
K.R. White, Ph.D. ....................................... Associate Professor
J.A. Xander, Ph.D. ...................................... Associate Professor
R.G. Fritz, Ph.D. ........................................ Assistant Professor
D. Hosni, Ph.D. .......................................... Assistant Professor
D. McNiel, Ph.D. ........................................ Assistant Professor

Finance
J.W. Budina Jr., Ph.D. ................................. Professor
W.W. Reiff, D.B.A. ...................................... Professor
D.R. Klock, Ph.D. ....................................... Associate Professor
E.A. Moses, Ph.D. ...................................... Chairman and Associate Professor
S.M. Atkinson, D.B.A. .................................. Assistant Professor
G.T. Chambers, L.L.M. ................................ Assistant Professor
J.M. Cheney, Ph.D. ...................................... Assistant Professor
E.T. Veit, Ph.D. ......................................... Assistant Professor

Management
N. Comish, Ph.D. ....................................... Professor
T.H. Jones Jr., Ph.D. .................................... Professor
R.C. Reidenbach, Ph.D. ................................. Chairman and Professor
W. Berry, Ph.D. ......................................... Associate Professor
Admission to graduate study in the College of Business Administration is open to individuals with a baccalaureate degree in any discipline from a regionally accredited college or university. No previous training in business or economics is required as a prerequisite for graduate status. Thus, all graduate programs are open to graduates in education, engineering, arts, sciences, and other fields as well as business.

Admission is granted to individuals showing high promise of success in postgraduate studies. Various measures of high promise are used, including:

(a) The applicant's record of academic achievement while registered as an upper division student (usually a minimum 3.0 grade point average on a 4.0 scale).

(b) The applicant's performance on the Graduate Management Admission Test (GMAT) including the total score as well as the verbal and quantitative components (normally a total score of 450 is necessary for further consideration). For the M.A. in Applied Economics only, scores on either the Graduate Record Exam (GRE) or GMAT may be submitted. If the GRE is used, a total score of at least 1,000 on the quantitative-verbal sections is normally required for further consideration. In all instances, test scores must be less than five years old.

Foreign students whose native language is not English are required to achieve a score of at least 575 on the Test of English as a Foreign Language (TOEFL) for further consideration.

Enrollment in graduate courses in the College of Business Administration is limited to students who have been accepted and classified with regular graduate status in the M.B.A. program, M.S. in Accountancy or the M.A. in Applied Economics, and to other students with graduate status elsewhere in the University if they have completed the appropriate prerequisite work.

An applicant will not be considered for admission to the graduate course until a score on the GMAT or GRE (and TOEFL, if appropriate) has been received, in addition to transcripts showing proof of attainment of the bachelor's degree, and transcripts from all colleges attended.
ACADEMIC STANDARDS

Graduate students in the College of Business Administration must maintain an overall 3.0 grade point average in both the Foundation and Advanced coursework. In the event this is not maintained, a graduate student shall be placed in an academic provisional status. If an overall grade point average of 3.0 is then not attained by the completion of the subsequent 9 hours of coursework, the individual will be disqualified.

Further, if a candidate accumulates "C" or less and/or unresolved "I" grades in more than three (3) Foundation or equivalent courses in the Common Body of Knowledge, this will result in disqualification from the program. (In addition, in the MS in Accountancy Program, a minimum grade of "C" must be earned in all accountancy Foundation courses.) No graduate level course with a grade of "D" is acceptable.

If a graduate student accumulates more than six (6) hours of "C" or less and/or unresolved "I" grades on coursework in the approved Program of Study, this will result in disqualification.

MASTER OF BUSINESS ADMINISTRATION

Program Advisor: L. P. Jarvis, PH 202, Phone 275-2187

The program leading to the Master of Business Administration degree at the University of Central Florida is designed to develop the student's analytical, problem-solving, and decision-making capabilities to meet the challenges of leadership in professional management positions at present and in the changing world of the future.

The curriculum provides a challenging and creative learning environment in an intensive program of study that has a broad-based administrative emphasis. Recognizing that management methods of tomorrow may bear little resemblance to techniques in current use, the program emphasis is on sound general principles and decision-making techniques that provide a base for continued learning and professional development rather than upon business procedures which are subject to obsolescence.

The program can be completed on either a full-time or part-time basis.

MASTER OF BUSINESS ADMINISTRATION—DEGREE REQUIREMENTS

Normally, the MBA program can be completed in two years of full-time study. Recent related course work in business administration and certain quantitative areas, however, can reduce the length of the program to one calendar year of full-time study. The curriculum consists of two parts, a foundation core and a professional core. The foundation core is defined by the course requirements listed below and its completion is a prerequisite to entering the professional core. Note that all or part of the foundation requirements may be satisfied through advanced standing given in view of a student's prior equivalent course work at the undergraduate or graduate level provided such course work has been satisfactorily completed within the past five years and, preferably, at an AACSB-accredited school.

FOUNDATION CORE

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 5004</td>
<td>Financial Accounting Concepts</td>
<td>3</td>
</tr>
<tr>
<td>BUL 5125</td>
<td>Legal and Social Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5055</td>
<td>Economic Concepts</td>
<td>3</td>
</tr>
</tbody>
</table>

24 Semester Hours
The Professional Core consists of 24 credit hours of advanced course work that substantially extends and applies knowledge developed in the Foundation Core. Through the selection of nine credit hours of electives, the student has the opportunity to develop some degree of specialization in one of the following: accountancy, economics, finance, management, or marketing.

PROFESSIONAL CORE AND ELECTIVES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 6734</td>
<td>Managerial Accounting Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6111</td>
<td>Economic Analysis of the Firm</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6415</td>
<td>Statistical Methods for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>FIN 6406</td>
<td>Financial Analysis and Management</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6206</td>
<td>Organization Behavior and Development</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6814</td>
<td>Quantitative Models for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>MAR 6716</td>
<td>Marketing Policy</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6721</td>
<td>Business Policy and Responsibility</td>
<td>3</td>
</tr>
</tbody>
</table>

ELECTIVES

Electives may be taken in accountancy, economics, finance, marketing or management. An elective course may be taken outside the College of Business Administration with permission of the Program Coordinator. The MBA program does not require a thesis.

Satisfactory completion of an end of program examination is required before the MBA Degree may be awarded. The examination consists of four equal parts covering the areas of economics, finance, management, and marketing. The student must pass each of the parts. If any part of the examination is failed on the initial attempt, the student is eligible to retake that part during the immediate following term.

Total Semester Hours Required: 33-60

MASTER OF SCIENCE IN ACCOUNTANCY

Program Advisor: T. Phillips, PH 403, Phone 275-2322

The Master of Science in Accountancy (MSa) program provides candidates with greater breadth and depth in accounting than is possible in baccalaureate programs. The program emphasis is on the preparation of individuals for careers as professional accountants in financial institutions, governments, industry, nonprofit organizations, and public practice. (This program satisfies the requirements of the State Board of Accountancy rule 21-A-27.02.)

MASTER OF SCIENCE IN ACCOUNTANCY—DEGREE REQUIREMENTS

The curriculum consists of a series of foundation courses followed by 33 hours of advanced courses. The foundation courses may be entirely or partially satisfied.
through prior equivalent undergraduate course work. Normally, such course work must have been satisfactorily completed within the past five years, preferably at an AACSB accredited college or university. Some of the prerequisite course work may be satisfied through credit by examination if approved by the College.

PART I—FOUNDATION

All of the MBA Foundation Courses                                            24 Semester Hours
Accountancy Foundation Courses                                              33 Semester Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUL 3112</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>BUL 3121</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3101</td>
<td>Financial Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3121</td>
<td>Financial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3141</td>
<td>Financial Accounting III</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3401</td>
<td>Cost Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3701</td>
<td>Accounting Information Systems I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 3861</td>
<td>Financial Accounting for Governmental and Nonprofit Organizations</td>
<td>3</td>
</tr>
<tr>
<td>ACC 4201</td>
<td>Financial Accounting IV</td>
<td>3</td>
</tr>
<tr>
<td>ACC 4501</td>
<td>Federal Income Tax I</td>
<td>3</td>
</tr>
<tr>
<td>ACC 4601</td>
<td>Auditing I</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics through calculus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Following satisfactory completion of the Foundation courses listed above, the Master of Science in Accountancy is awarded upon satisfactory completion of a graduate program of 33 semester hours. Students, with the assistance and approval of an advisor, may select an area of specialization in Industry, Public, Tax, General, or Not-for-Profit Accountancy. Required courses and restricted electives are listed below.

PART II—ADVANCED REQUIREMENTS

Required Courses                                                            18 Semester Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 5431</td>
<td>Cost Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 5531</td>
<td>Federal Income Tax II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 5631</td>
<td>Advanced Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6735</td>
<td>Accounting Information Systems II</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6805</td>
<td>Seminar in Accounting Theory</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6866</td>
<td>Seminar in Professional Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

Restricted Elective Courses                                               15 semester hours
To be selected with advisor approval

Two courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 5231</td>
<td>Financial Accounting V</td>
<td>3</td>
</tr>
<tr>
<td>ACC 5865</td>
<td>Managerial Accounting for Governmental and Nonprofit Organizations</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6411</td>
<td>Seminar in Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6511</td>
<td>Seminar in Federal Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6611</td>
<td>Seminar in Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6745</td>
<td>Seminar in Accounting Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6810</td>
<td>Seminar in Professional Accountancy Practice</td>
<td>3</td>
</tr>
<tr>
<td>ACC 6868</td>
<td>Seminar in Auditing for Governmental and Nonprofit Organizations</td>
<td>3</td>
</tr>
</tbody>
</table>

Two courses from the MBA Required Coursework group, one of which must be MAN 6721 if the student has not previously had MAN 4720, Business Policies, or equivalent. 6 hours
One course from either the MBA Required Coursework group or from Accountancy. 3 hours

Examination
Satisfactory completion of an End-of-Program Comprehensive Examination is required.

The MS Program in Accountancy does not require a thesis.

Total Minimum Semester Hours Required: 33-90

MASTER OF ARTS—APPLIED ECONOMICS
Program Advisor: D. W. McNiel, PH 442, Phone 275-3466

The Master of Arts degree in Applied Economics is a two year (part-time) program designed to provide specialization in economics for persons desiring careers as economists in the academic, governmental, business, and financial communities. Contemporary society offers almost unlimited opportunities to individuals with an understanding of economic relationships and the tools of analysis to understand today's economic problems. Economists work on such problems as sales forecasting, market analysis, economic feasibility, hedging and commodity pricing, unemployment, inflation, balance of payments, energy development, pollution abatement and many other current problems.

MASTER OF ARTS DEGREE REQUIREMENTS—APPLIED ECONOMICS

The Master of Arts in Applied Economics degree requires 30 semester hours presuming that all of the prerequisites have been completed prior to admission.

PREREQUISITES 6 Hours
The following prerequisites (or equivalents) should be completed before enrolling in 6000-level graduate courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 5055</td>
<td>Economic Concepts</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5413</td>
<td>Statistics for Business and Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mathematics through calculus</td>
<td></td>
</tr>
</tbody>
</table>

The Economics prerequisites may be satisfied through completion of the equivalent foundation courses (ECO 2013, 2023, 3411, and STA 3023) or through credit by examination. Equivalent prerequisite course work must have been satisfactorily completed within the last five years at a regionally accredited college or university. Prerequisite course work does not count toward the 30 semester hours credit required for completion of the M.A. in Applied Economics degree.

REQUIRED COURSES 9 Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 6111</td>
<td>Economic Analysis of the Firm</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6204</td>
<td>Aggregate Economic Conditions and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6415</td>
<td>Statistical Methods for Business Decisions</td>
<td>3</td>
</tr>
</tbody>
</table>

ECONOMICS ELECTIVES 9-18 Hours
A minimum of nine additional hours of economics elective course work is required.

NON-ECONOMICS ELECTIVES 0-9 Hours
A maximum of nine hours of approved non-economics elective course work may be completed in disciplines such as accounting, finance, management, marketing, mathematics, statistics, public administration, and computer science. Career-oriented elective course work tracks are suggested in following sections.
THESIS OR INTERNSHIP

Three to six hours of either thesis or internship is required to complete the M.A. in Applied Economics degree. A thesis topic, normally for six credit hours, may be selected in consultation with the candidate’s advisory committee or the candidate may petition for approval of an internship program. A six hour internship may consist of three credit hours of work in a business or government agency (ECO 6946—Internship) and three additional credit hours for an ‘end of project’ report (ECO 6918—Directed Independent Research). An alternative may consist of a three to six hour research project and report supervised and approved by the candidate’s advisory committee (ECO 6918—Directed Independent Research).

FINAL EXAMINATION

Candidates must satisfactorily complete a comprehensive examination consisting of an oral defense of the thesis or of the assignments and research report associated with the internship.

CAREER-ORIENTED ELECTIVE TRACKS

Candidates for the Master of Arts in Applied Economics degree are encouraged to use the flexibility provided in the elective portion of the program to design a plan of study that enhances their particular career interests. The five suggested career-oriented elective tracks that follow are representative of some of the possibilities.

a. Financial Economics. For candidates seeking careers as financial economists in the fields of banking, brokerage, corporate or personal finance, selection among the following electives is recommended:

- ECO 6206 Business Cycles and Forecasting
- ECO 6226 Seminar in Money, Banking and Monetary Policy
- ECP 6704 Managerial Economics
- FIN 6406 Financial Analysis and Management
- FIN 6425 Asset Management and Financial Decisions
- FIN 6506 Analysis of Investment Opportunities
- RMI 6008 Risk Management

b. Public Sector Economics. For candidates seeking careers in the public sector as managers, planners, policy analysts, or regulators, selection among the following electives is recommended:

- ECP 6704 Managerial Economics
- ECP 6615 Economics of Urban and Regional Problems
- ECP 6426 Economics of Regulated Industries
- ECP 6405 Industrial Organization and Performance
- ECP 6205 Labor Economics
- ECO 6505 Public Finance and Fiscal Policy
- ECO 6226 Seminar in Money, Banking and Monetary Policy
- REE 6046 Real Estate Analysis
  - Approved electives in Public Administration
  - Approved electives in Political Science
  - Approved electives in Political Theory

(c. Quantitative Economics. For candidates seeking careers as analysts, consultants, or researchers in business, government, or non-profit institutions, selection among the following quantitative electives is recommended:

- ECO 6206 Business Cycles and Forecasting
- ECO 6416 Econometrics
- ECP 6704 Managerial Economics
- MAN 6814 Quantitative Models for Business Decisions
- MAR 6606 Marketing Research Methods
d. International Political Economy. For candidates seeking positions with international organizations (such as the World Bank or United Nations), or overseas business or government appointments, selection among the following electives is recommended.

- ECO 6705 Seminar in International Economics
- ECS 6015 Economic Development
- ECS 6006 Seminar in Comparative Economic Systems
- PUP 6058 Issues in International Public Policy
- INR 4035 International Political Economy
- INR 4401 International Law I
- INR 4402 International Law II
- INR 6007 Seminar in International Politics

e. Manpower Economics. For candidates seeking careers in the area of human resources development or positions in interdisciplinary manpower related issues, selection among the following electives is recommended.

- ECP 6205 Labor Economics
- ECS 6015 Economic Development
- PAD 4424 Labor Relations in the Public Sector
- MAN 4401 Labor Relations Management
- MAN 6206 Organizational Behavior and Development
- PAD 6417 Human Resource Management
- EIN 4264 Industrial Hygiene and Occupational Health
- EIN 6258 Man-Computer Interaction
- EIN 5117 Management Information Systems
- EVT 5267 Vocational Program Planning, Development and Evaluation

LIST OF COURSES—COLLEGE OF BUSINESS ADMINISTRATION

- ACC 5004 Financial Accounting Concepts 3 cr (3.0)
  PR: Acceptance into the graduate program. The conceptual background for financial statements.

- ACC 5231 Financial Accounting V 3 cr (3.0)
  PR: ACC 3121 and meet departmental admission requirements. Problems of partnerships, accounting for branches, bankruptcy, installment sales, accounting for estates and trusts, and interim reporting.

- ACC 5275 International and Multinational Accounting 3 cr (3.0)
  PR: ACC 3121 with a grade of 'C' or better or C.I. and meet departmental admission requirements. An examination of the environmental factors affecting international accounting concepts and standards. Cross-country differences in accounting treatments are compared.

- ACC 5431 Cost Accounting II 3 cr (3.0)
  PR: ACC 3401, FIN 3403, ECO 3411 or C.I. and meet departmental admission requirements. Continuation of ACC 3401. Overhead and joint cost allocation, capital budgeting and analysis, EOQ analysis, decentralization, quantitative decision analysis.

- ACC 5531 Federal Income Tax II 3 cr (3.0)
  PR: ACC 4501 and meet departmental admission requirements. Concepts and methods of determining taxable income for partnerships and corporations; and selected topics.

- ACC 5612 Operational Auditing 3 cr (3.0)
  PR: 4601 with a grade of 'C' or better and meet departmental admission requirements. The standards principles, practices, and procedures followed in the internal audit function.

- ACC 5631 Advanced Auditing 3 cr (3.0)
  PR: ACC 3701, ACC 4601, STA 3023 and meet departmental admission requirements. A continuation of ACC 4601. Special topics relative to the standards, practices and procedures followed in the audit function.
ACC 5865 Managerial Accounting for Governmental and Nonprofit Organizations 3 cr (3,0)
PR: ACC 3861 or C.I. and meet departmental admission requirements. Study of problems and methods of applying managerial accounting concepts in a nonprofit environment.

ACC 6411 Seminar in Cost Accounting 3 cr (3,0)
PR: ACC 5431, graduate standing and all Master of Science in Accountancy foundation courses or equivalents. A study of current selected topics in cost and management accounting.

ACC 6511 Seminar in Tax 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. Advanced study of and research in tax law.

ACC 6611 Seminar in Auditing 3 cr (3,0)
PR: ACC 5631, graduate standing, and all MSa foundation courses or equivalents. A study of current selected auditing topics.

ACC 6734 Managerial Accounting Analysis 3 cr (3,0)
PR: Graduate standing and ACC 5004, or one year of accounting, and ECO 5413. (Not open for accounting majors.) Accounting as an information measurement system for internal planning and control.

ACC 6735 Accounting Information Systems II 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. Design and analysis of information systems and special auditing topics.

ACC 6745 Seminar in Accounting Control Systems 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. An integrative course designed to provide a systematic approach to the integration of financial accounting, managerial accounting, taxation, and general business courses.

ACC 6805 Seminar in Accounting Theory 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. An examination of the evolution of contemporary accounting theory with emphasis on current and future developments.

ACC 6810 Professional Accountancy Practice 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. Study of information and the operation of a professional accountancy practice.

ACC 6866 Seminar in Professional Accounting Issues 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. An examination of current issues confronting the accounting profession.

ACC 6868 Seminar in Auditing for Government and Nonprofit Organizations 3 cr (3,0)
PR: Graduate standing and all MSa foundation courses or equivalents. Examination of standards for audit of governmental organizations and programs; institutional issues of auditor independence; reporting audit findings in a public-sector environment.

BUL 5125 Legal and Social Environment of Business 3 cr (3,0)
PR: Admission to graduate program. Analysis of the legal and ethical environment of business, the effects of legislation and regulation on business activity, and the role of law and ethics in the decision making process.

ECO 5055 Economic Concepts 3 cr (3,0)
PR: Acceptance into the graduate program. Introduction to micro and macro economic analysis.

ECO 5413 Statistics for Business and Economics 3 cr (3,0)
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.

ECO 6111 Economic Analysis of the Firm 3 cr (3,0)
PR: Graduate standing and ECO 5055 or equivalent. Commodity price and output determination; factor price determination and functional income distribution; analysis of different types of markets.
ECO 6204 Aggregate Economic Conditions and Analysis 3 cr (3,0)
PR: Graduate standing and ECO 5505 or equivalent. An analysis of aggregate economic conditions including the determination of output, employment and income levels.

ECO 6206 Business Cycles and Forecasting 3 cr (3,0)
PR: ECO 5505 and ECO 6415 or equivalents, graduate standing. Use of economic tools for measuring changes in aggregate economic activity, changes in production and prices, and the use of statistical techniques.

ECO 6226 Seminar in Money, Banking and Monetary Policy 3 cr (3,0)
PR: Graduate standing. Study of the structural foundation and policy making activities of the monetary authorities.

ECO 6305 History of Economic Thought 3 cr (3,0)
PR: Graduate standing. A study of the leading ideas of the major contributors to the development of economic thought.

ECO 6415 Statistical Methods for Business Decisions 3 cr (3,0)
PR: Graduate standing. ECO 5413 or equivalent. Multivariate models, time series models, and accompanying problems are analyzed and applied to forecast situations.

ECO 6416 Econometrics 3 cr (3,0)
PR: ECO 6415 and graduate standing. The mathematical formulation of economic theories and the use of statistical procedures to measure the theoretical relationships and to verify or reject the theories.

ECO 6505 Public Finance and Fiscal Policy 3 cr (3,0)
PR: Graduate standing and ECO 5055 or equivalent. Analysis of the role of government and the effects of spending, taxing, and borrowing on the economy.

ECO 6705 Seminar in International Economics 3 cr (3,0)
PR: Graduate standing. An inquiry into the theory of international trade and finance, commercial policy and economic integration.

ECP 6205 Labor Economics 3 cr (3,0)
PR: Graduate standing and ECO 5055 or equivalent. An investigation into the nature and function of the labor markets, with specific concern for both institutional and noninstitutional imbalance.

ECP 6405 Industrial Organization and Performance 3 cr (3,0)
PR: Graduate standing and ECO 6111. A study of the performance of various types of market structure and practice, relative to price and efficiency.

ECP 6426 Economics of Regulated Industries 3 cr (3,0)
PR: Graduate standing. A study of the economic, legal, and administrative foundations of regulatory policy in a broad range of industries in the American economy.

ECP 6615 Economics of Urban and Regional Problems 3 cr (3,0)
PR: Graduate standing and ECO 6111. Economic analysis of the problems arising from and associated with, the growth and development of cities and regions.

ECP 6704 Managerial Economics 3 cr (3,0)
PR: Graduate standing and ECO 6111 or equivalent. The use of economic tools and methods of reasoning applied to a wide range of business and economic problems.

ECS 6006 Seminar in Comparative Economic Systems 3 cr (3,0)
PR: Graduate standing. An examination of factors that influence economic systems; patterns of resource allocation and income distribution in differing economic environments.

ECS 6015 Economic Development 3 cr (3,0)
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.

FIN 5405 Financial Concepts 3 cr (3,0)
PR: Acceptance into the graduate program, ACC 5004 and ECO 5055 and ECO 5413 or equivalents. Effects of financial decisions upon the firm, interrelationships of these effects and alternatives available to financial managers in making these financial decisions.
FIN 6406 Financial Analysis and Management 3 cr (3,0)
PR: Graduate standing and FIN 5405 or equivalent. This course embraces the conceptual and practical problems associated with financial management of the nonfinancial corporation.

FIN 6425 Asset Management and Financial Decisions 3 cr (3,0)
PR: Graduate standing and FIN 6406. Considers the interrelated decision making process of asset allocations, corporate fund raising, dividend policies and market maximization.

FIN 6506 Analysis of Investment Opportunities 3 cr (3,0)
PR: Graduate standing and FIN 6406. Deals with the theory and tools of analysis required in the management of financial assets.

MAN 5051 Management Concepts 2 cr (2,0)
PR: Acceptance in MBA program. Theory and practice of managing organizations to include planning, organizational theory, human behavior and control.

MAN 5501 Introduction to Production/Operations Management 2 cr (2,0)
PR: Acceptance into the graduate program and ECO 5413 or equivalent. Introduction to the fundamental concepts, processes and institutions involved in the production of goods and services required by modern society.

MAN 5830 Introduction to Management Information Systems 2 cr (2,0)
PR: Acceptance into the graduate programs. Designed to provide the student with the fundamentals of business data processing and management information systems used by organizations in a modern society.

MAN 6055 Planning and Control Analysis 3 cr (3,0)
PR: Graduate standing and MAN 5051 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.

MAN 6075 History of Management Thought 3 cr (3,0)
PR: Graduate standing and MAN 5051. The historical development of management in modern society with emphasis on the interrelationship between the management processes and the economic, social, and political environments.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits (CR)</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN 6121</td>
<td>Group Decisions and Analysis</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and MAN 5051 or equivalent. Experience in company-wide management decision-making by groups using the management game techniques. Analysis of the group decision-making process using video tapes.</td>
</tr>
<tr>
<td>MAN 6206</td>
<td>Organizational Behavior and Development</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and MAN 5051 or equivalent. The analysis of human behavior in organizations in terms of the individual, small group, intergroup relationships, and the total organization.</td>
</tr>
<tr>
<td>MAN 6721</td>
<td>Business Policy and Responsibility</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and completion of all foundation courses or their equivalent. This MBA program capstone course provides the student experience in formulating policy and strategy for the direction of a business firm from the integrated viewpoint of a CEO.</td>
</tr>
<tr>
<td>MAN 6814</td>
<td>Quantitative Models for Business Decisions</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and ECO 5413 or equivalent. Quantitative techniques useful for the solution of business problems. Mathematical model building to aid the decision-making process is stressed.</td>
</tr>
<tr>
<td>MAN 6840</td>
<td>Research and Development Management</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and MAN 5051. An examination of the function of research and development and the impact of technological innovation on our economic and social systems.</td>
</tr>
<tr>
<td>MAR 5055</td>
<td>Marketing Concepts</td>
<td>3 cr (3,0)</td>
<td>Acceptance into the graduate program. Study of functions, institutions and basic marketing of goods in the U.S. economy.</td>
</tr>
<tr>
<td>MAR 5941</td>
<td>Small Business Consulting</td>
<td>3 cr (3,0)</td>
<td>ACC 2001, 2021, 2013, MAN 3010, MAR 3023, or graduate status. Provides students opportunity to apply knowledge learned in classroom to real business situations. Open to undergraduate majors in the College of Business Administration with approval of the department chairman.</td>
</tr>
<tr>
<td>MAR 6406</td>
<td>Sales Management and Control</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and MAR 5505 or equivalent. Designed to provide an analysis of sales and management process. Topics covered include selection and training, compensation, behavioral issues and sales planning, evaluation, and control.</td>
</tr>
<tr>
<td>MAR 6606</td>
<td>Marketing Research Methods</td>
<td>3 cr (3,0)</td>
<td>Graduate standing. Investigation of primary research methods used to generate information for marketing decision makers. Problem definition, research design, data collection, data processing and statistical interpretation, and communication of research results.</td>
</tr>
<tr>
<td>MAR 6706</td>
<td>Contemporary Marketing Problems</td>
<td>3 cr (3,0)</td>
<td>Graduate standing, MAR 6716, or C.I. Analysis of contemporary marketing problems resulting from social, economic, and political developments.</td>
</tr>
<tr>
<td>MAR 6716</td>
<td>Marketing Policy</td>
<td>3 cr (3,0)</td>
<td>Graduate standing and MAR 5055 or equivalent. Marketing policy formulation and decision-making with respect to planning, pricing, promotion and distribution.</td>
</tr>
<tr>
<td>REE 6046</td>
<td>Real Estate Analysis</td>
<td>3 cr (3,0)</td>
<td>Acceptance into the graduate program and FIN 5405 or equivalent. This course melds theory and practice towards the objective of solving urban land allocation problems faced by public and private sector decision-makers.</td>
</tr>
<tr>
<td>RMI 6008</td>
<td>Risk Management</td>
<td>3 cr (3,0)</td>
<td>Acceptance into the graduate program and FIN 5404 or equivalents. An introduction to risk management with emphasis on the business firm, but also treating several major risk management issues in the public sector.</td>
</tr>
</tbody>
</table>
Courses through the Advanced Studies area of the College of Education are for students with at least baccalaureate degrees. Both degree and non-degree programs may be planned for people in education-related positions in social and government agencies, business and industry, as well as for professional educators in private and public schools. Master of Education, Master of Arts, and Master of Science (in School Psychology only) degrees are awarded by the University of Central Florida. Doctor of Education and Educational Specialist degrees are available in cooperation with Florida Atlantic University and the University of Florida. Advanced courses are scheduled in the evening to meet the needs of people employed in the community.

FACULTY

B. B. Anderson, Ed.D. .......................................................... Professor
V. Barr-Johnson, Ph.D. .................................................. Professor
D.K. Brumbaugh, Ed.D. .................................................. Professor
W. Clarke, Ed.D. .................................................. Professor
R. G. Cowgill, Ph.D. .................................................. Associate Dean and Professor
C. D. Dziuban, Ph.D. .................................................. Professor
W. K. Esler, Ph.D. .................................................. Chairperson, Department of Educational Foundations and Professor
F. E. Green, Ed.D. .................................................. Professor
H. O. Hall, Ed.D. .................................................. Professor
D. E. Hernandez, Ed.D. .................................................. Professor
M. C. Hynes, Ph.D. .................................................. Professor
M. L. Kysilka, Ph.D. .................................................. Director, Educational Research Institute and Professor
R. Lange, Ph.D. .................................................. Professor
R. D. Martin, Ed.D. .................................................. Chairperson, Department of Instructional Programs and Professor
C. C. Miller, Ed.D. .................................................. Dean and Professor
E. E. Miller, Ed.D. .................................................. Professor
F. D. Rohrer, Ph.D. .................................................. Professor
R. A. Rothberg, Ed.D. .................................................. Professor
R. A. Thompson, Ed.D. .................................................. Professor
R. E. Weidenheimer, Ed.D. .................................................. Professor
J. H. Armstrong, Ed.D. .................................................. Associate Professor
J. S. Beadle, Ph.D. .................................................. Associate Professor
R. C. Bird, Ph.D. .................................................. Associate Professor
T. S. Cleland, Ph.D. .................................................. Associate Professor
D. W. Gurney, Ph.D. .................................................. Associate Professor
T. L. Harrow, Ph.D. .................................................. Associate Professor
B. Hoover, Ed.D. .................................................. Associate Professor
R. D. Hunter .................................................. Associate Professor
N. R. McGee, Ed.D. .................................................. Associate Professor
J. N. McLain, Ph.D. .................................................. Assistant Dean and Associate Professor
P. C. Manning, Ed.D. .................................................. Associate Professor
J. Midgett, Ed.D. .................................................. Associate Professor
J. T. O'Leary, Ed.D. .................................................. Associate Professor
A. H. Olson, Ed.D. .................................................. Associate Professor
M. J. Palmer, Ed.D. .................................................. Associate Professor
L. F. Poe, Ed.D. .................................................. Associate Professor
PROGRAMS IN EDUCATION

Possible areas of specialization for postbaccalaureate work and master's degrees include:

- Administration/Supervision
- Business Education
- Counselor Education
- Early Childhood Education
- Educational Media
- English Education
- Exceptional Child Areas:
  - Mentally Handicapped
  - Learning Disabled
  - Emotionally Handicapped
- Foreign Language Education
- Instructional Technology
- Mathematics Education
- Music Education
- Physical Education
- Reading Education
- School Psychology
- Science Education
- Social Sciences Education
- Speech Education
- Visual Arts Education
- Vocational Education

Studies beyond the Master's degree level leading to Specialist of Education and/or Doctor of Education degrees are available through cooperative programs between the University of Central Florida and other State Universities, as shown below:

Florida Atlantic University
  Administration/Supervision (Ed.S., Ed.D.)
  Curriculum and Instruction (Ed.S., Ed.D.)

University of Florida
  Counselor Education (Ed.D.)
  Elementary Education (Ed.S., Ed.D.)
  Instructional Leadership (Ed.S., Ed.D.)
MASTER'S DEGREE REQUIREMENTS

ADMISSION
The prospective master's student must meet the admission requirements established by the University. In addition, a student seeking a Master of Education degree must show evidence that all course work has been completed for the basic bachelor's level State of Florida teaching certificate. Master of Arts programs, available in some specialties, and a Master of Science in School Psychology may be planned without the student's having previously completed certification courses.

The students who fail to meet the University admissions standards have the opportunity to apply for admission via the provisional category. Admission through this category is severely limited and restricted to those students who show academic and professional promise. To be considered for provisional selection, a student must file an application with the Advanced Studies Coordinator of the College of Education. Faculty committees with members drawn from each department within the College select students for provisional positions.

The following items are examples of criteria that the committees may use in evaluating a student:

- Ranking of undergraduate grade point average
- Ranking of GRE score
- Contribution, current and projected, to the profession
- Number of years of professional experience
- Number of postbaccalaureate hours taken
- Grade point average on any postbaccalaureate work
- Evaluations by advisor and other professionals

At the completion of 9 semester hours after becoming a provisional student, the student will be changed to regular degree status, if the student's grade point average for the 9 hours is at least 3.0. If the average is below 3.0, the student will be reverted to postbaccalaureate status.

PROGRAM OF STUDY
Each advanced student is assigned an advisor by the Advanced Studies Coordinator. Degree programs must be planned by the student and his advisor prior to completion of the ninth hour of graduate degree study. If, prior to having an approved program on file with the College of Education, a student receives credit at another institution and plans to have the credit transferred to his UCF program, he enrolls in these courses at his own risk. Postbaccalaureate students may use their advisors for information and consultation, but this planning cannot be considered as planning a degree program. A planned degree program requires a minimum of 33 semester hours of graduate course work. While many programs may be completed in 33 hours, others require as many as 60 hours.

PERFORMANCE STANDARDS
The College of Education standards for students' academic performances are slightly different than the minimum requirements for graduate students as set by the Graduate Studies Office. In addition to the minimum standard of maintaining a 'B' (3.0 GPA) on all graduate work and earning no more than 6 hours of 'C' work or unresolved 'I' (incomplete) grades, College of Education students must maintain at least a 'C' (2.0) GPA average in all co-requisite work prescribed in concert with their graduate degree program.

As explained in the University procedures, a student whose grade point average on his degree work falls below 3.0 will be placed on academic provisional status for 9 hours. During that 9 hours, a student must raise his grade point average back up to
the 3.0 minimum to remain in the program. No transfer work may be used to raise the average. A student will be allowed only one academic provisional period. The College of Education considers the status of all newly admitted master's students to be probationary for their first 9 program hours. At the end of 9 hours, a student must have a 3.0 minimum average or he will be reverted to non-degree status. No further provisional status will be extended.

ADMISSION TO MASTER'S CANDIDACY
A student will become a candidate for the master’s degree when he completes 16 semester hours of graduate work in a planned program with a B (3.0) or higher grade point average and submits the proper application.

COMPREHENSIVE EXAMINATION
All students are required to complete written comprehensive examinations prior to graduation from the degree programs. The examinations will be planned and evaluated by each student’s major department. Examinations will receive an evaluation of 'pass,' 'conditional pass,' or 'fail.' If a student receives a 'conditional pass' grade, he will be given a prescription for further study. A failed examination requires a re-examination.

RESEARCH PROJECT
All programs also include a research project for 3 semester hours of credit. The project may range from developing curriculum materials to conducting experimental studies. All master's students are required to take EDF 6481 as an introduction to the use of the library and other campus facilities and for development of writing, thinking and research skills. This course should be taken early (preferably first) in the program of courses. No transfer course may be used for satisfying the EDF 6481 requirement.

DOCTOR OF EDUCATION AND SPECIALIST OF EDUCATION—DEGREE REQUIREMENTS

COOPERATIVE PROGRAMS WITH FLORIDA ATLANTIC UNIVERSITY
Florida Atlantic University in Boca Raton, Florida, offers Education Specialist (Ed.S.) and Doctoral (Ed.D.) degree programs at the University of Central Florida in Administration and Supervision for people who are interested in decision-making positions in educational organizations and in Curriculum and Instruction for the junior college teacher. The subject field possibilities in Curriculum and Instruction are limited to the fields in which a master's degree is offered at either UCF or FAU. The programs offer students an opportunity to do their work in Orlando rather than moving or commuting to the Boca Raton area.

HOW MUCH WORK WILL BE AVAILABLE AT ORLANDO
The availability of courses in the Orlando area is dependent upon the individual student's program, the number of cooperative degree students needing the same course, and university funding. Some courses offered by UCF will be acceptable and courses from FAU will be offered at UCF. A student probably will be able to complete all degree work without attending classes in Boca Raton. Beyond the stage of formal classwork, the student will be able to work on his research for his dissertation in Orlando with occasional contact with the FAU campus, allowing him to maintain his home and professional ties here.
MINIMUM ADMISSION REQUIREMENTS
Admission requirements for both the Specialist and Doctoral programs in both Administration and Supervision and in Curriculum and Instruction are:
1. A master's degree from an accredited university;
2. A score at the 50th percentile or above on the appropriate *advanced section of the Graduate Record Examination; and
3. three years full-time teaching experience.

*In the program for Administration and Supervision, the advanced GRE section should be in education; in Curriculum and Instruction, the advanced section should be in the person's main teaching subject field.

FURTHER REQUIREMENTS FOR THE INDIVIDUAL PROGRAMS ARE:
Curriculum and Instruction
Grade point average of at least 3.25 on all postbaccalaureate work
AND
a combined verbal and quantitative score of 1000 on the Graduate Record Examination.

Administration and Supervision
Combined verbal and quantitative score of 1000 on the Graduate Record Examination
OR
a grade point average of at least 3.25 on all postbaccalaureate work and a 3.0 or better on approximately the last 60 semester hours of undergraduate work and evidence of having taken the GRE aptitude test (no specific score required).

In addition to these basic admission requirements, an interview is a necessary part of the admissions procedure for the faculty to discuss with the student his motivation and his expectations for the program. For an applicant in the Administration and Supervision program, a test is required in the Administration and Supervision areas. This test is diagnostic for prescribing course work and other experiences in individualizing the degree programs.

Some exceptions may be permitted for provisional admission. Any candidate who will not meet all criteria must prepare and submit, for review by the UCF Graduate Advisory Committee, a support file including but not limited to the following materials:

1. An essay describing the applicant's professional goals;
2. An up-to-date vita;
3. Letters of recommendation (if not sent in for the original application file). Letters must be included from current supervisors verifying applicant's current professional position and any future plans for advancement. Letters must also be included from faculty at UCF or the cooperating institution if an applicant has attended either;
4. Evidence of professional leadership—examples of professional production or involvement such as programs designed, grants written and funded, books published, positions held in professional organizations.

Admission recommendations will be made jointly by the Florida Atlantic University and the University of Central Florida in accordance with the above requirements. Florida Atlantic University will determine final acceptance and notify each applicant when his admission status is determined.

The number of people admitted to the Cooperative Programs will be limited to ensure the availability of faculty and facilities. Date of application completion (when all records are on file) and qualifications of the applicants will be considered in the selection procedure.
RESIDENCY REQUIREMENTS
For the FAU/UCF Cooperative Doctoral Program, residency will be satisfied by the student's attending at least two semesters, earning a minimum of 6 hours each semester taken at either FAU or UCF. The semesters do not have to be consecutive. For the Specialist Degree, one semester of at least 6 semester hours is required at either FAU or UCF.

Progress in a program will be marked by successful completion of courses undertaken and passing qualifying examinations. In the doctoral program, when the student has passed his qualifying examinations and has a dissertation proposal approved, he will be eligible for admission to candidacy. After admission to candidacy, the student will work to complete his dissertation research with advice from his faculty committee. Work counted toward either degree must be no more than seven years old by the time the degree is completed.

The descriptions below are based on the minimum amount of work required after the baccalaureate degree. How much work must be earned beyond the master's degree is based upon each student's qualifications and experiences and is determined by the student's faculty committee. Six hours of graduate level work with grades of at least 'B' may be considered for transfer from another specialist or doctoral program.

DOCTORAL PROGRAMS
ADMINISTRATION AND SUPERVISION
A minimum of 33 hours credit is required in the specialization area, all of which must be at the graduate level. A cognate requirement of 15 credit hours may be met by courses in one or more fields outside of the College of Education. An appropriately supervised internship in administration or a field project may be required, particularly in the case of the person who has not been in an administrative or supervisory position. The requirement in research and statistics is 10 semester hours. Credit for the dissertation research must be for a minimum of 20 semester hours. The dissertation must be a scholarly work of recognized caliber which contributes to original knowledge or attacks a significant field or professional problem.

CURRICULUM AND INSTRUCTION
A minimum of 30 hours in graduate level courses is required in the primary teaching field. A minimum of 18 hours is required in an area cognate to the teaching field. The professional education requirement is 20 hours in graduate level courses including community college curriculum, improvement of instruction, and curriculum development. Three specialized courses satisfy a minimum requirement of 10 hours in research and statistics. An internship of 6 hours credit is required if the student has not had sufficient qualified experience in teaching at the junior college or university level. Other work may be substituted if the student has satisfactory previous experience. A minimum of 20 hours credit must be earned in dissertation research. The dissertation will be either an original contribution to knowledge in professional education or a study of a significant instructional problem in the first teaching field.

SPECIALIST PROGRAMS
An Ed.S. graduate must have completed a minimum of 36 semester hours of graduate level course work in Administration and Supervision. A minimum of 9 semester hours of curriculum course work is also required. Upper division cognate courses outside the College of Education should total 6 semester hours. Candidates who plan to continue on to doctoral studies are encouraged to include courses in Foundations and Personnel Services in the Ed.S. program in preparation for doctoral comprehensive exams in those areas. EDA 7912, Advanced Research, is also required.
APPLICATIONS, TRANSCRIPTS, AND GRE SCORES
The student should file a UCF Application for Graduate Degree Programs especially marked for the Cooperative program. IF AN APPLICANT PLANS TO SEEK BOTH THE SPECIALIST AND DOCTORAL DEGREES, HE SHOULD LIST BOTH ON HIS ORIGINAL APPLICATION. In addition to the application, he needs to have official transcripts for every university attended for all undergraduate and graduate work and official GRE scores sent directly from the institutions involved to the Registrar's Office, University of Central Florida, Orlando, Florida, 32816. If the student has previously filed his papers at UCF (for any program other than the FAU/UCF Cooperative Program), another set will have to be obtained as originals must be transmitted to FAU.

FOR MORE INFORMATION
For applications and information on the admission procedures, contact Dr. Nanette McLain (305) 275-2437. For curriculum questions, talk with Dr. Harry Hall (305) 275-2950/275-2334.

COOPERATIVE PROGRAMS WITH THE UNIVERSITY OF FLORIDA
The University of Central Florida (UCF) in collaboration with the University of Florida (UF) offers advanced work in education. Two degrees, the Educational Specialist (Ed.S.) and the Doctor of Education (Ed.D.) in certain fields, are available in the cooperative programs. A Doctor of Philosophy (Ph.D.) program is not available for the UCF-UF programs although it is offered at the University of Florida. All degrees are awarded by the University of Florida.

The Ed.S. degree emphasizes, according to The University Record of the University of Florida, 'development of the competencies needed for a specific job.' The specific jobs could be as local, state or national level experts in education or in educational positions in private institutions and industry or educationally-related companies. The two components of the Ed.S. are course work and, in some instances, a practicum or field experience. The Ed.D., a more extensive degree consisting of three parts—course work, field experience (practicum), and research—is designed for leadership positions as described for the Ed.S. or for university teaching positions in education. The differences in the degrees are reflected in the length of programs and emphasis on research with the Ed.S. being obviously the shorter in time and amount of research. Changing over from one degree to the other while in the cooperative program may be possible by certain program and qualifying examination additions.

AVAILABLE FIELDS
Programs currently approved are in Instructional Leadership, Counselor Education, and Elementary Education. Students may be admitted only once a year in Instructional Leadership. Applications in Elementary Education may be processed for any semester. In Counselor Education, students may be admitted each Fall.

INSTRUCTIONAL LEADERSHIP is a broad program covering general supervision, instruction and curriculum development. An individual's program and experiences in the courses may be planned to reflect his professional goals in terms of level of position (elementary, secondary, post-secondary) and possible subject field interest. Both Ed.S. and Ed.D. programs are available.
COUNSELOR EDUCATION is a doctoral program only; no specialist degree applications will be processed. Applicants must have a master’s degree with a major in guidance with an emphasis on counseling. The program is designed for people aspiring to be practicing counselors as well as for counselor educators. As in the Instructional Leadership area, each individual’s program will be designed to meet his professional goals.

ELEMENTARY EDUCATION is for people interested in a main emphasis on the young school child. Sub-specialties may be completed in various areas, such as reading, early childhood, exceptional child and leadership. Both Ed.S. and Ed.D. programs are possible.

MINIMUM ADMISSION REQUIREMENTS
Admission requirements are those of the Graduate School and the Advanced School of the College of Education, University of Florida. The principal requirements are listed below:

a. Previous completion of a master’s degree from an accredited institution.

b. A satisfactory score (1000 or above for Ed.S. or 1100 or above for Ed.D.) on the Aptitude Test of the Graduate Record Examination.

c. High scholastic average on undergraduate (3.0 grade-point average or above for the last 60 semester hours) and previous graduate work (3.5 grade-point average or above).

d. Satisfactory personal and professional references.

e. For Counselor Education, a statement of professional goals must be included with the application; for other fields, the inclusion of a professional autobiography is required.

Some exceptions may be permitted for provisional admission provided the candidate demonstrates other sufficient evidences of admissibility. Any candidate who will not meet all criteria must prepare and submit for review by the UCF Graduate Advisory Committee a complete support file including, but not limited to, the following materials:

a. An essay describing the applicant’s professional goals;

b. An up-to-date vita;

c. Letters of recommendation (if not sent in for the original application file). Letters must be included from current supervisors verifying applicant’s professional position and any future plans for advancement. Letters must also be included from faculty at UCF or the cooperating institution if an applicant has attended either;

d. Evidence of professional leadership—examples of professional production or involvement such as programs designed, grants written and funded, books published, positions held in professional organizations.

Admission recommendations will be made jointly by the University of Florida and the University of Central Florida in accordance with the above requirements. The University of Florida will determine final acceptance and notify each applicant when his admission status is determined.

The number of people admitted to the cooperative programs will be limited to ensure the availability of faculty and facilities. Date of application completion (when all records are on file) and qualifications of the applicants will be considered in the selection procedure.

RESIDENCY
The residency requirement for the University of Florida has been modified for the cooperative programs. Courses offered by both the University of Florida and the University of Central Florida will be accepted by the University of Florida Graduate School for credit toward the degree. The Ed.S. degree programs require one semester of full-time study (minimum 10 credits) on the campus at the University of
Florida to assist students in pursuing individual needs and interests. The period of concentrated study for the Ed.D. degree may be satisfied by earning a minimum of 36 semester hours within a 27-month period of registrations on either or both campuses. Prior to admission to candidacy at least one semester of full-time study (minimum 10 credits) must be completed at the University of Florida.

PROGRAM REQUIREMENTS
Each individual's program of study will be planned by his committee in consultation with the student. Committees have a minimum of three members; one member may be a UCF faculty member; the chairman will be from the University of Florida. The chairman with input from other faculty will be responsible for determining the student's readiness for, and the planning and evaluation of, written and oral qualifying exams which follow completion of the planned course work. General program requirements are:

a. Educational Specialist degree (Ed.S.)—a minimum of 72 semester hours beyond the bachelor's degree. Appropriate credit from the master's degree may be used for 36 semester hours of the total. Under special circumstances up to 6 semester hours may be transferred in from post-master's work completed at State University System of Florida institutions or from other institutions offering a doctoral degree.

b. Doctor of Education degree (Ed.D.)—a minimum of 90 semester hours beyond the bachelor's degree with the possibility of transfer the same as described above for the Ed.S. In addition to slight differences in the program course of study, the Ed.D. student is required to complete more work in research including a dissertation. The composition of the qualifying exams will also differ.

The requirements above are basic; individual students may have to do more work than described. For example, a person without a professional education background would have some 'catch-up' work to do; a provisionally-admitted student would have to meet additional prescriptive requirements to strengthen his potential for success; different major fields within the program may require work beyond the minimum for their specialties.

APPLICATIONS, TRANSCRIPTS AND GRE SCORES
Applications for the UCF-UF Cooperative Doctoral Program are available only from the College of Education at UCF. They may be obtained by mail or by calling (305) 275-2436 or dropping by ED 109 on campus. To insure on-time processing, applications and all supporting information must be in the Admissions Office at least 12 weeks before taking courses. Quotas for the program may be reached before the published deadline dates for applications. Complete applications should be returned to Dr. Nannette McLain, at UCF.

Official transcripts of all college work (graduate and undergraduate) must be ordered from the schools the student attended and sent directly to UCF (even if they are already on file at the University of Florida). Official Graduate Record Examination scores must be sent directly from Educational Testing Service, Princeton, New Jersey, 08540, to the UCF Admissions Office. GRE scores more than five years old will be acceptable if ETS still has a record on file. A request to ETS must be accompanied by a check or money order for $5.00.

Transcripts and scores sent to UCF or UF for review for some other graduate, undergraduate, or cooperative program cannot be transferred over to the UCF-UF program; new copies must be ordered. No action can be taken for admission consideration until all records have arrived at UCF.
FURTHER INFORMATION
For general information on requirements and admissions, contact Dr. Nannette McLain, (305) 275-2436. For curriculum information, contact the application areas involved: Dr. William Esler, Instructional Leadership, 275-2427; Dr. Bob Bollet, Counselor Education, 275-2052/275-2597; or Dr. R. Martin, Elementary Education, 275-2939.

GENERAL PROGRAM REQUIREMENTS
A minimum of 90 hours beyond the baccalaureate degree is required for an Ed.D. including components of core courses, research, a minor or cognate area, and electives. The student's individualized program may require additional credits. The Ed.S. degree requires a minimum of 72 semester hours beyond the bachelor's degree. For either degree, up to 36 hours may be transferred from a master's degree if those hours fit the student's program. Up to six hours of post-master's work may be transferred into the program provided the credits are from an institution awarding a doctorate in the area of that course work. Also required are a minimum of 21 semester hours in Education in a master's program or 33 semester hours in combined master's and bachelor's work with at least 15 semester hours from courses numbered 5000 or above.

MASTER'S DEGREE PROGRAMS IN EDUCATION
Programs are offered in a wide variety of areas within the general field of education. Master of Education programs are open only to students who have a baccalaureate degree and have completed coursework for regular Florida State Teaching Certification. Master of Arts programs are open to qualified individuals who are noncertified or for certified bachelor level students pursuing a second teaching field. In this section, the degree components for the various programs are outlined. Students should consult faculty advisors for answers to specific questions.

INSTRUCTIONAL PROGRAMS SPECIALITIES
Elementary Education
Contact Person: Dr. Lillian F. Poe (305) 275-2016

ADVANCED ELEMENTARY EDUCATION SPECIALIZATION (M.Ed.)
Designed to meet the needs of the classroom teacher whose career goal is to remain in the classroom. It provides experiences in the foundations of education, an update of the student's skills and understanding related to current research finding and instructional trends in basic subject matter areas, diagnosis and remediation in reading and mathematics, and an elective area permitting a selection of courses in a specific area, for example, reading or kindergarten education.
MASTER OF EDUCATION IN ELEMENTARY EDUCATION

ADVANCED ELEMENTARY SPECIALIZATION
Minimum Total, 33 semester hours)
AREA A—CORE—Minimum requirement of 12 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education
EDF 6517 History and Philosophy of American Education
OR
EDF 6155 Lifespan Human Development and Learning
EDF 6401 Statistics for Educational Data
OR
EDF 6432 Measurement and Evaluation in Education
EDE 6918 Research Project

3 hours
3 hours
3 hours

AREA B—CURRICULUM—Minimum requirement of 15 semester hours.
LAE 6616 Trends in Language Arts Education
MAE 6517 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher
SCE 6616 Trends in Elementary School Science Education
SSE 6617 Trends in Elementary School Social Studies Education
RED 5514 Classroom Diagnosis and Treatment of Reading Difficulties

3 hours
3 hours
3 hours
3 hours
3 hours

AREA C—ELECTIVES—Minimum requirement of 6 semester hours.
EDE 5541 Individualizing Instruction in the Elementary School
EDE 6205 Elementary School Curriculum
EEX 5051 Exceptional Children in the Schools
LAE 6714 Investigation in Children's Literature
MAE 5637 Laboratory Programs in Mathematics
RED 6116 Trends in Reading Education
SSE 5440 Law Education Studies Material
MUE 5611 Trends in Elementary School Music Education

3 hours
3 hours
3 hours
3 hours
3 hours
3 hours
3 hours

Elementary Education Specialization (M.A.) is for students to become qualified (and certified) to teach in the elementary school classroom, grades one through six. Programs may be developed for people certified in other teaching fields who wish to qualify in Elementary Education and in a more comprehensive program, for those building on any non-education baccalaureate degree.

Both Master of Arts degrees emphasize knowledge of content, teaching strategies and instructional materials needed to teach different elementary school subjects such as art, language arts, literature for children, mathematics, music, physical education, science and the social sciences, and the fundamentals of teaching reading and classroom diagnosis/remediation of reading difficulties.

The Master of Arts degrees for the baccalaureate non-education major also include the broad areas of human development, history/philosophy of education, measurement and evaluation, curriculum, teaching strategies and practical experience in elementary school classrooms (internship).
MASTER OF ARTS IN ELEMENTARY EDUCATION
IN GENERAL ELEMENTARY(*)

(Minimum Total, 36 semester hours)

AREA A—PROFESSIONAL CORE—Minimum requirement of 15 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>RED 5147</td>
<td>Developmental Reading</td>
<td>3</td>
</tr>
<tr>
<td>RED 5514</td>
<td>Classroom Diagnosis and Treatment of Reading Difficulties</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6518</td>
<td>Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher</td>
<td>3</td>
</tr>
<tr>
<td>EDE 6918</td>
<td>Research Project</td>
<td>3</td>
</tr>
</tbody>
</table>

AREA B—SPECIALIZATION Minimum requirement of 21 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARE 4313</td>
<td>Art in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>HLP 4460</td>
<td>Teaching Elementary School Health and Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>LAE 6616</td>
<td>Trends in Language Arts Education</td>
<td>3</td>
</tr>
<tr>
<td>LAE 6714</td>
<td>Investigation in Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>MAE 5318</td>
<td>Current Methods in Elementary School Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>SCE 6616</td>
<td>Trends in Elementary School Science Education</td>
<td>3</td>
</tr>
<tr>
<td>SSE 6617</td>
<td>Trends in Elementary School Social Studies Education</td>
<td>3</td>
</tr>
</tbody>
</table>

COREQUISITES—Minimum requirement of 9-12 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUE 3401</td>
<td>Music in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>EDE 4937</td>
<td>Drug Abuse Education</td>
<td>3</td>
</tr>
<tr>
<td>EDG 6940</td>
<td>Graduate Internship</td>
<td>3</td>
</tr>
<tr>
<td>If from Secondary preparation background:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDE 5541</td>
<td>Individualizing Instruction in the Elementary School</td>
<td>3</td>
</tr>
</tbody>
</table>

OR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE 6205</td>
<td>Elementary Curriculum</td>
<td>3</td>
</tr>
</tbody>
</table>

(*) A program for students previously certified as a Secondary Teacher or as a K-12 Teacher.

MASTER OF ARTS IN ELEMENTARY EDUCATION
IN GENERAL ELEMENTARY (*)

(Minimum Total, 46 semester hours)

AREA A—PROFESSIONAL CORE—Minimum requirement of 18 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Measurement and Evaluation in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Research Project</td>
<td>3</td>
</tr>
</tbody>
</table>

AREA B—SPECIALIZATION—Minimum requirement of 18 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAE 4314</td>
<td>Language Arts in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>MAE 5318</td>
<td>Current Methods in Elementary School Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>SCE 6616</td>
<td>Trends in Elementary School Science Education</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Hours</td>
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<tr>
<td>-------------</td>
<td>---------------------------------------------------------------</td>
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</tr>
<tr>
<td>SSE 6617</td>
<td>Trends in Elementary School Social Studies Education</td>
<td>3</td>
</tr>
<tr>
<td>RED 5147</td>
<td>Developmental Reading</td>
<td>3</td>
</tr>
<tr>
<td>RED 5514</td>
<td>Classroom Diagnosis and Treatment of Reading Difficulties</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA C—INTERNSHIP**—Minimum requirement of 10 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDG 6940</td>
<td>Graduate Internship (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6940</td>
<td>Graduate Internship</td>
<td>7</td>
</tr>
</tbody>
</table>

**COREQUISITES**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARE 4313</td>
<td>Art in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>HLP 4460</td>
<td>Teaching Elementary School Health &amp; Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>MUE 3401</td>
<td>Music in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>EDE 4937</td>
<td>Drug Abuse Education</td>
<td>3</td>
</tr>
</tbody>
</table>

(*) A program providing for professional and specialization preparation in Elementary Education.

**EARLY CHILDHOOD SPECIALIZATION (M.Ed.)**

To prepare students to become master teachers of or consultants for programs in nursery school through grade three. The program includes a 'professional core' of research, human development, and measurement and evaluation courses; field experiences and courses focusing on programs, creative activities, organization of instruction, individualizing, perception and an overview of the exceptional student. This specialization fulfills Florida Early Childhood (nursery-kindergarten) certification requirements.

**MASTER OF EDUCATION IN ELEMENTARY EDUCATION**

**EARLY CHILDHOOD SPECIALIZATION**

(Minimum Total, 34 semester hours)

**AREA A—CORE**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDE 6918</td>
<td>Research Project</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA B—SPECIALIZATION**—Minimum requirement of 19 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDE 5541</td>
<td>Individualizing Instruction in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>EEC 5205</td>
<td>Programs in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>EEC 5206</td>
<td>Organization of Instruction in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>EEC 5208</td>
<td>Creative Activities in Early Childhood</td>
<td>4</td>
</tr>
<tr>
<td>EEX 5051</td>
<td>Exceptional Children in the Schools</td>
<td>3</td>
</tr>
<tr>
<td>PET 6285</td>
<td>Perceptual Motor Development</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA C—ELECTIVES**—Minimum requirement of 3 semester hours which must be at the 6000 level.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 6517</td>
<td>Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher or select an alternate course in consultation with an advisor.</td>
<td>3</td>
</tr>
</tbody>
</table>
MATHEMATICS SPECIALIZATION (M.Ed.)

A program for elementary teachers who serve as special mathematics laboratory teachers; or as adjunct mathematics-learning disability teachers helping the regular classroom teacher in diagnosing, prescribing and remediating the instruction of children identified as learning disabled in mathematics; or as mathematics specialists who are the curriculum resource instructional leaders in their school.

This program includes the development of competencies in diagnosing learning difficulties and error patterns in mathematics, organizing and managing laboratory experiences, using a wide variety of specific teaching techniques for all content strands in a K-8 (pre-algebra) mathematics classroom individualized instruction programs. The program may qualify one for certification in Elementary School and Junior High School Mathematics if he has sufficient mathematics (12 semester hours) content courses and certain experience-methods requirements.

Contact Person: Dr. Michael Hynes, (305) 275-2007/275-2932

MASTER OF EDUCATION IN ELEMENTARY EDUCATION
MATHEMATICS SPECIALIZATION
(Minimum Total, 33 semester hours)
AREA A—CORE—Minimum requirement of 12 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours
OR
EDF 6432 Measurement and Evaluation in Education 3 hours
EDE 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 12-15 semester hours.
MAE 5637 Laboratory Programs in Mathematics 3 hours
MAE 6517 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher 3 hours
MAE 6549 Practicum in Mathematics Instruction, K-12 1-3 hours
MAE 6899 Seminar in Teaching Mathematics 3 hours

AREA C—ELECTIVES—Minimum requirement of 6-9 semester hours.
(Selected in consultation with Advisor)
MAE 5318 Current Methods in Elementary School Mathematics 3 hours
MAE 6145 Mathematics Curriculum, K-12 3 hours
MAE 6641 Problem Solving and Critical Thinking Skills in Mathematics, K-12 3 hours
MAE 6648 Designing Instructional Packages for Computer Applications 3 hours

COREQUISITE
RED 6335 Reading in the Content Areas 3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)

Program is not approved for automatic certification by the State of Florida.
MUSIC EDUCATION SPECIALIZATION (M.Ed.)

A program in cooperation with the Department of Music is for students who are certified to teach music (K-12). The Master of Education program, organized to increase knowledge and improve teaching skills, includes: advanced work in research and educational foundations; a practicum in music education; and courses in foundations of music education, general music, teaching performing organizations and curriculum. Advanced courses in music history, music theory, conducting and performance are included.

Contact Person: Dr. Mary J. Palmer (305) 275-2018/275-2934

MASTER OF EDUCATION IN MUSIC EDUCATION

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours.

EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours

OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours

OR
EDF 6432 Measurement and Evaluation in Education 3 hours
EDE 6918 Research Project 3 hours

AREA B—CURRICULUM—Minimum requirement of 9 semester hours.

MUE 6155 Teaching Performing Organizations 3 hours
MUE 6349 Advanced General Music 3 hours
MUE 6946 Practicum in Music Education 3 hours
### AREA C—SPECIALIZATION
**Minimum requirement of 12 semester hours.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUH 4340</td>
<td>Seminar: Music to Bach</td>
<td>2 hours</td>
</tr>
<tr>
<td>MUH 4361</td>
<td>Seminar: Music Since Bach</td>
<td>2 hours</td>
</tr>
<tr>
<td>MUG 4102</td>
<td>Advanced Conducting</td>
<td>2 hours</td>
</tr>
<tr>
<td>MUT 5325</td>
<td>Arranging and Composing Music</td>
<td>2 hours</td>
</tr>
<tr>
<td>MV 5251</td>
<td>Secondary Graduate Performance</td>
<td>1 hour</td>
</tr>
<tr>
<td>MV 5251</td>
<td>Secondary Graduate Performance</td>
<td>1 hour</td>
</tr>
<tr>
<td>MV 5351</td>
<td>Principal Graduate Performance</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

**COREQUISITES**

- RED 6335  Reading in the Content Area  
  (An undergraduate course or in-service credit may be used to satisfy the requirement.)

Other Requirement: A placement examination in music history, music theory, and sight singing (or completion of equivalent courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUH 4218</td>
<td>Review of Music History</td>
<td>1 hour</td>
</tr>
<tr>
<td>MUT 4031</td>
<td>Review of Music Theory</td>
<td>1 hour</td>
</tr>
<tr>
<td>MUT 4275</td>
<td>Review of Sight-Singing and Ear Training</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

### READING SPECIALIZATION (M.Ed.)

Prepares teachers for certification as reading specialists (e.g., reading resource teacher, reading laboratory teacher, reading/language arts supervisor, primary education specialist) in grades K-12 in public schools and private reading laboratories or clinics. Diagnosis of reading disabilities, techniques of corrective reading, psychological measurement, reading in the content fields, management of reading programs, reading trends and research and dimensions of the language arts other than reading are included with considerable emphasis on practicums with disabled readers from the early childhood to adult levels. People certified in areas of education other than elementary are eligible to pursue a degree in the program.

Contact Person: Dr. Richard A. Thompson (305) 275-275-2018/275-2934

### MASTER OF EDUCATION IN READING

**(Minimum Total, 33 semester hours)**

**AREA A—CORE**—**Minimum requirement of 12 semester hours.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3 hours</td>
</tr>
<tr>
<td>OR EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3 hours</td>
</tr>
<tr>
<td>OR EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3 hours</td>
</tr>
<tr>
<td>OR EDF 6432</td>
<td>Measurement &amp; Evaluation in Education</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDE 6918</td>
<td>Research Project</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

**AREA B—SPECIALIZATION**—**Minimum requirement of 21 semester hours.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>RED 6845</td>
<td>Clinical Diagnosis and Remediation of Reading Difficulties</td>
<td>3 hours</td>
</tr>
<tr>
<td>RED 6515</td>
<td>Remedial Reading Practicum</td>
<td>6 hours</td>
</tr>
<tr>
<td>RED 6116</td>
<td>Trends in Reading Education</td>
<td>3 hours</td>
</tr>
<tr>
<td>RED 6746</td>
<td>Management of Reading Programs</td>
<td>3 hours</td>
</tr>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas</td>
<td>3 hours</td>
</tr>
<tr>
<td>Choose one</td>
<td><strong>LAE 5464</strong> Literature for Adolescents</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td><strong>LAE 6616</strong> Trends in Language Arts Education</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td><strong>LAE 6714</strong> Investigation in Children’s Literature</td>
<td>3 hours</td>
</tr>
</tbody>
</table>
COREQUISITES

RED 5147 Developmental Reading 3 hours
(or 3012)
RED 5514 Diagnosis & Treatment Reading 3 hours
(or 4519)

VISUAL ARTS (M.Ed.) PROGRAM K-12

Designed to meet the expanded and deepening needs of the art teacher in the studio content areas, to examine contemporary problems in art education, review recent curriculum developments, study innovative developments, explore interdisciplinary concepts and become involved in research problems specific to the art teacher. This degree requires 33 semester hours and previous certification in art.

THE MASTER OF ARTS (M.A.) PROGRAM IN VISUAL ARTS

Planned to provide the art-orientated person with a degree which includes certification. The 40 hour program meets state certification requirements in foundations, special methods in art education, general methods in teaching and the student teaching component. An M.A. program in Visual Arts can be arranged for the student who is not interested in becoming certified to teach art, but wants preparation for museum work, art therapy, or becoming involved in life-long learning in art for adult education. Prerequisites depend on previous experience of the student.

Contact Person: Dr. Ruth Weidenheimer (305) 275-2008/275-2932

MASTER OF EDUCATION IN VISUAL ARTS EDUCATION

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours.

EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours

OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours

OR
EDF 6432 Measurement and Evaluation in Education 3 hours
ARE 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 21 semester hours.

ARE 5251 Art for Exceptionalities 3 hours
ARE 5255 Arts in Recreation 3 hours
ARE 5444 Jewelry Making 3 hours
ARE 5648 Contemporary Visual Arts Education 3 hours
ARE 6455 K-12 Art Instructional Materials I 3 hours
ARE 6456 K-12 Art Instructional Materials II 3 hours
ART 5109 Crafts Design 3 hours

COREQUISITE

RED 6335 Reading in the Content Areas 3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)
MASTER OF ARTS IN VISUAL ARTS EDUCATION

(Minimum Total, 40 semester hours)

AREA A—PROFESSIONAL CORE—Minimum requirement of 18 semester hours.

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>ARE 6918</td>
<td>Research Project</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
<td>3</td>
</tr>
<tr>
<td>ESE 6325</td>
<td>Curriculum Design</td>
<td>3</td>
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</table>

OR

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE 6205</td>
<td>Elementary Curriculum</td>
<td>3</td>
</tr>
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</table>

AREA B—SPECIALIZATION—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ARE 6455</td>
<td>K-12 Art Instructional Materials I (required)</td>
<td>3</td>
</tr>
<tr>
<td>ARE 6456</td>
<td>K-12 Art Instructional Materials II (required)</td>
<td>3</td>
</tr>
<tr>
<td>ARE 5251</td>
<td>Art for Exceptionalities</td>
<td>3</td>
</tr>
<tr>
<td>ARE 5255</td>
<td>Arts in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>ARE 5444</td>
<td>Jewelry Making in Schools</td>
<td>3</td>
</tr>
<tr>
<td>ARE 5648</td>
<td>Contemporary Visual Arts Education</td>
<td>3</td>
</tr>
<tr>
<td>ART 5109</td>
<td>Crafts Design</td>
<td>3</td>
</tr>
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</table>

AREA C—INTERNSHIP—Minimum requirement of 10 semester hours.

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EDG 6940</td>
<td>Graduate Internship (or equivalent)</td>
<td>3</td>
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<tr>
<td>EDG 6940</td>
<td>Graduate Internship</td>
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COREQUISITE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas (An undergraduate course or in-service credit may be used to satisfy the requirement.)</td>
<td>3</td>
</tr>
</tbody>
</table>

SECONDARY EDUCATION

Contact Person: Dr. John H. Armstrong (305) 275-2015/275-2934

SECONDARY EDUCATION (M.Ed.)

Programs are designed to extend and update teaching skills for classroom teachers working with adolescent students in a specific academic area at the middle, junior, or high school level.

The program has three areas of emphasis. A ‘professional core’ includes research fundamentals and project, human development or history/philosophy of education, and measurement/evaluation or statistics for educational data. The ‘curriculum core’ focuses on advanced curriculum concepts, research finding in instructional trends, and advanced teaching strategies. Specialization core courses may be selected from offerings in the appropriate discipline department in consultation with the advisor.

Subject field specializations are available in the following areas:

- Business Education
- Science
- English
- Social Sciences
- Mathematics
- Vocational Education
MASTER OF EDUCATION IN SECONDARY EDUCATION

BUSINESS-VOCATIONAL EDUCATION
(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours.
- EDF 6481 Fundamentals of Graduate Research in Education 3 hours
- EDF 6517 History and Philosophy of American Education 3 hours
- EDF 6155 Lifespan Human Development and Learning 3 hours
- OR EDF 6401 Statistics for Educational Data 3 hours
- OR EDF 6432 Measurement and Evaluation in Education 3 hours
- EDS 6918 Research Project 3 hours

AREA B—VOCATIONAL CORE—Minimum requirement of 9 semester hours.
- BTE 6172 Business Education Curriculum 3 hours
- EVT 6264 Administration in Vocational Education 3 hours
- EVT 6265 Supervision in Vocational Education 3 hours

AREA C—SPECIALIZATION—Minimum requirement of 12 semester hours.
- BTE 6371 Advanced Business Instruction Techniques 3 hours
- BTE 6773 Office Simulation Techniques 3 hours
- BTE 6935 Seminar in Business Education 3 hours
- BTE 6946 Practicum Business Education 3 hours

AREA D—OPTIONAL ELECTIVES
- EVT 5260 Cooperative Programs in Vocational Education 3 hours
- EVT 5664 School/Community Relations for Vocational Education 3 hours

COREQUISITES
- RED 6335 Reading in the Content Areas 3 hours
  (An undergraduate course or inservice credit may be used to satisfy the requirement)
- EVT 4066 Philosophical Principles Technical Education 3 hours

MASTER OF EDUCATION IN SECONDARY EDUCATION

ENGLISH LANGUAGE ARTS
(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours.
- EDF 6481 Fundamentals of Graduate Research in Education 3 hours
- EDF 6517 History and Philosophy of American Education 3 hours
- OR EDF 6155 Lifespan Human Development and Learning 3 hours
- OR EDF 6401 Statistics for Educational Data 3 hours
- OR EDF 6432 Measurement and Evaluation in Education 3 hours
- ESE 6918 Research Project 3 hours

AREA B—CURRICULUM—Minimum requirement of 9 semester hours.
(select from the following courses):
- LAE 4342 Teaching Language and Composition 3 hours
- LAE 5464 Literature for Adolescents 3 hours
- LAE 6637 English Programs in the Secondary Schools 3 hours
- EME 5208 Media and Methods 3 hours
- ESE 6218 Curriculum Writing 3 hours
## MASTER OF EDUCATION IN SECONDARY EDUCATION

### MATHEMATICS EDUCATION

(Minimum Total, 33 semester hours)

**AREA A—CORE**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>EDF 6155 Lifespan Human Development and Learning</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>EDF 6401 Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>EDF 6432 Measurement and Evaluation in Education</td>
<td>3</td>
</tr>
<tr>
<td>ESE 6918</td>
<td>Research Project</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA B—CURRICULUM CORE**—Minimum requirement of 15 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 5637</td>
<td>Laboratory Programs in Mathematics (required)</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6517</td>
<td>Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher (required)</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6899</td>
<td>Seminar in Teaching Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>

(Select two courses from the following):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EME 5208</td>
<td>Media and Methods</td>
<td>3</td>
</tr>
<tr>
<td>ESE 6218</td>
<td>Curriculum Writing</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6145</td>
<td>Mathematics Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6549</td>
<td>Practicum in Mathematics Education</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6641</td>
<td>Problem Solving and Critical Thinking Skills in Mathematics, K-12</td>
<td>3</td>
</tr>
<tr>
<td>MAE 6648</td>
<td>Designing Instructional Packages for Computer Applications</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA C—SPECIALIZATION**—Minimum requirement of 6 semester hours selected in consultation with an advisor.

**COREQUISITE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas (An undergraduate course or in-service credit may be used to satisfy the requirement.)</td>
<td>3</td>
</tr>
</tbody>
</table>

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### SCIENCE EDUCATION

(Minimum Total, 33 semester hours)

**AREA A—CORE**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>EDF 6155 Lifespan Human Development and Learning</td>
<td>3</td>
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110
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
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<tr>
<td>OR</td>
<td>Measurement and Evaluation in Education</td>
<td></td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Research Project</td>
<td></td>
</tr>
<tr>
<td>ESE 6918</td>
<td></td>
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</table>

**AREA B—CURRICULUM**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCE 5238</td>
<td>Inquiry In the Sciences</td>
<td>3</td>
</tr>
<tr>
<td>SCE 6237</td>
<td>Science Programs in Secondary School</td>
<td>3</td>
</tr>
</tbody>
</table>

(Select 6 semester hours in consultation with advisor)

**AREA C—SPECIALIZATION**—Minimum requirement of 9 semester hours to be selected in consultation with the advisor.

**COREQUISITE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas</td>
<td>3</td>
</tr>
</tbody>
</table>

**MASTER OF EDUCATION IN SECONDARY EDUCATION**

**SOCIAL SCIENCE EDUCATION**

(Immediate Total, 33 semester hours)

**AREA A—CORE**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>Measurement and Evaluation in Education</td>
<td></td>
</tr>
<tr>
<td>ESE 6918</td>
<td>Research Project</td>
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**AREA B—CURRICULUM**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ESE 6218</td>
<td>Curriculum Writing</td>
<td>3</td>
</tr>
<tr>
<td>ESE 6325</td>
<td>Curriculum Design</td>
<td>3</td>
</tr>
<tr>
<td>SSE 5334</td>
<td>Inquiry in the Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>SSE 6636</td>
<td>Contemporary Social Science Education</td>
<td>3</td>
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</table>

**AREA C—SPECIALIZATION**—Minimum requirement of 9 semester hours to be selected in consultation with the advisor.

**COREQUISITE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas</td>
<td>3</td>
</tr>
</tbody>
</table>

(An undergraduate course or in-service credit may be used to satisfy the requirement.)

**MASTER OF EDUCATION IN VOCATIONAL EDUCATION**

**MASTER TEACHER**

(Immediate Total, 33 semester hours)

**AREA A—CORE**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
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<td>Fundamentals of Graduate Research in Education</td>
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</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>Lifespan Human Development and Learning</td>
<td></td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td>Measurement and Evaluation in Education</td>
<td></td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Graduate Internship</td>
<td>3</td>
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<tr>
<td>EDG 6940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESE 6918</td>
<td>Research Project</td>
<td></td>
</tr>
</tbody>
</table>

**AREA B—SPECIALIZATION**—Minimum requirement of 21 semester hours to be selected in consultation with the advisor.

**COREQUISITE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>RED 6335</td>
<td>Reading in the Content Areas</td>
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</tr>
</tbody>
</table>
MASTER OF EDUCATION IN VOCATIONAL EDUCATION
ADMINISTRATOR OPTION
(Minimum Total, 33 semester hours)
AREA A—CORE—Minimum requirement of 12 semester hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours
OR
EDF 6432 Measurement and Evaluation in Education 3 hours
EDG 6940 Graduate Internship 3 hours
OR
ESE 6918 Research Project 3 hours

AREA B SPECIALIZATION—Minimum requirement of 21 semester hours to be selected in consultation with the advisor.
EVT 4066 Principles and Practices of Vocational Education 3 hours
EVT 6265 Supervision in Vocational Education 3 hours
EVT 5664 School/Community Relations for Vocational Education 3 hours

COREQUISITE
RED 6335 Reading in the Content Areas 3 hours
(An undergraduate or in-service credit may be used to satisfy the requirement.)

SECONDARY EDUCATION (M.A.)
For students to become qualified (and certified) to teach in the middle school, junior high, or senior high classroom, this is a comprehensive program for building on the non-education academic area bachelor’s degree in: Business Education, English, Mathematics, Science, Social Science, and Vocational Education. Professional courses involve the areas of human development, history/philosophy of education, measurement and evaluation, curriculum writing, teaching strategies, and practical experience in secondary school classrooms (internship).

MASTER OF ARTS IN SECONDARY EDUCATION
OPTION SPECIALIZATION: BUSINESS EDUCATION, ENGLISH, MATHEMATICS, SCIENCE, SOCIAL SCIENCE
(Minimum Total, 40 semester hours)
AREA A—PROFESSIONAL CORE—Minimum requirement of 18 semester hours.
EDF 6137 Lifespan Human Development and Learning 3 hours
ESE 6218 Curriculum Writing 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
ESE 6918 Research Project 3 hours
AREA B—SPECIALIZATION—Minimum requirement of 12 semester hours to be selected in consultation with an advisor.
Must include a 5000- or 6000-level special methods course 3 hours
AREA C—INTERNSHIP—Minimum requirement of 10 semester hours
EDG 6940 Graduate Internship (or equivalent) 3 hours
EDG 6940 Graduate Internship 7 hours
COREQUISITE
RED 6335 Reading in the Content Areas 3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)

MASTER OF ARTS IN SECONDARY EDUCATION

VOCATIONAL EDUCATION
(Minimum Total, 39 semester hours)
AREA A—CORE—Minimum requirement of 6 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDG 6940 Graduate Internship
OR
ESE 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 33 semester hours
EVT 4066 Principles and Practices of Vocational Education 3 hours
EVT 4368 Advanced Teaching Techniques for Vocational Education 3 hours
Courses to be selected in consultation with an advisor.
COREQUISITE
RED 6335 Reading in the Content Areas 3 hours

MASTER OF ARTS IN SECONDARY EDUCATION

VOCATIONAL—HEALTH RELATED AREAS
(Minimum Total, 39 semester hours)
AREA A—CORE—Minimum requirement of 6 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDG 6940 Graduate Internship
OR
ESE 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 33 semester hours.
EVT 4066 Principles and Practices of Vocational Education 3 hours
EVT 4368 Advanced Teaching Techniques for Vocational Education 3 hours
EVT 5315 Applied Clinical Teaching Techniques in Vocational Education 3 hours
EVT 5316 Clinical Coordination for the Health Occupation Teacher 3 hours
Courses to be selected in consultation with an advisor.
COREQUISITE
RED 6335 Reading in the Content Areas 3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)

SECONDARY EDUCATION

SCIENCE EDUCATION/HEALTH SCIENCES (M.A.)
This specialization emphasis is a cooperative program between the College of Education and the College of Health. It is designed to prepare persons with a baccalaureate degree in a health related profession to become educators in their field. Health sciences courses constitute 50 per cent of the program, with professional courses selected for the other 50 per cent. Course selection with an advisor is related to background preparation, experience, and interest of the student.
MASTER OF ARTS IN SCIENCE EDUCATION

HEALTH SCIENCES
(Minimum Total, 36 semester hours)
AREA A—CORE—Minimum requirement of 6 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
ESE 6918 Research Project 3 hours
AREA B—PROFESSIONAL—Minimum requirement of 12 semester hours to be selected from graduate level Education courses in consultation with the advisor.
AREA C—SPECIALIZATION—Minimum requirement of 18 semester hours to be selected from graduate level courses in consultation with the advisor.

SECONDARY EDUCATION: EXTENDED CONTENT (M.A.)
This program is designed for the student whose objective is to combine an in-depth study of his specialization area in order to teach in the community college. The major emphasis is in content, specialization courses.

MASTER OF ARTS IN SECONDARY EDUCATION
EXTENDED CONTENT PROGRAM
(Minimum Total, 42 semester hours)
AREA A—CORE—Minimum requirement of 9 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
Select one: EMG 5208; EDF 6401; EDF 6432; RED 6335 3 hours
AREA B—CURRICULUM—Minimum requirement of 15 semester hours.
ESE 6218 Curriculum Writing 3 hours
EDG 6940 Internship 6 hours
Advanced methods course in subject field 3 hours
ESE 6918 Research Project 3 hours
AREA C—SPECIALIZATION—Minimum requirement of 18 semester hours to be selected in consultation with the advisor.

EDUCATIONAL SERVICES SPECIALTIES

ADMINISTRATION AND SUPERVISION
Programs are perceived as a sequential set of activities developed as a format for establishing an educational leadership plan for the area. Practicing professionals and aspiring educators have the opportunity to enter the program which fits their needs. The M.Ed. option includes Administration and Supervision K-12, Administration and Supervision K-6, and Administration and Supervision 7-12. These programs require 36-42 semester hours.
The M.A. in Educational Administration does not fulfill state certification requirements. Additional courses may be required in special methods, general methods and curriculum as prerequisites to the degree which is individualized to meet the needs of the student and requires 39-40 semester hours for completion.

MASTER OF EDUCATION IN ADMINISTRATION & SUPERVISION
(Minimum Total, 36 semester hours)
AREA A—CORE—Minimum requirement of 12 semester hours.
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
EDA 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 18 semester hours.
EDA 6061 Organization and Administration of Schools 3 hours
EDA 6502 Organization and Administration of Instructional Programs 3 hours
EDS 6123 Educational Supervisory Functions 3 hours
EDS 6130 Educational Supervisory Techniques 3 hours
OR
EDS 6111 Administration & Supervision of Staff Dev 3 hours
AND TWO OF THE FOLLOWING:
EDA 6232 Legal Aspects of School Operation 3 hours
EDA 6240 Educational Financial Affairs 3 hours
EDA 6260 Educational Systems and Facilities 3 hours
EDG 6940 Graduate Internship 3 hours

AREA C—CURRICULUM—Minimum requirement of 6 semester hours, concentrated in either ESE or EDE courses.
ESE 6325 Curriculum Design 3 hours
ESE 6416 Curriculum Evaluation 3 hours
OR
EDE 6205 Elementary School Curriculum 3 hours
EDE 5541 Individualizing Instruction in the Elementary School 3 hours

COREQUISITE
RED 6335 Reading in the Content Areas (An undergraduate course or in-service credit may be used to satisfy the requirement.) 3 hours

MASTER OF ARTS IN EDUCATION

ADMINISTRATION/SUPERVISION
(Minimum Total, 39 semester hours)
AREA A—CORE—Minimum requirement of 15 semester hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
OR
EDF 6608 Social Factors in American Education 3 hours
EDF 6401 Statistics for Educational Data 3 hours
OR
EDF 6432 Measurement and Evaluation in Education 3 hours
EDA 6918 Research Project 3 hours

AREA B—SPECIALIZATION (@ semester hours)
Selected with approval of Advisor.

AREA C—ADMINISTRATION—Minimum requirement of 15 semester hours
EDA 6061 Organization and Administration of Schools* 3 hours
EDA 6502 Organization and Administration of Instructional Programs* 3 hours
EDS 6123 Educational Supervisory Functions 3 hours
OR
EDS 6130 Educational Supervisory Techniques 3 hours
EDA 6232 Legal Aspects of School Operation 3 hours
EDA 6240 Educational Financial Affairs 3 hours
EDA 6260 Educational Systems and Facilities 3 hours
EDG 6940 Graduate Internship 3 hours

*Required course

This program does not lead to Certification in School Administration or Supervision.
COUNSELOR EDUCATION

Has three program options. The Master of Education is designed to meet the needs of students who have a baccalaureate degree and have completed coursework for regular Florida State Teaching Certification and plan to work as a counselor in a school setting (elementary, middle, secondary, junior college). This degree requires a minimum of 33 semester hours.

The second option is a 39 semester hour Master of Arts for the student who has a baccalaureate degree in a discipline other than education. This degree is for the student desiring certification in guidance for the public schools, K-12, at the master's level.

The third option is a 39 semester hour Master of Arts for the student who is not interested in working in a school setting, but is interested in other counseling employment (e.g., employment service, vocational rehabilitation, juvenile courts, crisis intervention centers, etc.). This degree requires that at least 6 semester hours be taken from colleges other than the College of Education.

Other criteria: For consideration for admission to any of the counselor education programs, an applicant must secure and complete a special packet of materials for review by a faculty admissions committee.

MASTER OF EDUCATION IN COUNSELOR EDUCATION

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours

<table>
<thead>
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<th>Title</th>
<th>Hours</th>
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<td>Fundamentals of Graduate Research in Education</td>
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<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
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<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
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<tr>
<td>EGC 6918</td>
<td>Research Project</td>
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AREA B—SPECIALIZATION—Minimum requirement of 21 semester hours

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<th>Course</th>
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<tr>
<td>EGC 5005</td>
<td>Introduction to Guidance and Human Services</td>
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<tr>
<td>EGC 6235</td>
<td>Procedures for Group Testing</td>
<td>3</td>
</tr>
<tr>
<td>EGC 6317</td>
<td>Vocational &amp; Career Development</td>
<td>3</td>
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<tr>
<td>EGC 6435</td>
<td>Theories of Individual Counseling</td>
<td>3</td>
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<tr>
<td>EGC 6436</td>
<td>Techniques of Counseling</td>
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<tr>
<td>EGC 6505</td>
<td>Group Procedures in Counseling</td>
<td>3</td>
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<tr>
<td>EGC 6446</td>
<td>Counseling Practicum</td>
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</table>

COREQUISITES

RED 6335 | Reading in the Content Areas | 3 |

(An undergraduate course or in-service credit may be used to satisfy the requirement.)

MASTER OF ARTS IN COUNSELOR EDUCATION

(Minimum Total, 39 semester hours)

AREA A—CORE—Minimum requirement of 15 semester hours

<table>
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<tr>
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<th>Hours</th>
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<td>Fundamentals of Graduate Research in Education</td>
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<td>EDF 8517</td>
<td>History and Philosophy of American Education</td>
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<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
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<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
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<tr>
<td>EGC 6918</td>
<td>Research Project</td>
<td>3</td>
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</tbody>
</table>

AREA B—SPECIALIZATION—Minimum requirement of 21 semester hours

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EGC 5005</td>
<td>Introduction to Guidance and Human Services</td>
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<tr>
<td>EGC 6235</td>
<td>Procedures for Group Testing</td>
<td>3</td>
</tr>
<tr>
<td>EGC 6317</td>
<td>Vocational and Career Development Procedures</td>
<td>3</td>
</tr>
</tbody>
</table>

116
EGC 6435  Theories of Individual Counseling  3 hours
EGC 6436  Techniques of Counseling  3 hours
EGC 6505  Group Procedures in Counseling  3 hours
EGC 6446  Counseling Practicum in School  3 hours

AREA C—ADDITIONAL CERTIFICATION COURSE—Minimum requirement of 3 semester hours
EDA 6061  Organization and Administration of Schools  3 hours
EDA 6502  Organization and Administration of Instructional Programs  3 hours
EDS 6123  Educational Supervisory Functions  3 hours
EDS 6130  Educational Supervisory Techniques  3 hours
EDE 6205  Elementary School Curriculum  3 hours
LIS 4428  Utilization of Education Media  3 hours
ESE 6218  Curriculum Writing  3 hours
EDG 6337  Techniques of Games Use in Education  3 hours

COREQUISITES
RED 6335  Reading in the Content Areas  3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)
Special Methods  3 hours

PRACTICUM, STUDENT TEACHING, OR FULL-TIME EXPERIENCE IN K-12 SETTING NEEDED FOR CERTIFICATION

MASTER OF ARTS IN COUNSELOR EDUCATION
(Minimum Total, 39 semester hours)
AREA A—CORE—Minimum requirement of 6 semester hours
EDF 6481  Fundamentals of Graduate Research in Education  3 hours
EGC 6918  Research Project  3 hours

AREA B—SPECIALIZATION—Minimum of 24 semester hours
EGC 5005  Introduction to Guidance & Human Services  3 hours
EGC 6235  Procedures for Group Testing  3 hours
EGC 6317  Vocational & Career Development Procedures  3 hours
EGC 6435  Theories of Individual Counseling  3 hours
EGC 6436  Techniques of Counseling  3 hours
EGC 6505  Group Procedures in Counseling  3 hours
EGC 6446  Counseling Practicum in Schools  3 hours

AREA C—ELECTIVE TRACK—Minimum of 9 semester hours to be selected in consultation with the advisor. Only 6 semester hours may be selected from course levels below 5000; at least 6 semester hours must be taken outside the College of Education.

THE EDUCATIONAL MEDIA PROGRAM
Leads to a Master of Education degree for school media specialists. It is designed to offer advanced skills in administration, production, instructional design, research, and evaluation of media programs, as well as knowledge and applications of innovations and new technologies for education. Additional coursework is required for those not certified in media.

MASTER OF EDUCATION IN EDUCATIONAL MEDIA
(Minimum Total, 33 semester hours)
AREA A—CORE—Minimum requirement of 12 semester hours
EDF 6481  Fundamentals of Graduate Research in Education  3 hours
EDF 6517 History and Philosophy of American Education 3 hours
OR
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours
OR
EDF 6432 Measurement and Evaluation in Education 3 hours
EME 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 15 semester hours
LIS 6509 Seminar Library Media 3 hours
LIS 5312 Advanced Production Techniques 3 hours
LIS 5454 Administrative Principles in Media Centers 3 hours
LIS 5262 Computer Applications in Instructional Technology 3 hours
LIS 6313 Multi-Media Message Design 3 hours
EME 6613 Instructional System Design 3 hours
EDG 6940 Graduate Internship 3 hours

AREA C—ELECTIVES—Minimum requirement of 6 semester hours
EDG 6337 Games Use in Education 3 hours
EEX 5051 Exceptional Children in School 3 hours
EGC 5005 Introduction to Guidance and Human Services 3 hours
LAE 6714 Investigation in Children’s Literature 3 hours
LAE 5464 Literature for Adolescents 3 hours
EME 5208 Media and Methods 3 hours

COREQUISITES
RED 6335 Reading in the Content Areas 3 hours
(An undergraduate course or in-service credit may be used to satisfy the requirement.)
If previously certified, but NOT in media:
LIS 4453 School Media Sciences 3 hours
LIS 4540 Interaction Techniques in Media Sciences 3 hours
LIS 4310 Production of Materials for Media Center 3 hours
LIS 4428 Utilization of Educational Media 3 hours
LIS 4731 Organization of Media and Information 3 hours
LIS 4601 Reference Sources and Services 3 hours
LIS 4510 Development of Media Collections 3 hours

THE INSTRUCTIONAL TECHNOLOGY PROGRAM

Leads to a Master of Arts degree and is designed for those who wish to work in business, industry, government, medicine, or other settings where training takes place. Instructional technologists analyze training problems and requirements, design, develop, evaluate, and manage instructional programs.

MASTER OF ARTS IN EDUCATIONAL MEDIA

INSTRUCTIONAL TECHNOLOGY
(Minimum Total, 36 semester hours)
AREA A—CORE—Minimum requirement of 6 semester hours.
EDF 6481 Fundamentals of Graduate Research In Education 3 hours
EME 6918 Research Project 3 hours

AREA B—SPECIALIZATION—Minimum requirement of 15 semester hours.
LIS 5312 Advanced Production Techniques 3 hours
LIS 5262 Computer Applications in Instructional Technology 3 hours
LIS 6313 Multi-Media Message Design 3 hours
EME 6613 Instructional System Design 3 hours
EDG 6940 Graduate Internship (may be repeated) 3 hours

AREA C—RELATED ELECTIVES—Minimum requirement of 15 semester hours.
To be selected with the help of an advisor. Courses may be selected from Communication, Computer Science, Industrial Psychology, Business Administration, other departments in Education, etc.

COREQUISITES
LIS 4310 Production of Materials for Media Center 3 hours
LIS 4428 Utilization of Educational Media 3 hours

EXCEPTIONAL STUDENT EDUCATION SPECIALIZATIONS (M.Ed.)

Focus on three types of exceptionality:

SLD Specific learning disabilities—Disorder in one or more of the basic psychological processes involved in understanding or in using spoken and written language; learning problems not due primarily to other handicapping conditions.

MH Mentally handicapped—Significant impairment in general intellectual functioning concurrent with deficits in adaptive behavior which are manifested during the development period.

EH Emotionally handicapped—Inability to achieve adequate academic progress or satisfactory interpersonal relationships not attributed primarily to physical, sensory or intellectual deficits.
A 'core curriculum' required in all three specializations includes: identification of the various exceptionalities which may exist in a school population; problems, characteristics and strategies for language disabilities; and selection and interpretation of test scores, developmental history, performance status and prediction of future progress and needs.

Unless an applicant has previous elementary education course work, additional courses are required in teaching reading and mathematics and an 'elective focus' on selecting and using literature for children, effective utilization of educational media, or trends in language arts, science, social studies or music.

A specialization core for each of the exceptionalities includes theory of the exceptionality, curriculum and techniques courses, specific assessment work and application in practicums. For all three programs, a practicum experience, a written comprehensive exam, and a research project are required.

Without previous elementary course work, 15 additional semester hours are required for all exceptional education majors:

Required (6 Semester Hours)
  MAE 5318 Current Methods in Elementary School Mathematics 3 hours
  RED 5147 Developmental Reading 3 hours

Choose 2 (6 Semester Hours)
  LAE 6616 Trends in Language Arts Education 3 hours
  LAE 6714 Investigation in Children's Literature 3 hours
  LIS 4428 Utilization of Educational Media 3 hours

Choose 1 (3 Semester Hours)
  MUE 5611 Trends in Elementary School Music Education 3 hours
  ARE 4313 Art in the Elementary School 3 hours
  SCE 6616 Trends in Elementary School Science Education 3 hours
  SSE 6617 Trends in Elementary School Social Studies Education 3 hours

MASTER OF EDUCATION IN EXCEPTIONAL CHILD (EH)
(Minimum Total, 33 semester hours)
AREA A—CORE—(12 Semester Hours)
  EDF 6481 Fundamentals of Graduate Research in Education 3 hours
  EDF 6517 History and Philosophy of American Education 3 hours
  OR
  EDF 6155 Lifespan Human Development and Learning 3 hours
  EDF 6401 Statistics for Educational Data 3 hours
  OR
  EDF 6432 Measurement and Evaluation in Education 3 hours
  EEX 6918 Research Project 3 hours

AREA B—CURRICULUM CORE—(12 Semester Hours)
  EEX 5051 Exceptional Children in Schools 3 hours
  EEX 5105 Educational Implications for the Speech and Language Disorders of Exceptional Children 3 hours
  EEX 5215 Psycho-educational Appraisal of Exceptional Children 3 hours
  EEX 6863 Supervised Teaching Practicum with Exceptional Students 3 hours
AREA C—SPECIALIZATION—(9 Semester Hours)

EED 6071 Behavior Disorders in Schools 3 hours
EED 6215 Development of a Personalized Program for Children with Behavior Disorders 3 hours
EED 6247 Educational Programming for Children with Behavior Disorders 3 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements, if not previously certified in Elementary Education.

MAE 5318 Current Methods in Elementary School Mathematics 3 hours
RED 5147 Developmental Reading 3 hours

Choose Two

LAE 6616 Trends in Language Arts Education 3 hours
LAE 6714 Investigation in Children's Literature 3 hours
LIS 4428 Utilization of Educational Media 3 hours

Choose One

MUE 5611 Trends in Elementary School Music Education 3 hours
ARE 4313 Art in the Elementary School 3 hours
SCE 6616 Trends in Elementary School Science Education 3 hours
SSE 6617 Trends in Elementary School Social Studies 3 hours

MASTER OF EDUCATION IN EXCEPTIONAL CHILD (LD)

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours

EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours

OR

EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6401 Statistics for Educational Data 3 hours

OR

EDF 6432 Measurements and Evaluation in Education 3 hours
EEX 6918 Research Project 3 hours

AREA B—CURRICULUM CORE—Minimum requirement of 12 semester hours

EEX 5051 Exceptional Children in the Schools 3 hours
EEX 5105 Educational Implication for the Speech and Language Disorders of Exceptional Children 3 hours
EEX 5215 Psycho-educational Appraisal of Exceptional Children 3 hours
EEX 6863 Supervised Teaching Practicum with Exceptional Students 3 hours

AREA C—SPECIALIZATION—Minimum requirement of 9 semester hours

ELD 6112 Foundation and Diagnosis of Learning Disabilities 4 hours
ELD 6304 Management and Teaching Strategies for the Learning Disabled Student 4 hours
ELD 6944 Diagnostic Learning Disabilities Laboratory 1 hour

COREQUISITES: Prescribed by College of Education to meet State Certification requirements, if not previously certified in Elementary Education.

MAE 5318 Current Methods in Elementary School Mathematics 3 hours
RED 5147 Developmental Reading 3 hours
Choose Two
- LAE 6616 Trends in Language Arts Education 3 hours
- LAE 6714 Investigation of Children’s Literature 3 hours
- LIS 4428 Utilization of Educational Media 3 hours

Choose One
- MUE 5611 Trends in Elementary School Music Education 3 hours
- ARE 4313 Art in the Elementary School 3 hours
- SCE 6616 Trends in Elementary School Science Education 3 hours
- SSE 6617 Trends in Elementary School Social Studies Education 3 hours

MASTER OF EDUCATION IN EXCEPTIONAL CHILD (MH)

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours

**EDF 6481** Fundamentals of Graduate Research in Education 3 hours

**EDF 6517** History and Philosophy of American Education 3 hours

**OR**

**EDF 6155** Lifespan Human Development and Learning 3 hours

**EDF 6401** Statistics for Educational Data 3 hours

**OR**

**EDF 6432** Measurement and Evaluation in Education 3 hours

**EEX 6918** Research Project 3 hours

AREA B—CURRICULUM CORE—Minimum requirement of 12 semester hours

**EEX 5051** Exceptional Children in the Schools 3 hours

**EEX 5105** Educational Implication for the Speech and Language Disorders of Exceptional Children 3 hours

**EEX 5215** Psycho-educational Appraisal of Exceptional Children 3 hours

**EEX 6863** Supervised Teaching Practicum with Exceptional Student 3 hours

AREA C—SPECIALIZATION—Minimum requirement of 9 semester hours

**EMR 5051** Fundamental Concepts and Educational Procedures Related to Mental Retardation 3 hours

**EMR 6362** Classroom Organization and Curriculum for Teaching the Mentally Retarded 4 hours

**EMR 6261** Career Planning for the Mentally Retarded 2 hours

COREQUISITES: Prescribed by College of Education to meet State Certification requirements, if not previously certified in Elementary Education.

**MAE 5318** Current Methods in Elementary School Mathematics 3 hours

**RED 5147** Developmental Reading 3 hours

Choose Two
- LAE 6616 Trends in Language Arts Education 3 hours
- LAE 6714 Investigation in Children’s Literature 3 hours
- LIS 4428 Utilization of Educational Media 3 hours

Choose One
- MUE 5611 Trends in Elementary School Music Education 3 hours
- ARE 4313 Art in the Elementary School 3 hours
- SCE 6616 Trend in Elementary School Science Education 3 hours
- SSE 6617 Trends in Elementary School Social Studies Education 3 hours
SCHOOL PSYCHOLOGY (M.S.)

A unique specialization in psychology and education. The University of Central Florida Program is based on the assumptions that school psychologists can apply relevant knowledge and skills from a variety of disciplines to the learning and adjustment problems of pre-school and school age children; and that relevant knowledge and skills can be transmitted through a variety of services including (a) consultation with teachers and parents, (b) direct services to children and young adults, and (c) indirect services to school and community organizations. School psychologists may practice in public or private schools, colleges and universities, rehabilitation centers, hospitals, mental health clinics, government agencies, child guidance centers, penal institutions, and may develop private practices. Applicants with backgrounds in education, psychology or other undergraduate majors may qualify. The program involves formal preparation and practical experiences focusing on psychological foundations (human development, learning and motivation), psychoeducational assessment, exceptional students, remediation or intervention techniques, counseling skills, as well as a full-time supervised internship of two semesters in the public school setting. Graduates are eligible for certification at the state level.

Other criteria: Applicants for the School Psychology Program are required to attend a formal interview and submit letters of recommendation.

MASTER OF SCIENCE IN SCHOOL PSYCHOLOGY

(Minimum Total, 60 semester hours)

AREA A—CORE—Minimum requirement of 24 semester hours

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<th>Course Title</th>
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<td>Exceptional Children in the Schools</td>
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<tr>
<td>RED 5147</td>
<td>Developmental Reading</td>
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<td>DEP 5057</td>
<td>Developmental Psychology</td>
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<td>EXP 5445</td>
<td>Psychology of Learning and Motivation</td>
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<td>Statistics for Educational Data</td>
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<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
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<tr>
<td>SPS 6918</td>
<td>Research Project</td>
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<td>SPS 6608</td>
<td>Seminar in School Psychology</td>
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AREA B—SPECIALIZATION—Minimum requirement of 36 semester hours

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<td>SPS 6936</td>
<td>Problems in School Psychology</td>
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<tr>
<td>EGC 6435</td>
<td>Theories of Individual Counseling</td>
<td>3</td>
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<tr>
<td>EGC 6436</td>
<td>Techniques of Counseling</td>
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</tr>
<tr>
<td>EGC 6505</td>
<td>Group Procedures in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>EAB 5765</td>
<td>Applied Behavior Analysis with Children &amp; Youth</td>
<td>3</td>
</tr>
<tr>
<td>EGC 6215</td>
<td>Individual Psycho-Educational Testing I: WISC-R, WAIS-R</td>
<td>3</td>
</tr>
<tr>
<td>EGC 6225</td>
<td>Individual Psycho-Educational Testing II</td>
<td>3</td>
</tr>
<tr>
<td>SPS 6606</td>
<td>School Consultation Techniques</td>
<td>3</td>
</tr>
<tr>
<td>SPS 6949</td>
<td>School Psychology Internship</td>
<td>12</td>
</tr>
</tbody>
</table>

COREQUISITES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6517</td>
<td>History &amp; Philosophy of American Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education</td>
<td>3</td>
</tr>
<tr>
<td>EDA 6061</td>
<td>Organization and Administration of Schools</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>One other course in administration/ supervision, curriculum or general methods</td>
<td>3</td>
</tr>
</tbody>
</table>
PHYSICAL EDUCATION

Offers a Master of Education (M.Ed.) and Master of Arts (M.A.) in Education degrees with specialization in various aspects of Physical Education. The M.Ed. degree program is designed for people with a background in education who are already certified by the state to teach physical education. This program is sufficiently flexible and general to meet a range of student needs in improving proficiency and awareness in: (1) teaching skills, (2) curricular innovations, (3) research findings and techniques, (4) interpersonal skills and (5) administrative techniques.

The M.A. degree program is structured for students who may or may not have a background in education or physical education to provide a more in-depth study of a specific area of physical education. Students fulfilling the requirements of these programs would be prepared to enter positions in education, private business, industry and government.

MASTER OF EDUCATION IN PHYSICAL EDUCATION

(Minimum Total, 33 semester hours)

AREA A—CORE—Minimum requirement of 12 semester hours.

EDF 6481 Fundamentals of Graduate Research in Education 3 hours

EDF 6517 History and Philosophy of American Education 3 hours

OR

EDF 6155 Lifespan Human Development and Learning 3 hours

EDF 6401 Statistics for Educational Data 3 hours

OR

EDF 6432 Measurement and Evaluation in Education 3 hours

PET 6918 Research Project 3 hours
AREA B—SPECIALIZATION—Minimum requirement of 15 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 6146</td>
<td>Current Trends and Philosophical Foundations of Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 6285C</td>
<td>Perceptual Motor Development</td>
<td>3</td>
</tr>
<tr>
<td>PET 6378C</td>
<td>Environmental Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PET 6516C</td>
<td>Measurement in Kinesiology and Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 6540</td>
<td>Problem Analysis—Review of Literature</td>
<td>3</td>
</tr>
</tbody>
</table>

AREA C—ELECTIVES—Minimum requirement of 6 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEI 6443</td>
<td>Recreation</td>
<td>3</td>
</tr>
<tr>
<td>PET 6060C</td>
<td>Analysis of Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>PET 6417</td>
<td>Administration of Physical Education and Athletic Programs</td>
<td>3</td>
</tr>
<tr>
<td>PET 6425</td>
<td>Curriculum Design in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 6938</td>
<td>Special Topics</td>
<td>3</td>
</tr>
<tr>
<td>PET 6908</td>
<td>Independent Study</td>
<td>3</td>
</tr>
</tbody>
</table>

COREQUISITE READ 6335 Reading in the Content Areas 3 hours

(An undergraduate course or in-service credit may be used to satisfy the requirement.)

MASTER OF ARTS IN PHYSICAL EDUCATION

EXERCISE PHYSIOLOGY
(Minimum Total, 36 semester hours)

AREA A—CORE—21-27 Semester hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research In Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 4370C*</td>
<td>Exercise Physiology—Cardiovascular</td>
<td>2</td>
</tr>
<tr>
<td>PET 4371C*</td>
<td>Exercise Physiology—Respiratory</td>
<td>2</td>
</tr>
<tr>
<td>PET 6378C</td>
<td>Environmental Exercise Physiology</td>
<td>2</td>
</tr>
<tr>
<td>PET 6540</td>
<td>Problem Analysis—Review of Literature</td>
<td>3</td>
</tr>
<tr>
<td>PET 6908</td>
<td>Independent Study (in exercise physiology)</td>
<td>2-4</td>
</tr>
<tr>
<td>PET 6918</td>
<td>Research Project (in exercise physiology)</td>
<td>3</td>
</tr>
<tr>
<td>PET 6938</td>
<td>Special Topics (in exercise physiology)</td>
<td>3</td>
</tr>
<tr>
<td>PET 6938</td>
<td>Seminar (in exercise physiology)</td>
<td>2-4</td>
</tr>
<tr>
<td>PET 6946</td>
<td>Internship (in exercise physiology)</td>
<td>3-5</td>
</tr>
</tbody>
</table>

AREA B—STATISTICS—Minimum requirement of 3-8 semester hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
</tbody>
</table>

AREA C—SPECIAL EDUCATION—3 semester hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 4312C*</td>
<td>Anatomic and Mechanical Foundations of Human Movement</td>
<td>3</td>
</tr>
<tr>
<td>PET 6060C</td>
<td>Analysis of Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>PET 6146</td>
<td>Current Trends and Philosophical Foundations of Physical Education</td>
<td>3</td>
</tr>
</tbody>
</table>

AREA D—COGNATE—Minimum requirement of 3-8 semester hours

AREA E—ELECTIVES—Minimum requirement of 6 semester hours

AREA F—PREREQUISITE—Minimum requirement of 2 semester hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEM 3102C</td>
<td>Body Development</td>
<td>2</td>
</tr>
</tbody>
</table>

*No more than 6 hours of 4000-level courses may be included in a program of study.

MASTER OF ARTS IN PHYSICAL EDUCATION

EXERCISE SCIENCE
(Minimum Total, 36 semester hours)

AREA A—CORE—Minimum requirement of 22-29 semester hours.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research In Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 4312C*</td>
<td>Anatomic and Mechanical Foundations of Human Movement</td>
<td>3</td>
</tr>
</tbody>
</table>

125
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 4370C*</td>
<td>Exercise Physiology—Cardiovascular</td>
<td>2</td>
</tr>
<tr>
<td>PET 4371C*</td>
<td>Exercise Physiology—Respiratory</td>
<td>2</td>
</tr>
<tr>
<td>PET 6060C</td>
<td>Analysis of Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>PET 6378C</td>
<td>Environmental Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PET 6540</td>
<td>Problem Analysis—Review of Literature</td>
<td>3</td>
</tr>
<tr>
<td>PET 6908</td>
<td>Independent Study</td>
<td>2-4</td>
</tr>
<tr>
<td>PET 6938</td>
<td>Special Topics</td>
<td>2-4</td>
</tr>
<tr>
<td>PET 6946</td>
<td>Internship</td>
<td>3-5</td>
</tr>
<tr>
<td>PET 6918</td>
<td>Research Project</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA B—STATISTICS**—Minimum requirement of 3 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA C—SPECIALIZATION**—Minimum requirement of 3 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 4050C*</td>
<td>Motor Development/Learning</td>
<td>2</td>
</tr>
<tr>
<td>PET 6146</td>
<td>Current Trends and Philosophical Foundations</td>
<td>3</td>
</tr>
<tr>
<td>PET 6285C</td>
<td>Perceptual Motor Development</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA D—COGNATE (OUTSIDE OF COLLEGE OF EDUCATION)**—Minimum requirement of 3-8 semester hours to be selected in consultation with an advisor.

**AREA E—ELECTIVES**—Minimum requirement of 0-7 semester hours.

*No more than 6 hours of 4000-level courses may be included in total program.

**COREQUISITE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEM 3102C</td>
<td>Body Development</td>
<td>2</td>
</tr>
</tbody>
</table>

**PREREQUISITES**

- Credit in human anatomy
- Credit in chemistry
- Credit in psychology
- Credit in sociology
- National certification in CPF

**MASTER OF ARTS IN PHYSICAL EDUCATION (PMD)**

**PERCEPTUAL MOTOR DEVELOPMENT**

(Minimum Total, 36 semester hours)

**AREA A—PROFESSIONAL**—Minimum requirement of 15 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3</td>
</tr>
<tr>
<td>PET 6378C</td>
<td>Environmental Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PET 6146</td>
<td>Current Trends and Philosophical Foundations</td>
<td>3</td>
</tr>
</tbody>
</table>

**AREA B—SPECIALIZATION**—Minimum requirement of 12 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 6285C</td>
<td>Perceptual Motor Development</td>
<td>3</td>
</tr>
<tr>
<td>EDG 6940</td>
<td>Graduate Internship</td>
<td>3</td>
</tr>
<tr>
<td>PET 6540</td>
<td>Problem Analysis—Review of Literature</td>
<td>3</td>
</tr>
<tr>
<td>PET 6918</td>
<td>Research Project</td>
<td>3</td>
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</tbody>
</table>

**AREA C—ELECTIVES**—Minimum requirement of 9 semester hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET 6425</td>
<td>Curriculum Design in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PET 6417</td>
<td>Administration of Physical Education and Athletic Programs</td>
<td>3</td>
</tr>
<tr>
<td>EEX 5051</td>
<td>Exceptional Children in the Schools</td>
<td>3</td>
</tr>
<tr>
<td>EEX 5215</td>
<td>Psycho-educational Appraisal of Exceptional Children</td>
<td>3</td>
</tr>
<tr>
<td>ELD 6304</td>
<td>Management and Teaching Strategies for the Learning</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Disabled Student</td>
<td></td>
</tr>
</tbody>
</table>

126
PET 6938  Special Topics
PET 6908  Independent Study

MASTER OF ARTS IN PHYSICAL EDUCATION

CONCENTRATION IN SPORTS MEDICINE
(Minimum Total, 36 semester hours)

AREA A—CORE—Minimum requirement of 27 semester hours
EDF 6481  Fundamentals of Graduate Research in Education 3 hours
PET 6378C  Environmental Exercise Physiology 3 hours
PET 6516C  Measurement in Kinesiology and PE 3 hours
PET 6540  Problem Analysis—Review of Literature 3 hours
PET 6616  Physical Evaluation 3 hours
PET 6625  Therapeutic Exercise/Modalities 3 hours
PET 6665  Administration of Athletic Training 3 hours
PET 6918  Research Project—Sports Medicine Related 3 hours
PET 6946  Clinical Practice 3 hours

AREA B—STATISTICS—Minimum requirement of 3-8 semester hours
EDG6401  Statistics for Educational Data 3 hours

AREA C—PHYSICAL EDUCATION (Select two courses 6-12 Semester Hours)
PET 4312C  Anatomic and Mechanical Foundations of Human Development 3 hours
PET 6080C  Analysis of Human Performance 3 hours
PET 6146  Current Trends & Philosophical Foundations of PE 3 hours
PET 6417  Administration of PE & Athletic Programs 3 hours

COGNATE AREAS (OUTSIDE COLLEGE OF EDUCATION): To be selected in consultation with an advisor (0-8 semester hours).

ELECTIVES: Courses to be selected in consultation with an advisor (0-6 semester hours).

LIST OF COURSES—COLLEGE OF EDUCATION

ARE 5251  Art for Exceptionalities 3 cr (2,1)
Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.

ARE 5255  Arts in Recreation 3 cr (2,1)
Art activities and experiences appropriate for use in playground, leisure services, occupational orientation and other recreational areas.

ARE 5358  Found Arts 3 cr (3,0)
PR: ARE 4440 and ARE 4443 or C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

ARE 5444  Jewelry Making in Schools 3 cr (3,0)
PR: C.I. Jewelry making appropriate for school age children using standard public school equipment.

ARE 5648  Contemporary Visual Arts Education 3 cr (3,0)
PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school Visual Arts Programs.

ARE 6455  K-12 Art Instructional Materials I 3 cr (3,0)
Advanced application of two-dimensional, three-dimensional, and graphics materials to appropriate levels of instruction in elementary and secondary schools.

ARE 6456  K-12 Art Instructional Materials II 3 cr (3,0)
Continuation of ARE 6455.

BTE 6172  Business Education Curriculum 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Curriculum planning and development; objectives, innovations, problems and issues in contemporary business programs.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTE 6371</td>
<td>Advanced Business Instruction Techniques</td>
<td>3 cr(3,0)</td>
<td>PR: Graduate Standing or C.I. Research, methods and materials related to current practices in Business Education.</td>
</tr>
<tr>
<td>BTE 6773</td>
<td>Office Simulation Techniques</td>
<td>3 cr(3,4)</td>
<td>PR: Basic Teacher Certificate or C.I. Methods of office simulation for teachers at the developmental and performance levels.</td>
</tr>
<tr>
<td>BTE 6935</td>
<td>Seminar in Business Education</td>
<td>3 cr(3,0)</td>
<td>PR: Graduate Standing or C.I. Current problems, issues and trends in Business Education.</td>
</tr>
<tr>
<td>BTE 6946</td>
<td>Practicum Business Education</td>
<td>3 cr(3,0)</td>
<td>PR: Graduate Standing. Techniques, materials and instructional media; evaluation and new trends of instruction in all areas of Business Education.</td>
</tr>
<tr>
<td>EDA 6061</td>
<td>Organization and Administration of Schools</td>
<td>3 cr(3,0)</td>
<td>PR: Basic Teacher Certificate or C.I. School organization patterns, kindergarten through junior college. Study of functions such as scheduling, staffing, community relations, design and operation of facilities, financial management.</td>
</tr>
<tr>
<td>EDA 6195</td>
<td>Educational Leadership II</td>
<td>UF 3 cr</td>
<td>Contemporary research on diffusion of innovations, planning of change, organizational theory and political power in policy decision making. Role of administrators and instructional leaders in establishing educational policies.</td>
</tr>
<tr>
<td>EDA 6201</td>
<td>Business Management in Education</td>
<td>FAU 3 cr</td>
<td>Fiscal management of individual schools and districts including budgeting, purchasing and accounting for school funds.</td>
</tr>
<tr>
<td>EDA 6205</td>
<td>Systems Planning and Management in Education</td>
<td>FAU 3 cr</td>
<td>Administrative task analysis, flow charting, casting, work scheduling, systems theory, systems design, feedback networks, P.P.B.S. and other topics and techniques applicable to systematic planning for and management of educational enterprises.</td>
</tr>
<tr>
<td>EDA 6232</td>
<td>Legal Aspects of School Operation</td>
<td>3 cr(3,0)</td>
<td>PR: Basic Teacher 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.</td>
</tr>
<tr>
<td>EDA 6240</td>
<td>Educational Financial Affairs</td>
<td>3 cr(3,0)</td>
<td>PR: Basic Teacher Certificate or C.I. Theoretical and practical approaches to managing school business affairs at Central Office and individual school levels.</td>
</tr>
<tr>
<td>EDA 6260</td>
<td>Educational Systems and Facilities</td>
<td>3 cr(3,0)</td>
<td>PR: Basic Teacher Certificate or C.I. Application of current educational management and behavioral theory for systems approaches in schools and educational facilities.</td>
</tr>
<tr>
<td>EDA 6502</td>
<td>Organization and Administration of Instructional Programs</td>
<td>3 cr(3,0)</td>
<td>PR: Basic Teacher Certificate or C.I. Purpose and functions of school learning centers, curricula, and establishment of educational priorities, review and analysis of various grouping patterns for individualizing instruction.</td>
</tr>
<tr>
<td>EDA 7241</td>
<td>Economics of Public Education</td>
<td>FAU 3 cr</td>
<td>Economic effects of schools upon the local, state and national economy; resource allocation and education investment.</td>
</tr>
<tr>
<td>EDA 7260</td>
<td>Educational Facilities</td>
<td>FAU 3 cr</td>
<td>Administration of educational facilities such as surveys, finance plans and specifications, equipment, contracts, construction procedures, maintenance and custodial services. Explores new dimensions in joint planning and multiple use of school facilities.</td>
</tr>
<tr>
<td>EDA 7095</td>
<td>Directed Independent Study</td>
<td>FAU 3 cr</td>
<td></td>
</tr>
</tbody>
</table>

128
EDA 7930 Seminar in School Administration  
FAU 3 cr  
Discussion of problems in school administration, patterns of curriculum organization and research projects.

EDA 7943 Field Project I & II  
FAU 5 cr  
Field experience and projects for advanced graduate students. Participation in school plant surveys, accreditation visitation, curriculum studies, administrative analysis, field research. May be repeated for credit.

EDA 7980 Dissertation  
FAU 1-20 cr  

EDE 5541 Individualizing Instruction in the Elementary School  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Study of basic philosophy, organizational patterns, techniques, materials and activities related to individualizing instruction in the elementary school classroom.

EDE 6205 Elementary School Curriculum  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of elementary schools.

EDE 6225 Practices in Childhood Education  
UF 3 cr  
PR: Course background or teaching experience in the elementary curriculum. Elementary school practices in relation to fundamental principles of curriculum development; selection, organization and development of effective teaching-learning situations.

EDE 6948 Practicum in Elementary Education  
UF 3-6 cr  
PR: C.I.

EDE 7247 Problems in Childhood Education I  
UF 3 cr  

EDE 7248 Problems in Childhood Education II  
UF 3 cr  

EDE 7415 Evaluation in the Elementary School  
UF 3 cr  
Point of view, methods and techniques used in appraising behavioral growth of pupils; evaluation of the objectives of the total program.

EDF 6155 Lifespan Human Development and Learning  
3 cr (3,0)  
Research in childhood, adolescent and adult development relevant to contemporary American education. Emphasis on application of theory to educational practice.

EDF 6259 Psychology of Classroom Behavior  
3 cr (3,0)  
Application of educational psychology to student behavior and classroom discipline. Focus on preventive management approaches and integration and research with classroom practice.

EDF 6401 Statistics for Educational Data  
3 cr (3,0)  
PR: EDF 6481 or C.I. Design of educational evaluation; analysis of data, descriptive and influential statistics, interpretation of results.

EDF 6403 Quantitative Foundations of Educational Research  
3 cr (3,0)  
PR: EDF 6401 or C.I. Examination of appropriate methods in applied educational contexts. Consideration of analysis strategies for educational data, emphasis on identification and interpretation of findings.

EDF 6432 Measurement and Evaluation in Education  
3 cr (3,0)  
PR: EDF 6481 or C.I. Theory and rationale of testing instrument construction, application of test results in the educational setting, analysis of standardized tests.

EDF 6481 Fundamentals of Graduate Research in Education  
3 cr (3,0)  
PR: C.I. Computer applications to educational research, elementary design and data analysis, effective use of library, reading and interpreting research in education.

EDF 6488 Research Design in Education  
3 cr (3,0)  
PR: EDF 6403 or C.I. An examination of methodological techniques for specific educational problems. Intended for students in the process of designing independent research studies.
EDF 6517 History and Philosophy of American Education 3 cr (3,0)
PR: C.I. A critical analysis of the conceptual and operative educational systems developed in the United States of America.

EDF 6608 Social Factors in American Education 3 cr (3,0)
Analysis of general and specific aspects of American education as they relate to social and behavioral sciences.

EDG 6285 Evaluation in the School Program UF 3 cr
Procedures and techniques of evaluation in school programs with particular emphasis on needs assessment, school self-study, and course evaluation.

EDG 6337 Techniques of Game Use in Education 3 cr (3,0)
Analysis, development, and use of educational games as an approach to classroom teaching.

EDG 6940 Graduate Internship 1-8 cr (0,1-8)
PR: Approval of Student Internship Office. Internship in an appropriate educational setting under the direction of a qualified field supervisor and/or a university supervisor.

EDG 7222 Curriculum: Theory and Research UF 3 cr
Theories of curriculum organization and a survey of curriculum research and patterns of curriculum.

EDG 7361 Instruction: Theory and Research UF 3 cr
Theories of instruction based upon research in the learning process, mental health, creativity, the thought process, human relations, group dynamics, communications.

EDG 7391 Seminar in Instructional Leadership UF 3 cr
Review of theories of change applicable to education. Discussion of roles of instructional leaders using alternative models of change.

EDG 7665 Bases of Curriculum and Instruction Theory I UF 3 cr
Application of theory and research in the behavioral sciences to the development of curriculum and instruction theory. Topics include social forces, human development, learning, knowledge and personality theories.

EDH 6065 History and Philosophy of Higher Education FAU 3 cr
Early European and American universities, both state and private. Also considers small and private junior and senior colleges.

EDH 6215 Community College Curriculum FAU 3 cr
Examination of the background, development, function and goals of the curriculum of the community college.

EDH 6216 Curriculum Development for the Disadvantaged Junior College Student FAU 3 cr
Review and consideration of significant factors affecting development of curriculum for disadvantaged students in the junior colleges.

EDH 6305 Improvement of Instruction in Colleges FAU 3 cr
Purposes, trends, outcomes and special programs in the curriculum. Considers techniques for identifying, improving and rewarding good college teaching. Test construction, measurement and learning theories.

EDS 5356 Supervision of Professional Laboratory Experiences 3 cr (2,1)
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.

EDS 6050 Supervision of Instruction FAU 3 cr
Effective supervisory principles and practices which can be used for instructional improvement.

EDS 6100 Leadership FAU 3 cr
Analysis of the interactive process within and between groups, emphasizing the formation and functioning of groups; development of skills essential for effective leadership.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDS 6111</td>
<td>Administration and Supervision of Staff Development</td>
<td>3 cr (2,1)</td>
<td>PR: Basic Teacher Certificate or C.I. Role and procedures for the supervisor or administrator in staff development. Assessment of staff development needs and delivery systems are stressed.</td>
</tr>
<tr>
<td>EDS 6123</td>
<td>Educational Supervisory Functions</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Analysis of school supervisory functions in human relations, leadership, personnel administration and in-service education for instructional improvement.</td>
</tr>
<tr>
<td>EDS 6130</td>
<td>Educational Supervisory Techniques</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. and EDS 6123. Development of techniques in observation, group processes, communication and evaluation for assessment of school personnel and programs.</td>
</tr>
<tr>
<td>EEC 5205</td>
<td>Programs in Early Childhood Education</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Philosophy, content, facilities, instructional materials and activities appropriate for children 3 to 8 years of age; current research; new curricula. Concurrent laboratory experiences.</td>
</tr>
<tr>
<td>EEC 5206</td>
<td>Organization of Instruction in Early Childhood Education</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Organization and techniques in instruction relating to language arts, social sciences, science, mathematics, health and physical education; problems relating to reading readiness perception and cognition (K-3). Concurrent laboratory experience.</td>
</tr>
<tr>
<td>EEC 5208</td>
<td>Creative Activities in Early Childhood</td>
<td>4 cr (4.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Organization of instruction and methods for creative activities involving music, art, literature and educational toys. Integration of activities and basic skills curriculum (K-3). Concurrent laboratory experience.</td>
</tr>
<tr>
<td>EED 6071</td>
<td>Behavior Disorders in Schools</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Assessment/analysis of behavior disorders, cause and effects, identification and theories.</td>
</tr>
<tr>
<td>EED 6215</td>
<td>Development of a Personalized Program for Children with Behavioral Disorders</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher 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.</td>
</tr>
<tr>
<td>EED 6247</td>
<td>Educational Programming for Children with Behavior Disorders</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. A study of existing models and theories of educational programs for children with behavior disorders.</td>
</tr>
<tr>
<td>EEX 5051</td>
<td>Exceptional Children in the Schools</td>
<td>3 cr (3.0)</td>
<td>PR: Senior Standing or C.I. Characteristics, definitions, educational problems and appropriate educational programs for the exceptional children in schools.</td>
</tr>
<tr>
<td>EEX 5105</td>
<td>Educational Implications for the Speech and Language Disorders of Exceptional Children</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher 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>EEX 5215</td>
<td>Psycho-educational Appraisal of Exceptional Children</td>
<td>3 cr (3.0)</td>
<td>PR: Basic Teacher Certificate or C.I. Selection of performance objectives, diagnostic measures, prescriptive teaching programs and progress evaluation procedures for individualizing instruction.</td>
</tr>
<tr>
<td>EEX 6863</td>
<td>Supervised Teaching Practicum with Exceptional Children</td>
<td>2-7 cr (12-38)</td>
<td>PR: Bachelor's degree, approved program and C.I. Supervised observation and teaching of an exceptional student.</td>
</tr>
<tr>
<td>EGC 5005</td>
<td>Introduction to Guidance and Human Services</td>
<td>3 cr (3.0)</td>
<td>PR: Completion of Phase II of Education Professional Preparation or C.I. A basic course presenting an overview of the philosophy, organization, administration and operation of guidance and human services.</td>
</tr>
</tbody>
</table>
EGC 5033 Guiding Human Relationships 3 cr (3,0)
PR: Senior Standing or Basic Teacher Certificate. Human relationship skills which will enhance intra- and inter-personal relating skills in classrooms.

EGC 6215 Individual Psycho-Educational Testing I: Binet, WISC-R, WAIS 3 cr (3,1)
PR: EDF 6402 or C.I. Analysis of test theory and practice in administration, scoring, interpretation and case report writing.

EGC 6225 Individual Psycho-Educational Testing II 4 cr (3,2)
PR: C.I. Analysis of test theory and practice in administration, scoring, and interpretation of tests assessing achievement, visual-motor and cognitive ability, adaptive behavior and self-concept.

EGC 6235 Procedures for Group Testing 3 cr (1,2)
PR: EDF 6432 or C.I. Survey of various educational and psychological objective instruments used in schools to measure achievement, aptitude, interests, ability. Emphasis on administration and score interpretation.

EGC 6317 Vocational and Career Development Procedures 3 cr (3,0)
Forces which affect career choice and shape personal development; vocational counseling, career education and parent-student-school interrelationships.

EGC 6435 Theories of Individual Counseling 3 cr (2,1)
PR: EGC 5005 or C.I. Major theories and approaches to school counseling, correlating them with counterpart theories of personality and learning.

EGC 6436 Techniques of Counseling 3 cr (1,2)
PR: EGC 5005, EGC 6435 or C.I. The nature of the counseling and its relationships to theoretical concepts.

EGC 6446 Counseling Practicum in Schools 3 cr (0,3)
PR: EDG 5005, 6435, 6436 or C.I. Supervised counseling emphasizing competence in (1) individual counseling; (2) working with groups; (3) tests in educational-vocational-personal counseling. May be repeated for credit.

EGC 6500 Guidance and Counseling of Gifted/Talented Individuals 3 cr (3,0)
Guidance and counseling procedures and strategies for gifted/talented students; self-assessment; group dynamics; communication with parents; career goals; alternate educational opportunities.

EGC 6505 Group Procedures in Counseling 3 cr (3,0)
PR: Basic Teacher Certificate, EGC 5005 or EGC 6435 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.

EGC 7056 Student Personnel Seminar In Higher Education UF 1-2 cr
Overview of the divisions, emphases, trends, and issues in student personnel services in higher education settings.

EGC 7318 Laboratory in Career Development UF 4 cr
PR: EGC 7446 (2); EGC 6317. Field based experience with emphasis on career development counseling.

EGC 7329 Seminar in Career Development UF 4 cr
PR: EGC 6317. Advanced course with in-depth coverage of various topics in career development.

EGC 7446 Practicum in Counseling UF 4 cr
PR: EGC 6446, and written application to the practicum coordinator, at least six weeks in advance of registration.

EGC 7485 Seminar in Counseling Research UF 2 cr
Admission to candidacy for the doctorate in Counselor Education.

EGC 7585 Practicum in Group Counseling UF 4 cr
PR: Eight credits in EGC 7446 and written application to the practicum coordinator at least six weeks in advance of registration.
EGC 7616 Evaluative Research in Guidance, Counseling and Personnel Work  
PR: EGC 6225; statistics course. Overview of research procedures and techniques with specific applications to the counseling profession.  

EGC 7706 Consultation Procedures  
PR: Eight credits in EGC 7446. Admission limited to students in the advanced program.  

EGC 7840 Practicum in Student Personnel Work  
PR: Eight credits in EGC 7446 and written application to the practicum coordinator at least six weeks in advance of registration.  

EGC 7852 Practicum in Counseling Older Persons  
PR: Written application to the practicum coordinator at least six weeks in advance of registration.  

EGC 7890 Internship in Personnel Work  
PR: Completion of all practica required for the Ed.S. or Ed.D. degree and written application to the internship coordinator at least six weeks in advance of registration.  

EGC 7892 Practicum in Psychological Assessment  
PR: EGC 6225, eight credits in EGC 7446 and written application to the practicum coordinator at least six weeks in advance of registration.  

EGC 7937 Seminar in Personnel Work  
Limited to students who are near completion of their course work for a degree.  

EGC 7980 Doctoral Research for Doctoral Dissertation  

EGI 6051 Understanding the Gifted/Talented Student  
A study of characteristics of the gifted/talented students; theories and research; identification procedures; special problems; educational forces.  

EGI 6245 Program Planning and Methodology for Gifted/Talented Students  
A study of organization, curriculum, strategies and activities for the gifted/talented student; diagnostic teaching; learning-teaching styles; instructional materials; individualized instruction.  

EGI 6941 Supervised Practicum with Gifted/Talented Students  
PR: EGI 6051, EGI 6245 and C.I. Supervised observation and teaching of students identified as gifted/talented.  

ELD 6112 Foundation and Diagnosis of Learning Disabilities  
PR: Basic Teacher Certificate or C.I. A study of the history, definition, causes, characteristics and current issues; consideration of diagnostic tests, materials and procedures.  

ELD 6304 Management and Teaching Strategies for the Learning Disabled Student  
PR: ELD 6112 or C.I. Prescriptive programming of teaching and management techniques based on a diagnosis of basic skill areas of learning disabled child.  

ELD 6944 Diagnostic Learning Disabilities Laboratory  
A laboratory designed for individual competence measurement of testing-evaluation skills. Must be scheduled concurrently with 'Foundations and Diagnosis of LD.'  

EME 5208 Media and Methods in Teaching  
PR: Basic Teacher Certificate or C.I. Practicum on various media in the classroom with emphasis on student film making and production.  

EME 6613 Instructional System Design  
Systematic design of instruction including task analysis, learner analysis, needs assessment, content analysis, specification of objectives, media selection, evaluation and revision; analysis of ID models.  

EMR 5051 Fundamental Concepts and Educational Procedures Related to Mental Retardation  
PR: Basic Teacher Certificate or C.I. A study of retardation groupings, educational and community provisions, history of services and learning characteristics of EMR, DMR, TMR.
EMR 6261 Career Planning for the Mentally Retarded  
PR: Basic Teacher Certificate. Instruction and practice in career planning with specific activities in homemaking skills, industrial arts, and job exploration.

EMR 6362 Classroom Organization and Curriculum for Teaching the Mentally Retarded  
PR: Basic Teacher Certificate or C.I. Organization, scheduling, materials, equipment, instructional procedures, appropriate curriculum experiences and adjustments, media use, and development prevocational skills for EMR, TMR, and PMR.

ESE 5214 Secondary School Curriculum Improvement  
PR: Basic Teacher Certificate or C.I. Secondary school self-studies for curriculum projects, accreditation reports or staff development.

ESE 5335 Teaching the Non-English Student  
PR: FLE 3063 Bilingual and non-linguistic instruction in curriculum areas and in English as a second language.

ESE 6218 Curriculum Writing  
PR: Basic Teacher Certificate or C.I. Goal analysis, task analysis, needs assessment and writing performance objectives for developing courses of study.

ESE 6325 Curriculum Design  
PR: Graduate standing or C.I. The foundations, design, constituent parts, development and implementation of change in public school curricula.

ESE 6416 Curriculum Evaluation  
PR: Graduate standing or C.I. Application of curriculum evaluation techniques to instructional programs.

EVT 5260 Cooperative Programs in Vocational Education  
PR: Basic Teacher Certificate or C.I. Study of cooperative vocational programs and achievement of competencies needed to establish, manage and coordinate co-op program activities in all vocational areas.

EVT 5315 Applied Clinical Teaching Techniques in Vocational Education  
PR: Basic Teacher Certificate or C.I. Study and practice of clinical teaching methods, development of student performance assessment instruments, planning clinical learning experiences, and record-keeping.

EVT 5316 Clinical Coordination for the Health Occupations Teacher  
PR: Basic Teacher Certificate or C.I. Development of clinical guidelines, resources, student schedules, and risk-management programs. Includes negotiating clinical contractual agreements and planning field supervision.

EVT 5561 Student Guidance in the Vocational Program  
PR: Basic Teacher Certificate or C.I. Achievement of skills used by teachers as they gather student data, confer with students and help students plan for employment or further education.

EVT 5564 Student Vocational Organizations  
PR: Basic Teacher Certificate or C.I. Competencies needed by vocational teachers as they establish and supervise student vocational organizations in secondary and post-secondary schools.

EVT 5685 Competency-Based Vocational Education  
PR: Basic Teacher Certificate or C.I. Achievement of teacher competencies unique to the installation and management of competency-based vocational training programs in secondary and post-secondary schools and community colleges.

EVT 5817 Management of Vocational Programs  
PR: Basic Teacher Certificate or C.I. Study and achievement of selected competencies needed by vocational teachers, supervisors and local administrators in the management of vocational education programs in the schools.
EVT 6264 Administration in Vocational Education 3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Administrative responsibilities in a local program of Vocational Education which includes two or more fields of occupational education.

EVT 6265 Supervision in Vocational Education 3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Supervisory techniques for planning and implementing improvement of staff, curriculum and personal relations in Vocational Education.

EVT 6267 Vocational Program Planning, Development and Evaluation 2-4 cr (2,4)  
PR: Basic Teacher Certificate or C.I. Achievement of selected teacher competencies related to program objectives, courses of study, long range plans and techniques for evaluating vocational program effectiveness.

EVT 6664 School/Community Relations for Vocational Education 2-4 cr (2,4)  
PR: Basic Teacher Certificate or C.I. Achievement of proficiency in the use of media techniques to promote the vocational program. Development and maintenance of productive relationships between school and community groups.

HSC 6132 Health Care Finance 3 cr (3,0)  
PR: ACC 5004, FIN 5405, Graduate status. The identification of resources available to Health Care institutions, allocation of resources and control of resource expenditures.

HSC 6153 Case Studies in Health Law 3 cr (3,0)  
PR: Graduate status or C.I. Health Law including patient care, liability, malpractice, workmen’s compensation, and legal responsibilities of health personnel.

HSC 6392 Issues and Trends in the Health Professions 3 cr (3,0)  
PR: Graduate status or C.I. Exploration of current status, issues, problems and future trends in the practice and education of health professions.

HSC 6402 Environmental Health 3 cr (3,0)  
PR: Graduate status or C.I. Recognition and evaluation of control problems arising from environmental contamination, which includes safe water supply, waste disposal, and food resources.

HSC 6412 Epidemiology 3 cr (3,0)  
PR: Graduate status or C.I. A study of the distribution and determinants of diseases and injuries in human populations.

HSC 6513 Principles and Practice of Medicine 3 cr (3,0)  
PR: Graduate status or C.I. A comprehensive survey of medicine.

HSC 6605 Health and Society 3 cr (3,0)  
PR: Graduate status or C.I. Understanding health and illness as defined by patients, providers, and other persons in the social system.

HSC 6911 Scientific Inquiry in the Health Profession 3 cr (3,0)  
PR: Graduate status or C.I. Research design and evaluation in health professions.

LAE 5464 Literature for Adolescents 3 cr (3,0)  
PR: Senior standing or C.I. Selecting and evaluating books for adolescents with emphasis on the use of literature in the development of young people.

LAE 6616 Trends in Language Arts Education 3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Historical development and trends; English usage systems; materials; instructional strategies.

LAE 6637 English Programs in the Secondary School 3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Concepts, problems and advanced topics.

LAE 6714 Investigation in Children’s Literature 3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Learning through the utilization of children’s literature; literature analysis and evaluation; story telling skill development; visual and reference materials.
LEI 6443 Recreation
A comprehensive study of public, private and school recreation programs.

LIS 6313 Multi-Media Message Design
Principles of communication, learning theory, and research in instructional technology applied to the design of mediated instructional messages.

LIS 6509 Seminar in Educational Media
Survey of current trends and issues in educational media. Research reviewed and the findings related to current practices.

LIS 6945 Practicum in Educational Media
Supervised work experience in educational media. May be taken twice for credit. Application must be made during preceding semester.

MAE 5318 Current Methods in Elementary School Mathematics
Strategies of instruction of computation and concepts of number, geometry and measurement. Instructional materials. (Meets Elementary Education certification requirements.)

MAE 5395 Teaching the Metric System
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).

MAE 5637 Laboratory Programs in Mathematics
PR: Basic Teacher Certificate or C.I. Design and development of special materials and projects for mathematics independent study. Emphasis on teaching and applying the metric system.

MAE 6145 Mathematics in Curriculum, K-12
PR: At least 6 SH of graduate credit in mathematics education or C.I. Development of historical and current issues and forces in mathematics curriculum. New mathematics programs and contemporary curricular issues will be emphasized.

MAE 6448 Designing Instructional Packages for Computer Applications
The applications of computer technology to instruction, K-12. Testing, drill activities, problem solving, skill development, and curriculum management will be considered.

MAE 6517 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher
PR: Basic Teacher Certificate or C.I. The study of techniques for diagnosis and remediation of difficulties in mathematics.

MAE 6549 Practicum in Mathematics Instruction, K-12
PR: MAE 6517; CR: MAE 6899. Supervised diagnostic instruction with children; selection of instructional materials and techniques. May be repeated for credit.

MAE 6641 Problem Solving and Critical Thinking Skills
PR: Regular Certificate or C.I. Development of procedures and practices necessary to implement critical thinking skills and problem solving techniques in the schools.

MAE 6899 Seminar in Teaching Mathematics
PR: Six semester hours of graduate credit in mathematics education. Development of historical and current issues, forces, and individuals and their impact on the teaching of mathematics K-12. Consideration of advanced instructional techniques. (May be repeated for credit.)

MUE 5611 Trends in Elementary School Music Education
PR: MUE 3401 or equivalent or C.I. Advanced study of instructional strategies and materials; integration of music education experiences with classroom activities; personal musical skill development; current research and new curricula.

MUE 6155 Teaching Performing Organizations
PR: Basic Teacher Certificate or C.I. Techniques and skills for the planning, administering and directing performing music organizations. Examination of historical and philosophical foundations of music education.
MUE 6349 Advanced General Music 3 cr (3,0)

MUE 6946 Practicum in Music Education 3 cr (0,14)
PR: Basic Teacher Certificate. MUE 6349 and MUE 6155, or C.I. Field experience in teaching music.

PET 6060C Analysis of Human Performance 3 cr (2,1)
Analytical techniques of kinesiology and their methods of application to individual and team activities.

PET 6146 Current Trends and Philosophical Foundations of Physical Education 3 cr (3,0)
A comprehensive analysis of current trends, forces and events leading to the development of contemporary concepts in physical education.

PET 6285C Perceptual Motor Development 3 cr (2,1)
Theoretical laboratory study of the relationship between perceptual motor development and learning. Special attention is given to the effects on academic achievement and reading.

PET 6378C Environmental Exercise Physiology 3 cr (3,2)
A study of physiological adaptation resulting from prescribed physical activity programs.

PET 6417 Administration in Physical Education 3 cr (3,0)
Study of current problems in the administration of school physical education and athletic programs.

PET 6425 Curriculum Design in Physical Education 3 cr (3,0)
Study of physical education and its existing organization. Emphasis on ethics, values, principles and issues.

PET 6516C Measurement in Kinesiology and Physical Education 3 cr (3,0)
Techniques of measurement and evaluation of human performance and their applications to physical education.

PET 6540 Problem Analysis—Review of Literature 3 cr (3,0)
PR: EDF 6432 and C.I. Comprehensive review of literature related to a selected topic in physical education; identification, analysis and evaluation of developments, issues and research problems.

PET 6616 Physical Evaluation 3 cr (3,0)
Advanced injury and illness evaluation incorporating anatomy and physiology as they relate. Internal injury and orthopedic problems are also covered.

PET 6625C Therapeutic Exercise/Therapeutic Modalities 3 cr (2,1)
This course will include specific rehabilitative exercises and the operation of rehabilitative equipment. Instruction will be given for therapeutic modalities.

PET 6665 Administration of Athletic Training 3 cr (3,0)
Specific problems related to rehabilitation, nutrition of athletes. Budgeting and administration of athletic programs also to be examined.

RED 5147 Developmental Reading 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Principles, procedures, organization and current practices in the elementary reading program, materials and methods of instruction.

RED 5514 Classroom Diagnosis and Treatment of Reading Difficulties 3 cr (3,1)
PR: RED 5147 or equivalent. Classroom diagnosis and corrective teaching in reading; instructional materials.

RED 6116 Trends in Reading Education 3 cr (3,0)
PR: Basic Teacher Certificate or C.I. Analysis of historical development and current trends; management systems; instructional strategies and investigation of research.
RED 6335 Reading in the Content Areas  
3 cr (3,0)  
PR: Basic Teacher 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.

RED 6515 Remedial Reading Practicum  
2-6 cr (1,2-6)  
PR: RED 5514 or equivalent. A remedial reading practicum for classroom teachers and those preparing to become special reading teachers. Emphasis on diagnostic reading tests and corrective materials and strategies.

RED 6746 Management of Reading Programs  
3 cr (3,0)  
Overview of K-12 reading instruction goals and program management models; role of reading supervisor and in-service needs assessment and delivery.

RED 6845 Clinical Diagnosis and Remediation of Reading Difficulties  
3 cr (3,0)  
PR: RED 5514 or C.I. Administration and interpretation of individual tests; factors contributing to reading difficulties; case studies; instructional techniques for the severely disabled reader.

RED 6846 Clinical Reading Practicum  
2-3 cr (0,2-3)  
PR: RED 6515 and RED 6845 or C.I. Clinical evaluation and remediation of severely disabled readers in a laboratory setting. Parent interview; case reports.

SCE 5328 Inquiry in the Sciences  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Teaching science by inquiry in the secondary school and development of inquiry lessons.

SCE 6237 Science Programs in Secondary School  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Study of historical development and current trends; analysis of science curricula, materials.

SCE 6616 Trends in Elementary School Science Education  
3 cr (3,0)  
PR: Basic Teacher Certification or C.I. Study of historical development and current trends; analysis of science curricula, materials.

SPS 6606 School Consultation Techniques  
1-2 cr (1-2,0)  
PR: C.I. Theories and models of school consultation and clinical practice in the consultative role.

SPS 6608 Seminar in School Psychology  
3 cr (3,0)  
PR: C.I. Diagnostic, Instructional and prescriptive intervention techniques.

SPS 6936 Problems in School Psychology  
3 cr (3,0)  
PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in school systems.

SP 6949 School Psychology Internship  
2-6 cr (0,2-6)  
PR: Graduate admission and C.I. Supervised placement in school setting.

SSE 5334 Inquiry in the Social Studies  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Teaching by inquiry in the new social studies with a development of inquiry episodes.

SSE 5440 Law Education Studies Materials  
3 cr (3,0)  
PR: Senior standing or C.I. Design, organization and development of educational materials relating constitutional law concepts to citizenship for schools.

SSE 6441 Florida Law Education Studies  
3 cr (3,0)  
Creative planning and evaluation of law education programs for schools in Florida.

SSE 6617 Trends in Elementary School Social Studies Education  
3 cr (3,0)  
PR: Basic Teacher Certificate or C.I. Historical development and current trends, strategies for inquiry instruction, intellectual, social and personal dimensions of social studies.

SSE 6636 Contemporary Social Science Education  
3 cr (3,0)  
PR: Basic Teacher Certificate of C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.
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 degrees.

The Master's 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 responsive to the needs of the State of Florida and the Nation.

The Ph.D. programs provide the opportunity for advanced graduate preparation in the areas of Electrical Engineering, Environmental Engineering, Industrial Engineering, and Mechanical Engineering. These programs provide direct support for the emergence of the Central Florida area as one of the national centers of high technology industry. The program is especially accessible to the place-bound engineer who would otherwise have difficulties in fulfilling his professional career objectives.
ADMISSION
1. University Admission Requirements
   An applicant must meet the minimum graduate admission criteria of a GPA of 3.0 (4.0) on the last two years of undergraduate degree work or score 1000 on the Graduate Record Examination.

2. College Admission Requirements
   In addition to the above minimum criteria, College admissions require the following:
   a. Applicants for the M.S.E. program must have the B.S.E. or equivalent from an ABET 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.
   c. Applicants from foreign countries whose native language is not English must score at least 550 on the Test of English as a Foreign Language (TOEFL).

MASTER OF SCIENCE IN ENGINEERING—M.S.E.
Advanced professional engineering competencies are achieved through the Master of Science in Engineering program. This program is intended for those who have attained an engineering bachelor’s degree. Based on a very strong undergraduate, interdepartmental, college-wide engineering core plus option approach, the M.S.E. degree program continues the interdisciplinary approach through the Master’s, but at the Department level.

DEGREE REQUIREMENTS
1. UNIVERSITY GRADUATE REGULATIONS
   See the University Graduate Regulations section of this catalog.

2. REQUIRED COURSES
   See Departmental Specialization Core course requirements in the following section.

3. RESTRICTED ELECTIVES
   Additional subdiscipline-specialty courses. Additional advanced mathematics, computer systems, natural sciences, engineering sciences, or appropriate supportive areas (beyond B.S.E. core requirement or equivalent).

4. RESEARCH REPORT OR THESIS
   Students must be registered in the semester in which application for graduation is filed.

5. EXAMINATION
   Oral defense of research report or thesis is required. Satisfactory completion of comprehensive examination may be required.

Total Minimum Semester Hours Required: 30
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. Civil Engineering Option 18 Hours
The core requirements will be met by the following courses offered by the Department of Civil Engineering and Environmental Sciences.

   a. CES 6606 Steel Design 3 hours
   b. CES 6707 Concrete Design 3 hours
   c. ECI 6235 Open Channel Hydraulics 3 hours
   d. ECI 5306 Geotechnical Engineering II 3 hours
   e. ENV 6436 Water and Wastewater Systems Design 3 hours
   f. TTE 5204 Traffic Engineering 3 hours
   g. TTE 5720 Design Elements of Transportation 3 hours
   h. ECI 6045 Mathematical Modeling in Civil Engineering 3 hours

2. Electrical Engineering Option 12-15 Hours
Courses are offered by the Department of Electrical Engineering and Communication Science. At least two courses from one of the following specialization areas are required: Communications systems, Control Systems, Digital Signal Processing, Digital Systems, Electronics, and Electro-optics. In addition, each student, with the approval of his graduate committee, will select courses from each of the three areas listed below:

   a. EEL 6371 Amplifier Design 3 hours
   b. EEL 5173 Signal and System Analysis 3 hours
   c. EEL 5442 Random Processes 3 hours
   d. ECM 5805 Software Engineering I 3 hours
   e. EEL 5365 Introduction to Digital Systems 3 hours
   f. ECM 5806 Software Engineering I 3 hours
   g. EEL 5441 Coherent Optics Applications 3 hours

3. Engineering Mathematics and Computer Systems Option 18 Hours
The core requirements for all students will be met by the following courses offered as an Interdisciplinary program.

   a. EEL 5365 Introduction to Digital Systems 3 hours
   b. EEL 6359 Computer Systems Design 3 hours
   c. ECM 5135 Engineering Math Analysis I 3 hours
   d. ECM 6235 Engineering Math Analysis II 3 hours
   e. ECM 5505 Micro Computer Systems 3 hours
   f. ECM 5806 Software Engineering I 3 hours

4. Environmental Engineering Option 20 Hours
The student will take the following Environmental Engineering Core and Specialty Courses offered by the Department of Civil Engineering and Environmental Sciences.

   a. ENV 6515 Environmental Impact Assessment 3 hours
   b. ENV 5625 Water Resources Engineering 3 hours
   c. ENV 6015 Physical/Chemical Treatment Systems 3 hours
ENV 6016 Biological Treatment Systems 3 hours
ENV 6017 Unit Operations and Processes Laboratory 2 hours
ENV 6016 Atmospheric Pollution Control 3 hours
ENV 6518 Industrial Waste Treatment 3 hours

5. **Industrial Engineering Option**

The core requirements for all students will be met by the following courses.

- EIN 6357 Engineering Economics Analysis 3 hours
- STA 5156 Probability and Statistics for Engineers 4 hours
- ESI 6316 Operations Research 4 hours
- EIN 6140 Project Engineering 3 hours
- ECM 6416 Discrete System Stimulation 3 hours

6. **Mechanical Engineering Option**

The core requirement for all students will be met by the courses listed:

- a. CES 5102 Intermediate Mechanics of Materials 3 hours
- b. EML 5271 Intermediate Dynamics 3 hours
- c. EML 6154 Conduction Heat Transfer 3 hours
- or EML 6155 Convection Heat Transfer 3 hours
- or EML 6157 Radiation Heat Transfer 3 hours
- d. EML 6530 Principles of Design 3 hours
- e. EML 6710 Gas Dynamics 3 hours
- or EML 6712 Mechanics of Viscous Flow 3 hours

**MASTER OF SCIENCE—M.S.**

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. Each department and program in the College offers one or more MS options as shown:

- Department of Civil Engineering & Environmental Sciences
  - Environmental Sciences
  - Structures & Foundations
  - Transportation Systems
- Department of Electrical Engineering & Communication Services
  - Electrical Systems and Sciences
- Program in Engineering Mathematics & Computer Systems
  - Computer Systems
  - Engineering System Analysis
- Department of Industrial Engineering & Management Sciences
  - Engineering Administration
  - Operations Research
- Department of Mechanical Engineering & Aerospace Sciences
  - Energy Systems
  - Mechanical Systems

**DEGREE REQUIREMENTS**

1. **UNIVERSITY GRADUATE REGULATIONS**
   See the University Graduate Regulations section of this catalog.
2. **REQUIRED COURSES** 12-20 hours
3. **RESTRICTED ELECTIVES** 8 hours
   Additional advanced mathematics (beyond MAC 3313), computer systems, natural sciences, engineering sciences or appropriate supportive areas.
4. **RESEARCH REPORT OR THESIS**  
   3-6 hours  
   Students must be registered in the semester in which application for graduation is filed.

5. **EXAMINATION**  
   Oral defense of research report or thesis is required. Satisfactory completion of a comprehensive examination may be required.  
   Total Minimum Semester Hours Required: 30

**OPTION REQUIREMENTS**

A. **Computer Systems Option** (offered by the Program in Engineering Mathematics & Computer Sciences)  
   This option is designed for students with an undergraduate degree in engineering, mathematics, computer science, or a basic science. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

   **Prerequisites**  
   Mathematics through Differential Equations  
   Assembly Language Programming  
   Probability and Statistics  
   FORTRAN Programming  
   Digital Logic Circuits

   **Required Courses**
   - EEL 5365 Introduction to Digital Systems 5 hours  
   - EEL 6349 Computer Systems Design 3 hours  
   - ECM 5505 Micro Computer Systems 3 hours  
   - ECM 5806 Software Engineering I 3 hours

   **Restricted Electives**  
   Select 3 courses from the following:  
   - ECM 5506 Engineering Applications of Computer Graphics 3 hours  
   - ECM 6706 Engineering Data Reduction 3 hours  
   - ECM 6805 Microcomputer Applications Design 3 hours  
   - ECM 6807 Software Engineering II 3 hours  
   - EEL 6717 Digital Computer Systems 3 hours  
   - EIN 6258 Man-Computer Interaction 3 hours

B. **Electrical Systems and Sciences Option** (offered by the Department of Electrical Engineering and Communication Sciences)  
   This option is available for individuals with undergraduate degrees in an area related to Electrical Engineering such as physics, mathematics, or computer science. The student, with the approval of his graduate committee, will select courses in Electrical Engineering or related fields with the objective of specializing in a particular subject area within Electrical Engineering.

   One nationally prominent option, which takes advantage of the large laser, defense, and space-industry base in the Orlando area, is the interdisciplinary program in Electro-Optics and Optical Communications. The emphasis of this area of specialization is optical systems design and electro-optics. Students will study optical electronics, lasers, detectors, and communications. Also, a strong emphasis is placed on the study of advanced applied mathematics.

   **Required Courses**
   - EEL 5441 Coherent Optics Applications  
   - EEL 6560 Optical Electronics  
   - EEL 6561 Fourier Optics  
   - EEL 6530 Communication Theory  
   - EEL 6488 Electromagnetic Fields
Other courses will be selected, with the approval of the graduate advisor, to round out the student's program. All students are expected to take 9 hours of applied mathematics chosen from the courses listed below.

**Electives**

**Optics**
- PHY 5937 Laser Physics 3 hours
- EEL 6808 Laser Technology 3 hours
- EEL 5907 Fiber Optics 3 hours

**Electronics**
- EEL 4308 Semiconductor Devices 4 hours
- EEL 6612 Modern Control Theory 4 hours
- EEL 6371 Amplifier Design 3 hours
- EEL 5365 Digital Systems 3 hours

**Communications**
- EEL 5542 Random Processes 3 hours
- EEL 5505 Digital Signal Processing 3 hours
- EEL 5173 Signal and Systems Analysis 3 hours
- EEL 6504 Communication Systems 3 hours

**Applied Mathematics**
- MAA 5211 Advanced Calculus 4 hours
- MAA 5405 Techniques of Complex Variables 3 hours
- MAP 4363 Applied Boundary Value Problems I 4 hours
- MAP 4364 Applied Boundary Value Problems II 3 hours
- MAP 5426 Special Functions 3 hours
- MAP 6406 Methods of Mathematical Analysis 4 hours
- MAP 6424 Transform Methods 3 hours

**C. Energy Systems Option** (offered by the Department of Mechanical Engineering and Aerospace Sciences)

Courses available in this option include:
- EML 5416 Solar Energy Systems 3 hours
- EML 5451 Energy Conversion 3 hours
- EML 5453 Energy Analysis 3 hours
- EML 5455 Energy Conservation 3 hours
- EML 6154 Conduction Heat Transfer 3 hours
- EML 6155 Convection Heat Transfer 3 hours
- EML 6157 Radiation Heat Transfer 3 hours
- EML 6710 Advanced Gas Dynamics 3 hours
- EML 6712 Mechanics of Viscous Flow 3 hours

A typical program might consist of 20 hours selected from the above, as well as 4-7 hours of advanced mathematics, scientific subjects, or engineering electives.

**D. Engineering Administration Option** (offered by the Department of Industrial Engineering and Management Sciences)

This program is designed for students who have an engineering or scientific undergraduate degree and are considering graduate work in the management field. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

**Prerequisites**
- Engineering Economy
- Operations Research
- Mathematics through Differential Equations
- Probability and Statistics
- FORTRAN Programming
Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 5156</td>
<td>Probability and Statistics for Engineers</td>
<td>4</td>
</tr>
<tr>
<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

Restricted Electives (at least 4)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESI 6316</td>
<td>Operations Research</td>
<td>4</td>
</tr>
<tr>
<td>ACC 5004</td>
<td>Financial Accounting Concepts</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6305</td>
<td>Engineering Administration II</td>
<td>3</td>
</tr>
<tr>
<td>ECM 6416</td>
<td>System Simulation</td>
<td>4</td>
</tr>
<tr>
<td>EIN 5117</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6525</td>
<td>Systems Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ESI 4234</td>
<td>Engineering Reliability &amp; Quality Assurance</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6215</td>
<td>Systems Safety</td>
<td>3</td>
</tr>
<tr>
<td>EIN 4251</td>
<td>Automation</td>
<td>3</td>
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<tr>
<td>ECP 6205</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECP 6405</td>
<td>Industrial Organization &amp; Performance</td>
<td>3</td>
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<tr>
<td>MAN 5051</td>
<td>Management Concepts</td>
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<tr>
<td>MAN 6055</td>
<td>Planning &amp; Control Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6121</td>
<td>Group Decisions &amp; Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MAN 6206</td>
<td>Organizational Behavior &amp; Development</td>
<td>3</td>
</tr>
<tr>
<td>FIN 5405</td>
<td>Financial Concepts</td>
<td>3</td>
</tr>
<tr>
<td>FIN 6406</td>
<td>Financial Analysis &amp; Management</td>
<td>3</td>
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<tr>
<td>ECO 5055</td>
<td>Economic Concepts</td>
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</tr>
<tr>
<td>ACC 6734</td>
<td>Accounting Analysis</td>
<td>3</td>
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<tr>
<td>ECP 6704</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6111</td>
<td>Economic Analysis of the Firm</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional subdiscipline-specialty courses and appropriate support courses are selected to meet the individual professional needs for each student.

E. Engineering Systems Analysis Option (offered by the Program in Engineering Mathematics & Computer Systems)

This program is designed for students with an undergraduate degree in engineering, mathematics, or science. An individual program of study is developed with a faculty advisor and is required to conform to the following guidelines:

Prerequisites
Operations Research
Mathematics through Differential Equations
Probability and Statistics
FORTRAN Programming
Systems Analysis

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM 5135</td>
<td>Engineering Math Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>ECM 6235</td>
<td>Engineering Math Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>ECM 6416</td>
<td>Discrete Systems Simulation</td>
<td>4</td>
</tr>
<tr>
<td>ESI 6316</td>
<td>Operations Research</td>
<td>4</td>
</tr>
</tbody>
</table>

Restricted Technical Electives—Choose at least 2 courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESI 6525</td>
<td>Systems Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ESI 5575</td>
<td>Mathematical Systems Theory</td>
<td>3</td>
</tr>
<tr>
<td>EIN 5117</td>
<td>Management Information Systems</td>
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</tr>
<tr>
<td>ECM 6426</td>
<td>Continuous System Simulation</td>
<td>3</td>
</tr>
<tr>
<td>ECM 6417</td>
<td>Advanced Systems Simulation</td>
<td>3</td>
</tr>
<tr>
<td>STA 5156</td>
<td>Probability and Statistics for Engineers</td>
<td>4</td>
</tr>
</tbody>
</table>
Additional subdiscipline-specialty courses are selected and often include appropriate support courses to meet the individual professional needs for each student.

F. Environmental Sciences Option (offered by the Department of Civil Engineering and Environmental Sciences)

This option is offered to student with appropriate science baccalaureate degrees. The student entering this program should have background (or articulation course work) in the following areas:
- Mathematics through Differential Equations
- Fluid Mechanics—assumes a Physics course also
- Engineering and Environment
- FORTRAN Programming
- Engineering Economics
- Probability and Statistics
- Hydrology and Hydraulics
- Environmental Engineering—Wastewater
- Environmental Engineering Design
- Chemical Process Control
- Biological Process Control
- Atmospheric Pollution Control

Example of Required Courses

1. ENV 5625 Water Resources Engineering 18 hours
2. EES 5210 Potable Water Chemistry 3 hours
3. ENV 6518 Industrial Waste Treatment 3 hours
4. ECI 6235 Open Channel Hydraulics 3 hours
5. ENV 6106 Atmosphere Pollution Control 3 hours
6. ENV 6015 Physical/Chemical Treatment Systems 3 hours
   or
7. ENV 6016 Biological Treatment Systems 3 hours

The remaining course work is selected from subdiscipline courses

G. Mechanical Systems Option (offered by the Department of Mechanical Engineering and Aerospace Sciences)

Courses available in this option include:
- CES 102 Intermediate Mechanics of Materials 3 hours
- EML 5271 Intermediate Dynamics 3 hours
- EML 6223 Synthesis of Vibrating Systems 3 hours
- EML 6279 Synthesis of Planar Mechanisms 3 hours
- EML 6311 System Control 3 hours
- EML 6402 Turbomachinery 3 hours
- EML 6530 Principles of Design 3 hours
- EML 6532 Computer-Aided Design 3 hours

A typical program might consist of 20 hours selected from the above, as well as 4-7 hours of advanced mathematics, scientific subjects, or engineering electives.

H. Operations Research Option (offered by the Department of Industrial Engineering and Management Sciences)

This program is designed for students who have an undergraduate degree in engineering, mathematics, or science. An individual program of study is developed with a faculty advisor but must conform to the following guidelines:

Prerequisites
- Engineering Economy
- Operations Research
Mathematics through Differential Equations
Probability and Statistics
FORTRAN Programming

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 5156</td>
<td>Probability &amp; Statistics for Engineers</td>
<td>4</td>
</tr>
<tr>
<td>ECM 6416</td>
<td>Discrete Systems Simulation</td>
<td>4</td>
</tr>
<tr>
<td>ECM 5135</td>
<td>Engineering Math Analysis I</td>
<td>3</td>
</tr>
</tbody>
</table>

Restricted Electives (At least three must be taken.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM 6235</td>
<td>Engineering Math Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6336</td>
<td>Queuing Systems</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6427</td>
<td>Mathematical Programming I</td>
<td>4</td>
</tr>
<tr>
<td>ESI 6437</td>
<td>Mathematical Programming II</td>
<td>4</td>
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<tr>
<td>EIN 6337</td>
<td>Production &amp; Inventory Control</td>
<td>3</td>
</tr>
<tr>
<td>ECM 6417</td>
<td>Advanced Systems Simulation</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional subdiscipline-specialty courses and appropriate support courses are selected to meet the individual needs of each student.

I. Structures & Foundations Option (offered by the Department of Civil Engineering and Environmental Sciences)

This option is offered to students with appropriate baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

- Matrix Methods
- Steel Design
- Concrete Design
- Mathematics through Differential Equations
- Geotechnical Engineering

Examples of required courses 18 Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES 6606</td>
<td>Steel Design</td>
<td>3</td>
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<tr>
<td>CES 6707</td>
<td>Concrete Design</td>
<td>3</td>
</tr>
<tr>
<td>CES 5102</td>
<td>Intermediate Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CES 5107</td>
<td>Matrix Methods</td>
<td>3</td>
</tr>
<tr>
<td>ECI 6324</td>
<td>Foundation Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECI 5306</td>
<td>Geotechnical Engineering II</td>
<td>3</td>
</tr>
</tbody>
</table>

Remaining course work from subdiscipline 6 to 9 hours

J. Transportation Systems Option (offered by the Department of Civil Engineering and Environmental Sciences)

This option is open to students with appropriate baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

- Probability and Statistics
- Operations Research
- Transportation Engineering
- Urban Systems Engineering
- Mathematics through Differential Equations

Examples of Required Course 18 Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTE 5204</td>
<td>Traffic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5720</td>
<td>Design Elements of Transportation Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECI 6197</td>
<td>Public Works Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ECI 6198</td>
<td>Regional Planning</td>
<td>3</td>
</tr>
<tr>
<td>TTE 6620</td>
<td>Mass Transportation Systems</td>
<td>3</td>
</tr>
<tr>
<td>TTE 8526</td>
<td>Planning and Design of Airports</td>
<td>3</td>
</tr>
</tbody>
</table>
MASTER OF SCIENCE IN ENVIRONMENTAL SYSTEMS MANAGEMENT—M.S.E.S.M.

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 and man-made environment.

The program provides for the preparation of engineering specialists for service in environment-related occupations by allowing concentrated study in a limited number of subdisciplines. The program is open to those with previous experience or course work which is closely related to the environmental sciences and environmental or systems engineering.

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.

CORE SUBJECTS (Required Courses) 22 Hours

a. ECM 5506 Engineering Applications of Computer Graphics 3 hours
b. EIN 6357 Engineering Economic Analysis 3 hours
c. ESI 6427 Mathematical Programming I 4 hours
d. ENV 5625 Water Resources Engineering 3 hours
e. ENV 6106 Atmospheric Pollution Control 3 hours
f. ENV 6015 Physical/Chemical Treatment Systems 3 hours
g. ENV 6016 Biological Treatment Systems 3 hours
 or
ENV 6015 Environmental Impact Assessment 3 hours

RESEARCH REPORT

3 hours

OPTION AREAS 5 hours

Hours from appropriate areas such as Environmental Engineering, Civil Engineering, Mechanical Engineering, Electrical Engineering, Industrial Engineering, and Engineering Mathematics and Computer Systems. See Option Areas listed below:

Group I—Public Systems
TTE 6620 Mass Transportation Systems
EIN 6414 Public Systems Planning & Resource Allocation
ECI 6197 Public Works Engineering

Group II—Instrumentation
EEL 6621 Nonlinear Control Systems
EEL 5630 Public Systems Planning & Resource Allocation
EEL 6349 Public Works Engineering

Group III—Atmospheric
EML 5228 Acoustics
EML 5451 Energy Conversions
MET 5710 Meteorology for Engineers
EML 6609 Environmental Thermodynamics
DOCTORAL PROGRAM

DOCTOR OF PHILOSOPHY DEGREE—PH.D.

The Ph.D. program is primarily intended for those with a Master’s degree in Engineering; but, with appropriate articulation courses, Master’s degree holders in related disciplines will be able to use the program to study selected engineering disciplines in depth. The graduates of the program are able to meet the highest standards of preparation for leadership in the profession of engineering including research, teaching, and leadership in high technology industry and governmental agencies.

ADMISSION

In addition to satisfying regular University admissions criteria, students must have a Master’s degree in Engineering or a related discipline awarded by a recognized institution. The student must successfully complete a Ph.D. Qualifying Examination conducted by the option department. A student is given two opportunities to pass the qualifying examination, but the second attempt must be approved by the Department.

DEGREE REQUIREMENTS

The student’s program will consist of a minimum of 84 semester hours of graduate credit.

CORE REQUIREMENT 24 Hours

All three areas listed below must be represented with a minimum of eight hours taken from outside the College of Engineering. The actual courses taken are worked out by the student and his advisory committee and specified in the student’s Program of Study.

Physical Sciences and Mathematics
Engineering Sciences
Management Sciences

OPTION REQUIREMENT 36 Hours

Option courses, normally taken within one discipline, are selected by the student and his advisory committee. The four options are:

Electrical Engineering
Environmental Engineering
Industrial Engineering
Mechanical Engineering
Civil Engineering (Planned for implementation in 1984)

DISSERTATION

Total Hours for the Ph.D Degree: 84
EXAMINATIONS
The candidacy examination will be taken when the student has finished most of his course work and has identified an area of research for the doctoral dissertation. The examination consists of two parts: (1) a written examination and (2) presentation of a written doctoral research prospectus to the committee and an oral review of the proposal. Upon completion of the dissertation, a successful oral defense of the dissertation must be conducted.

COLLEGE OF ENGINEERING DEPARTMENTS

CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES

D. L. Block, Ph.D.; P.E. ........................................... FSEC Director and Professor
J. P. Hartman, Ph.D.; P.E. ........................................... Assistant Dean and Professor
D. R. Jenkins, Ph.D.; P.E. ........................................... Professor
R. D. Kersten, Ph.D.; P.E. ........................................... Dean and Professor
J. N. Seaman, Ph.D.; P.E. ........................................... Professor
M. P. Wanieliuta, Ph.D.; P.E. ........................................ Chairman and Professor
Y. A. Yousef, Ph.D.; P.E. ........................................... Professor
W. E. Carroll, Ph.D.; P.E. ........................................... Associate Professor
C. D. Cooper, Ph.D.; P.E. ........................................... Associate Professor
R. Smith, P.E. ....................................................... Associate Professor
J. S. Taylor, Ph.D.; P.E. ........................................... Associate Professor
S. Kuo, Ph.D.; P.E. ................................................... Assistant Professor
M. I. Muiga, Ph.D.; P.E. ........................................... Assistant Professor

CIVIL ENGINEERING
Research interests of the faculty are related to design and analysis of structures, foundations, and transportation systems. The need to reduce energy consumption and the need to develop cost effective designs are recognized. Building related technology and transportation alternatives are major areas of interest. The results of faculty research have been applied in governmental as well as the private sector of the economy. Students completing the program find job opportunities in consulting, county and city government, industry, state and federal government, and construction activities. Thus, the educational program concerns itself with planning, analysis design, and construction of structures, foundations, transportation networks, urban centers, and other social needs.

ENVIRONMENTAL ENGINEERING
Strong faculty research interests have resulted in a program of distinction for the College and University. Research monies support students in the general areas of water treatment, wastewater treatment, solid waste management, atmospheric pollution control, and stormwater management. The research results of faculty members have been applied to social problems; however, basic research is being done as well.

Students with strong science or engineering backgrounds have a variety of research areas and levels of interest which they can pursue. Those completing the program find job opportunities in Federal, State and local governments, consulting, industry, and post educational areas. The Environmental Engineering education program concerns itself with prevention and correction of undesirable technological effects on the natural and man made environments.
CIVIL ENGINEERING AND ENVIRONMENTAL ENGINEERING COURSES

CES 5102 Intermediate Mechanics of Materials 3 cr (3,0)  
PR: ENG 3331 and MAP 3302. Elements of plane elasticity; failure theories; curved beams; columns; bending and torsion of thin-walled structures; theory of thin plates; applications to design.

CES 5107 Matrix Structural Analysis 3 cr (3,0)  
PR: CES 4144 or equivalent. Optimization and matrix methods applied to the design of real structures.

CES 5126 Analysis of Plates and Shells 3 cr (3,0)  

CES 5109 Dynamics of Structures 3 cr (3,0)  

CES 5128 Structural Stability 3 cr (3,0)  

CES 6606 Steel Design 3 cr (3,0)  
PR: CES 4605 or equivalent. Design of complete steel structures to include economics, plastic design and real building examples.

CES 6707 Concrete Design 3 cr (3,0)  
PR: CES 4704 or equivalent. Design of concrete structures to include economics, slabs, prestressed concrete, and real building examples.

ECI 5147 Construction Management 3 cr (3,0)  
PR: C.I. Planning and Management of construction projects: CPM and PERT analysis with preparation of estimates and contract documents. Selection and economics of heavy construction equipment.

ECI 5215C Hydraulic Engineering 3 cr (2,3)  
PR: EGN 3353. Environmental and civil engineering hydraulics application. Pipe and open channel flow, fittings, flow measurements, etc.

ECI 5306 Geotechnical Engineering II 3 cr (3,0)  
PR: ECI 4305. Continuation of ECI 4305 with emphasis on shear strength and design factors for earth pressures bearing capacity, and slope stability.

ECI 6045 Mathematical Modeling in Civil Engineering 3 cr (3,0)  
PR: C.I. Development of modeling techniques applied to the analysis of contemporary Civil Engineering problems including transportation, fluid flow, and two-dimensional continuum analysis.

ECI 6198 Public Works Engineering 3 cr (3,0)  
PR: C.I. Principles and practices, operation and maintenance, equipment, utilities, planning and design, etc.

ECI 6197 Regional Planning, Design, and Development 3 cr (3,0)  
PR: TTE 6607. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.

ECI 6235 Open Channel Hydraulics 3 cr (3,0)  
PR: EGN 3353 or C.I. Free surface flow studies by empirical and theoretical methods for the design, operation, and management of open channels.

ECI 6324 Foundation Analysis and Design I 3 cr (3,0)  
PR: ECI 5306. Analysis and design of fundamental foundation units including spread footings, combined footings, mats, and retaining walls.
ECI 6374 Soil Dynamics 3 cr (3,0)
PR: ECI 4305. Comprehensive coverage in calculating the dynamic response of foundations, presenting a variety of contemporary techniques for fields and laboratory.

ECI 6617 Groundwater Hydrology 3 cr (3,0)
PR: ENV 4404 or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.

EES 5210 Potable Water Treatment 3 cr (2,3)
PR: EES 4202 and 4204. Engineering application of potable water chemistry involving coagulation, softening, filtration, corrosion, disinfection quality and drinking water.

ENV 5615 Environmental Impact Assessment 3 cr (3,0)
PR: C.I. Evaluation, estimating, and predicting the effects of structures, processes, and systems upon the environmental and the effects of environmental changes upon human populations.

ENV 5625 Water Resources Engineering 3 cr (3,0)
PR: ENV 4404. Systems identification and solution to complex water allocation problems, and other hydraulic engineering designs and operations using economic analysis and operations research techniques.

ENV 6015 Physical/Chemical Treatment Systems in Environmental Engineering 3 cr (3,0)
PR: ENV 4404. Theory and design of physical and chemical operations and processes in environmental engineering using latest technologies.

ENV 6016 Biological Treatment Systems in Environmental Engineering 3 cr (3,0)
PR: ENV 4504. Theory and design of biological operations and processes in environmental engineering using the latest technologies.

ENV 6017L Unit Operations and Processes Laboratory 2 cr (0,6)
PR: ENV 6015 or 6016. Laboratory exercises in physical, chemical, and biological processes applicable to design.

ENV 6018 Environmental Engineering Process Control 3 cr (3,0)
PR: EGN 3703, EGN 4504. Environmental systems using feedback and feedforward real-time Laplace or Frequency Domain Dynamics.

ENV 6106 Atmospheric Pollution Control 3 cr (3,0)
PR: ENV 4119 or C.I. Atmospheric composition and dynamics, sources and nature of contaminants, toxicity thresholds and biological significance, engineering methods of measurement design and control.

ENV 6116 Design of Atmospheric Controls 3 cr (3,0)
PR: ENV 4119. Current methods for design and performance analysis to include scrubbers, baghouses, precipitators, and VOC incinerators.

ENV 6356 Solid Wastes Management 3 cr (3,0)
Study of the extent and characteristics of the solid waste problem, collection and disposal systems, environmental modeling and selected designs.

ENV 6436 Water and Wastewater Systems Design 2 cr (2,0)
PR: ENV 4404 and 4504 or C.I. Project course on design of water and wastewater systems.

ENV 6518 Industrial Waste Treatment 3 cr (2,3)
PR: ENV 4404 and 4504 or C.I. Theories and methods of management, reduction, treatment, and case studies of major industrial waste problems will be studied.

TTE 5204 Traffic Engineering 3 cr (3,0)
PR: STA 3032. Study of operator and vehicle characteristics, and design for street capacity, signals, signs and markings.

TTE 5720 Geometric Designs of Transportation Systems 3 cr (3,0)
PR: TTE 4004. Study of geometric and construction design elements in the engineering of transportation systems.
TTE 6526 Planning and Design of Airports 3 cr (3,0)
PR: C.I. Background of aviation and airport development, aircraft characteristics. Planning and design of airport components. Heliport and STOL ports and pavement and drainage design.

TTE 6620 Mass Transportation Systems 3 cr (3,0)
PR: C.I. Planning, design, construction, operation and administration of mass transportation systems.

ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES
E.E. Erickson, Ph.D.; P.E. ........................................... Professor
R.C. Harden, Ph.D.; P.E. ........................................... Professor
B.E. Mathews, Ph.D.; P.E. ........................................... Assistant Dean and Professor
R.L. Phillips, Ph.D. ........................................... Professor
F.O. Simons, Jr., Ph.D.; P.E. ........................................... Professor
R.L. Walker, Ph.D.; P.E. ........................................... Professor
S.B. Haley, Ph.D. ........................................... Associate Professor
R.N. Miller, Ph.D.; P.E. ........................................... Associate Professor
B.W. Patz, Ph.D.; P.E. ........................................... Associate Professor
B.E. Petrasko, D.E. ........................................... Chairman and Associate Professor
R.A. Walters, Ph.D. ........................................... Associate Professor
M.G. Harris, D.Sc.; P.E. ........................................... Assistant Professor
D.C. Malocha, Ph.D. ........................................... Assistant Professor

The major areas of research in the Electrical Engineering and Communication Sciences program are digital systems, electro-optics, optical communications and signal processing. Additional research opportunities exist in the areas of control systems, microwaves, and electronics. Current projects in digital systems include the development of algorithms and architectures for real-time computer image generations; LSI, VLSI and microprocessor based training hardware and systems for the Department of Defense; and fault tolerant electronic switching systems for NASA.

Research in electro-optics includes the study of fiber optic sensors for fiber optic gyro-rate sensing, hydrophones, temperature sensing, and pressure probes. The work on these systems has focused on use of optical phase locked loops, noise characteristics of different optical sensor configurations and environmentally induced optical noise. Work is also being conducted on the use of speckle interferometry for mechanical measurements. Research in optical communications has included the measurement and mathematical modeling of the statistical fading of a laser
beam propagating through atmospheric turbulence and on communication tech-
niques for reliable digital optical communication through the atmosphere.

In signal processing, work has been on the development of algorithms and com-
puter software for the real time implementation of discrete mathematics models of
continuous systems. Additional research in this area includes studies on the noise
characteristics of cross-correlator signal processors.

**ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES COURSES**

**EEL 5173 Signal and System Analysis**  
3 cr (3,0)  
PR: EEL 3122 and EEL 4714. Continuous and Discrete Dynamic Models; emphasis on state
variable models. Laplace, Z-transform and time domain solutions of dynamic model behavior.
Real-time digital simulation. Sampling theory.

**EEL 5260 Electric Power Generation and Distribution**  
3 cr (3,0)  
PR: EGN 3375 or equivalent. Concept of complex power in single and three phase systems. Synchron-
ous machines, power transformer, and transmission lines system design.

**EEL 5365 Introduction to Digital Systems**  
3 cr (3,0)  
PR: EEL 4342 or equivalent. Analysis and synthesis of combinational, synchronous and
asynchronous sequential logic circuits. Introduction to controller design using a digital design
language.

**EEL 5441 Coherent Optics Applications**  
3 cr (3,0)  
PR: PHY 3421 and EEL 3470 or C.I. Coherent optical radiation and propagation. Design and
analysis of optical components and systems.

**EEL 5542 Random Processes**  
3 cr (3,0)  
PR: EEL 3552 and STA 3032. Elements of probability theory; random variables, and stochastic
processes.

**EEL 5630 Digital Control Systems I**  
3 cr (3,0)  
PR: EEL 5173 and EEL 4342. Real time digital control system analysis and synthesis. Digital com-
penation of control systems such as high accuracy positional control systems with encoder
feedback sensors.

**EEL 6144 Synthesis of Electric Filters**  
Analysis and design of electric filters.  
3 cr (3,0)

**EEL 6349 Computer System Design**  
3 cr (3,0)  
PR: EEL 5365 or C.I. Study of digital systems and computer architecture using digital design
language. Specification and design of computer systems. Comparison of software and hardware
solutions.

**EEL 6371 Amplifier Design**  
3 cr (3,0)  
Small signal device models; analysis and synthesis of electronic amplifier circuits in frequency
and time domains.

**EEL 6372 Operational Amplifiers**  
The design of the differential amplifier stage, multi-staging, linear circuit applications, uses in
non-linear circuits, active filters.  
3 cr (3,0)

**EL 6488 Electromagnetic Fields**  
3 cr (3,0)  
PR: EEL 3470 or C.I. Maxwell's equations. Boundary conditions. Propagation, reflection, and

**EEL 6502 Digital Signal Processing I**  
3 cr (3,0)  
PR: EEL 5173 or C.I. Treatment of digital signal and system characteristics in time and frequency
domain with emphasis on conversion, Z-transform, FFT theory. Real-time processing; correlation
functions; system identification.

**EEL 6504 Communications Systems Design**  
3 cr (3,0)  
PR: EEL 6530 or C.I. Signal detection, linear estimation (including Weiner-Kalman Filtering); and
application topics such as Spread Spectrum and diversity techniques, computer communication,
data communication via fading channels.

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EEL 6505 Digital Signal Processing II 3 cr (3,0)
PR: EEL 6502. Programmable real-time signal processors (digital filters), multi-dimensional signal processing, image processing, computer generated imagery, and other related current topics—all with hardware implementation considerations.

EEL 6530 Communication Theory 3 cr (3,0)
PR: EEL 5542 or C.I. Communication in the presence of noise, modulation and demodulation; use of phase lock loop; digital data transmission, optimum receivers, introduction to information theory.

EEL 6560 Optical Electronics 3 cr (3,0)
PR: EEL 5441 or C.I. Introduction to optical electronic systems design, such as both gas and solid state laser systems, optical detectors, modulators, and frequency converters. Optical communication systems.

EEL 6561 Fourier Optics 3 cr (3,0)
Application of Fourier Transform theory to optical systems design. Development of optical correlation techniques. Holographic techniques and applications.

EEL 6621 Nonlinear Control Systems 3 cr (3,0)
PR: EEL 5173. Phase plane descriptions of non-linear phenomena, limit cycles, jump conditions, stability, describing functions, Liapunov and Popov theory, time and frequency domain analysis for non-linear systems.

EEL 6633 Digital Control Systems II 3 cr (3,0)
PR: EEL 5630. A study of Digital Control Systems with emphasis on advanced large-scale optimal and/or adaptive applications such as 'on board' real-time Kalman Filter Guidance systems.

EEL 6671 Modern and Optimal Control Systems 3 cr (3,0)

EEL 6717 Digital Computer Systems 3 cr (3,0)
PR: EEL 6349 or C.I. Analysis of special purpose computer elements, computers, and computer systems. Microprocessor based systems, systems with one or more central or I/O processors, networks of computers.

INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS

G.H. Brooks, Ph.D.; P.E. ............................................ Professor
R.D. Doering, Ph.D.; P.E. ............................................ Professor
C.B. Gambrell, Ph.D.; P.E. ............................................ Professor
G. F. Schrader, Ph.D.; P.E. ............................................ Associate Dean and Professor
G.F. Whitehouse, Ph.D.; P.E. ............................................ Chairman and Professor
C.S. Bauer, Ph.D.; P.E. ............................................ Associate Professor
Y. Hosni, Ph.D.; P.E. ............................................ Associate Professor
H.I. Klee, Ph.D.; P.E. ............................................ Associate Professor
J.A. Sepulveda, Ph.D.; P.E. ............................................ Assistant Professor
D.G. Linton, Ph.D.; P.E. ............................................ Assistant Professor
C.J. White, P.E. ............................................ Assistant Professor

The current research interests of the faculty of the Department are concerned primarily with productivity, computer simulation, transportation systems, microcomputers, energy management, stochastic modeling, engineering for the blind, economic decision analysis, production planning, health operations research, and management information systems.

INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS COURSES

EIN 5117 Management Information Systems I 3 cr (3,0)
PR: C.I. Design and implementation of computer-based Management Information Systems. Organizational, managerial and economic aspects of MIS.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
<td>3 cr</td>
<td>Role of engineer in project management, emphasis on qualitative and quantitative techniques in planning, organization supervision, control of projects from conceptual design to field installation; applications via term project.</td>
</tr>
<tr>
<td>EIN 6215</td>
<td>System Safety</td>
<td>3 cr</td>
<td>Concepts of system safety as applied to the recognition, evaluation and prevention or control of hazards in industry. Fault free analysis and risk management.</td>
</tr>
<tr>
<td>EIN 6248</td>
<td>Human Engineering II</td>
<td>3 cr</td>
<td>A continuation of EIN 4243 with emphasis on special projects and physiological factors appropriate to the industrial setting.</td>
</tr>
<tr>
<td>EIN 6258</td>
<td>Man-Computer Interaction</td>
<td>3 cr</td>
<td>The elements of man-computer interactive systems; hardware and software considerations; requirements of CIA, CAD, and MIS applications; design difficulties found in these systems.</td>
</tr>
<tr>
<td>EIN 6305</td>
<td>Engineering Administration II</td>
<td>3 cr</td>
<td>A continuation of EGN 4624 with emphasis on the manufacturing and industrial enterprise.</td>
</tr>
<tr>
<td>EIN 6316</td>
<td>Advanced Work Measurement</td>
<td>3 cr</td>
<td>A continuation of EIN 3315 consideration of work measurement. Systems and the appropriateness of their use. Case studies.</td>
</tr>
<tr>
<td>EIN 6337</td>
<td>Production &amp; Inventory Control</td>
<td>3 cr</td>
<td>Review of models and techniques used in forecasting, production control and inventory control. Includes aggregate planning, production scheduling, inventory management, models, etc.</td>
</tr>
<tr>
<td>EIN 6351</td>
<td>Mathematical Programming Models for Engineering</td>
<td>3 cr</td>
<td>Extension of EIN 6357 to explore the development and application of mathematical programming in the related area of capital and resource allocation.</td>
</tr>
<tr>
<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
<td>3 cr</td>
<td>Topics include measuring economic worth, economic optimization under constraints. Analysis of economic risk and uncertainty, foundations of utility functions.</td>
</tr>
<tr>
<td>EIN 6361</td>
<td>Energy Management in Industrial Operations</td>
<td>3 cr</td>
<td>Review of Federal, State and local energy code requirements, performing an energy audit, analysis of process energy requirements and application of conservation techniques, LCC Models.</td>
</tr>
<tr>
<td>EIN 6416</td>
<td>Public Works Economics</td>
<td>3 cr</td>
<td>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.</td>
</tr>
<tr>
<td>EIN 6942</td>
<td>Industrial Design Practicum</td>
<td>2 cr</td>
<td>Analysis of real world operational problems using IEMS techniques via selected field studies.</td>
</tr>
<tr>
<td>ESI 6316</td>
<td>Operations Research</td>
<td>4 cr</td>
<td>Methods of operations research including formulation for models and derivation of solutions; linear programming, network models queuing theory, simulation and nonlinear optimization techniques.</td>
</tr>
<tr>
<td>ESI 6336</td>
<td>Queuing Systems</td>
<td>3 cr</td>
<td>Analysis of queuing systems and waiting line problems using analytical and Monte Carlo methods. Laboratory assignments.</td>
</tr>
<tr>
<td>ESI 6427</td>
<td>Mathematical Programming I</td>
<td>4 cr</td>
<td>Theory and applications of linear, non-linear, dynamic and goal programming techniques.</td>
</tr>
</tbody>
</table>
ESI 6437 Mathematical Programming II
PR: ESI 6427. Continuation of ESI 6427.

STA 5156 Probability and Statistics for Engineers
PR: STA 3032 or equivalent. Theory and applications of discrete and continuous random variables, hypothesis tests, confidence intervals, regression analysis and correlation.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

E. Baker, Ph.D. ................................................... Professor
B.E. Eno, Ph.D.; P.E. ............................................ Professor
D.R. Jenkins, Ph.D.; P.E. ........................................... Acting Chairman and Professor
W.F. Smith, Sc.D.; P.E. ........................................... Professor
L.A. Anderson, Ph.D. ........................................ Associate Professor
J.K. Beck, P.E. ................................................... Associate Professor
A.H. Hagedoorn, Ph.D.; P.E. ........................................ Associate Professor
E.R. Hosler, Ph.D.; P.E. ........................................ Associate Professor
S.M. Metwalli, Ph.D. ........................................ Associate Professor
C.E. Nuckolls, Ph.D.; P.E. ........................................ Associate Professor
G.G. Ventre, Ph.D.; P.E. ........................................ Associate Professor
P. Bishop, Ph.D.; P.E. ........................................ Assistant Professor
K.K. Chang, Ph.D.; P.E. ........................................ Assistant Professor
F.S. Gunnerson, Ph.D. ........................................ Assistant Professor
F.A. Moslehy, Ph.D. ........................................ Assistant Professor

Major fields of emphasis in the Mechanical Engineering & Aerospace Sciences Department are Mechanical Systems and Energy Systems. The Mechanical Systems field includes study in the areas of solid mechanics, dynamic systems, mechanical measurements, machine design, and metallurgy. Research activities of the faculty include mechanical properties of fiber optic materials, interpretation of vibration signatures, advanced techniques in experimental mechanics, finite element methods of machine design analysis, and computer-aided design graphics. The Energy Systems field includes study in the areas of fluid mechanics, thermal sciences, propulsion systems, and energy conversion and utilization. Research activities of the faculty include energy conservation studies, development of simulation techniques for non-renewable energy resources exploration, passive and active solar heating and cooling, power plant combustion of biomass fuels, and heat transfer and thermal stress problems associated with nuclear reactors.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCE COURSES

EAS 6123 Advanced Aerodynamics 3 cr (3,0)
PR: EAS 4101 or equivalent. Theoretical methods useful for predicting performance and stability of thin lifting surfaces and slender vehicles at subsonic, supersonic and hypersonic speeds.

EAS 6400 Aeromechanics 3 cr (3,0)

EMA 5626 Mechanical Metallurgy 3 cr (3,0)
PR: EML 3234 or C.I. Recent advances in the microscopic understanding of the mechanisms in strengthening, fracture, fatigue, and creep of metals and alloys.

EMA 6126 Physical Metallurgy 3 cr (3,0)
PR: EML 3234 or C.I. Thermodynamics and kinetics of nucleation and growth reactions to metallurgical processes with special emphasis on nucleation in solids. Diffusion theory. Point, line and surface defects.
EML 5105 Statistical Thermodynamics 3 cr (3,0)

EML 5228 Acoustics 3 cr (3,0)
PR: MAP 3302, PHY 3421. Elements of vibration theory and wave motion; radiation, reflection, absorption, and transmission of acoustic waves; architectural acoustics; control and abatement of environmental noise pollution; transducers.

EML 5271 Intermediate Dynamics 3 cr (3,0)
PR: EGN 3321, 3331. Dynamics of particles, distributed mass systems, and rigid bodies from an advanced viewpoint. Virtual work. Lagrange's and Euler's equations. Hamilton's principle.

EML 5416 Solar Energy Systems 3 cr (3,0)

EML 5451 Energy Conversion 3 cr (3,0)
PR: EGN 3363 and PHY 3421. Unconventional methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics and magnetohydrodynamics.

EML 5453 Energy Analysis 3 cr (3,0)
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.

EML 5455 Energy Conservation 3 cr (3,0)
PR: EML 4142. Analysis of energy use in economic sectors and design of conservation methodologies to reduce energy use. Heating and cooling loads, passive building designs will be presented.

EML 5609 Environmental Thermodynamics 3 cr (3,0)
PR: EML 3106. Thermodynamics of the environment emphasizing analysis and design of thermal systems. Building heating and cooling load calculations and energy conservation technologies analyzed.

EML 6104 Classical Thermodynamics 3 cr (3,0)
PR: EML 3106 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.

EML 6124 Two Phase Flow 3 cr (3,0)

EML 6131 Combustion Phenomena 3 cr (3,0)
PR: EML 4142. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation, aerodynamics and stability of premixed and diffusion flames.

EML 6154 Conduction Heat Transfer 3 cr (3,0)
PR: EML 4142. Classical and numerical techniques applied to the solution of steady and transient conduction problems. Applications to the design of thermal systems.

EML 6155 Convection Heat Transfer 3 cr (3,0)
PR: EML 4142. Convection heat, mass and momentum transfer in laminar and turbulent flows. Applications to the design of thermal systems.

EML 6157 Radiation Heat Transfer 3 cr (3,0)
PR: EML 4142. Radiation properties and analysis of radiation heat transfer problems. Applications to the design of thermal systems.

EML 6223 Synthesis of Vibrating Systems cr (3,0)
EML 6279 Synthesis of Planar Mechanisms 3 cr (3,0)

EML 6306 Advanced Engineering Instrumentation 3 cr (3,0)
PR: EML 3303 or equivalent. Theoretical and experimental study of principles of operation, analysis and design techniques for systems of a mechanical and electromechanical nature.

EML 6311 System Control 3 cr (3,0)
PR: EGN 4714 or equivalent. Theoretical, experimental and computer methods involved in the design of control systems. Emphasis on non-linear system and advanced methods for control system analysis and optimization.

EML 6402 Turbomachinery 3 cr (3,0)
PR: EAS 4300 or EML 4411 or equivalent. Application of the principles of fluid mechanics, thermodynamics and aerodynamics to the design and analysis of pumps, compressors, and turbines.

EML 6506 Experimental Mechanics 3 cr (3,0)
PR: EML 3303. Selected topics in photoelasticity, application of holography to the determination of vibration modes, measurement of correlation and coherence functions, transfer functions and acoustic emission.

EML 6530 Principles of Design 3 cr (3,0)
PR: CES 5102, EML 5271 or C.I. Morphology of design, introductory decision theory, reliability analysis and safety factors, strength optimization, probabilistic aspects and advanced topics in machine design.

EML 6531 Mechanical Behavior of Materials 3 cr (3,0)

EML 6532 Computer-Aided Design 3 cr (3,0)
PR: CES 5102 or C.I. Theory, application and implementation of digital computer oriented algorithms for the synthesis, simulation, analysis and design of mechanical systems.

EML 6710 Advanced Gas Dynamics 3 cr (3,0)
PR: EML 4709 or C.I. Analysis of steady and subsonic, supersonic and hypersonic flows. Aerodynamic applications to the design of nozzles, diffusers, and high speed wind tunnels.

EML 6712 Mechanics of Viscous Flow 3 cr (3,0)
PR: EGN 3353, ECM 4114 or C.I. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.

INTERDISCIPLINARY PROGRAM

PROGRAM IN ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS

Engineering Mathematics and Computer Systems is an Interdisciplinary program which is administered by the following Advisory Council:

F.O. Simons, Jr., Ph.D.; P.E. ........................................ Professor
G.E. Whitehouse, Ph.D., P.E. ........................................ Chairmen and Professor
C.S. Bauer, Ph.D.; P.E. ........................................ Associate Professor
W.E. Carroll, Ph.D.; P.E. ........................................ Associate Professor
H.I. Klee, Ph.D., P.E. ........................................ Associate Professor
B.W. Patz, Ph.D.; P.E. ........................................ Associate Professor
F.A. Moselehy, Ph.D. ........................................ Assistant Professor

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 in the modeling, simulation and solution of complex technical problems.
The current research interests of the program include computerized transportation systems, robotics, computer graphics, training simulators, software engineering, energy management, computer applications, stochastic modeling, simulation, and management information systems.

**ENGINEERING MATHEMATICS AND COMPUTER SYSTEM COURSES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM 5135</td>
<td>Engineering Math Analysis I</td>
<td>3 cr</td>
<td>MAP 3302. Topics in advanced engineering mathematics including systems of differential equations, phase plane, linear algebra and vector differential calculus.</td>
</tr>
<tr>
<td>ECM 5505C</td>
<td>Microcomputer-based Monitoring and Control Systems</td>
<td>3 cr</td>
<td>EEL 4342 or equivalent, COP 3215 or equivalent. Machine language programming; software development aids; interfacing considerations.</td>
</tr>
<tr>
<td>ECM 5506C</td>
<td>Engineering Applications of Computer Graphics</td>
<td>3 cr</td>
<td>COP 3215. Introduction to the use of computer graphics, with engineering applications. Laboratory program assignments.</td>
</tr>
<tr>
<td>ECM 5806</td>
<td>Software Engineering I</td>
<td>3 cr</td>
<td>COP 3215, ECM 4504 or equivalent. Design reliability, testing, and implementation of engineering software.</td>
</tr>
<tr>
<td>ECM 6235</td>
<td>Engineering Math Analysis II</td>
<td>3 cr</td>
<td>ECM 5135. Advanced engineering math topics including Fourier series, partial differential equations, and complex variables.</td>
</tr>
<tr>
<td>ECM 6416</td>
<td>Discrete Systems Simulation</td>
<td>3 cr</td>
<td>STA 3032, COP 3215. Methods for performing discrete systems simulation, including network modeling, will be treated.</td>
</tr>
<tr>
<td>ECM 6426</td>
<td>Continuous System Simulation</td>
<td>3 cr</td>
<td>EGN 3703 or equivalent. Use of state-space techniques, numerical integration, and CSSL programs. Laboratory assignments.</td>
</tr>
<tr>
<td>ECM 6436</td>
<td>Automata Theory</td>
<td>3 cr</td>
<td>EEL 4342 or equivalent. Structural theory and performance characteristics of the finite-state machines.</td>
</tr>
<tr>
<td>ECM 6706</td>
<td>Engineering Date Reduction</td>
<td>3 cr</td>
<td>Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.</td>
</tr>
<tr>
<td>ECM 6805C</td>
<td>Microcomputer Applications Design</td>
<td>3 cr</td>
<td>ECM 5505C or C.I. Advanced applications of microcomputer systems. Design of systems and software to implement a case study in microcomputer usage.</td>
</tr>
<tr>
<td>ECM 6807</td>
<td>Software Engineering II</td>
<td>3 cr</td>
<td>ECM 5806 or equivalent; C.I. Continuation of ECM 5806. Emphasis on term projects and case studies.</td>
</tr>
<tr>
<td>ESI 6525</td>
<td>Systems Dynamics</td>
<td>3 cr</td>
<td>COP 3215 or equivalent. Study of industrial dynamics and use of computerized dynamo models. Urban dynamics models II also be addressed.</td>
</tr>
</tbody>
</table>
COLLEGE OF HEALTH

COMMUNICATIVE DISORDERS

Dona L. Hedrick .................................................. Graduate Program Coordinator
Office: PH 103F, Phone 275-2121

Owen C. Elder, Jr .................................................. Dean
T. Mendenhall .................................................... Assistant Dean

FACULTY

Dona L. Hedrick, Ph.D ............................................ Professor
Rick L. Bollinger, Ph.D ........................................... Associate Professor
David B. Ingram, Ph.D ........................................... Associate Professor
Thomas A. Mullin, Ph.D .......................................... Associate Professor
Harold A. Utt, Ph.D .............................................. Assistant Professor

ADMISSION

A baccalaureate degree with either a grade point average (GPA) of 3.0 (4.0 = A) for the last 60 semester hours credited towards the earned baccalaureate degree from a regionally accredited institution, or a quantitative-verbal Graduate Record Examination (GRE) score of 1000 or higher. This score must have been obtained within the five-year period prior to admission to the program. NOTE: The Board of Regents requires that all entering Graduate students must have taken the GRE examination even if the student is admissible on the GPA.

In addition to the above University requirements, three letters of recommendation from undergraduate professors and a letter of intent must be submitted to the program. Whenever possible a personal interview will also be recommended.

Applicants whose native language is not English must have a score of 500 or better on the Test of English as a Foreign Language (TOEFL).

PROGRAMS IN COMMUNICATIVE DISORDERS

Professional education is offered in Communicative Disorders leading to the Master of Arts degree in either Speech/Language Pathology or Audiology. The program requires the equivalent of two years full-time attendance to complete and is designed to meet the certification requirements of the American Speech-Language-Hearing Association.

The faculty is keenly aware of the need for combining clinical skills with theoretical foundations. Supervised student practica are offered in the Communicative Disorders Clinic on campus, as well as in external settings. Selected outstanding professionals in Central Florida (physicians, speech/language pathologists, audiologists) make up the clinical faculty which supplements the clinical expertise of the regular faculty.

MASTER OF ARTS IN COMMUNICATIVE DISORDERS—DEGREE REQUIREMENTS

Prerequisites: B.A. in Speech and Hearing (Communicative Disorders) or special prerequisite courses to be arranged with the program coordinator.

REQUIRED COURSES

(a) The following courses are required of all Communicative Disorders majors:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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(b) Speech-Language Pathology students are required to take the following:

- SPA 5225 Fluency Disorders 3 hours
- SPA 5225L Fluency Disorders Laboratory 1 hour
- SPA 5553 Differential Diagnosis in Speech and Language 3 hours
- SPA 5553L Differential Diagnosis in Speech and Language Laboratory 1 hour
- SPA 6131 Measurements in Speech Science 3 hours
- SPA 6204 Advanced Studies in Communicative Disorders: Articulation 3 hours
- SPA 6204L Articulation Laboratory 1 hour
- SPA 6211 Voice Disorders 3 hours
- SPA 6211L Voice Disorders Laboratory 1 hour
- SPA 6403 Advanced Studies in Communicative Disorders: Language 4 hours

(c) Audiology students are required to take the following:

- SPA 5103 Anatomy and Physiology of the Auditory Mechanism 3 hours
- SPA 5132 Instrumentation in Psychoacoustics 4 hours
- SPA 5358 Aural Habilitation/Rehabilitation 4 hours
- SPA 6308 Auditory Evaluation and Assessment Procedures for Special Populations 3 hours
- SPA 6345 Amplification 3 hours
- SPA 6353 Hearing Conservation 3 hours

All students will enroll in SPA 6505, Clinical Practicum, each semester in attendance, with the exception of the semester they are enrolled in SPA 5553L and the semester they are completing the thesis/non-thesis option.

**THESIS/NON-THESIS OPTION**

Each student will complete a thesis or non-thesis option. Students selecting the thesis option will complete a research study in the area of Speech-Language Pathology or Audiology for six semester hours of credit. An advisory committee of three faculty, chaired by a department faculty member, will be selected to guide the student through the thesis requirements. An oral defense of the thesis is required.

Students completing the non-thesis option may select from three areas: Clinical Research Project, Case Study, or Clinical Internship. All non-thesis options will be with faculty approval. A committee consisting of a chairman and an advisor will guide the student through the appropriate six-semester hour non-thesis option and oral presentation.

**EXAMINATIONS**

A final comprehensive examination on coursework is required. This examination must be passed before a student can be considered a degree candidate.

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**COMMUNICATIVE DISORDERS COURSES**

**LIN 5705 Psycholinguistics** 3 or (3.0)

**PR:** Graduate status or C.L. 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.
SPA 5005 Survey of Communicative Disorders 3 cr (3,0)
PR: Graduate status or C.I. A survey of speech, language, and hearing disorders for habilitative personnel and other interested professionals.

SPA 5103 Anatomy and Physiology of the Auditory Mechanism 3 cr (3,0)
PR: Graduate status or C.I. Structure and function of the systems comprising audition.

SPA 5132 Instrumentation in Psychoacoustics 4 cr (3,3)
PR: Graduate status or C.I. Lectures, readings and experiments pertaining to the subjective reception of sound.

SPA 5225 Fluency Disorders 3 cr (3,0)
PR: Graduate status or C.I. Identification and evaluation of disorders of rhythm. Emphasis will be on methods of intervention in disorders of fluency.

SPA 5225L Fluency Disorders Laboratory 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.

SPA 5307 Differential Diagnosis of Auditory Disorders 3 cr (3,0)
PR: Graduate status or C.I. Clinical techniques in pure tone speech, acoustic impedance and electrophysiologic response audiometry.

SPA 5358 Aural Habilitation/Rehabilitation 4 cr (4,0)
PR: Graduate status or C.I. Principles and procedures involved in speech and language acquisition, management, utilization of residual hearing, speech reading and the use of hearing aids.
SPA 5458 Therapeutic Communication 3 cr (3,0)
PR: Graduate status or C.I. Practical interviewing and counseling in the area of Communicative Disorders. Emphasis is on facilitating clinician-client interactions.

SPA 5553 Differential Diagnosis in Speech and Language 3 cr (3,0)
PR: Graduate status or C.I. Administration and interpretation of evaluation techniques, including standardized tests, will be presented. Emphasis will be on those techniques which allow for differential diagnosis of speech and language disorders.

SPA 5553L Differential Diagnosis in Speech and Language Laboratory 1 cr (0,4)
PR: Graduate status or C.I. Students will be assigned to diagnostic teams in which they will apply the techniques presented in SPA 5553. Experiences will include test administration, interviewing, writing of diagnostic reports and oral presentations with staffings.

SPA 5600 Administration and Management of Communicative Disorders Programs 3 cr (3,0)
PR: Graduate status or C.I. Methods and techniques for organization and administration of Speech/Language and Hearing Disorders in public school, hospital, rehabilitation center and private practice facilities.

SPA 5805 Research in Communicative Disorders 3 cr (3,0)
PR: STA 4163, Graduate status or C.I. This course is designed to introduce the student to empirical research in the area of communication disorders. Emphasis is on hypothesis testing, methodology, analysis and interpretation of results.

SPA 6131 Measurements in Speech Science 3 cr (1,4)
PR: Graduate status or C.I. The application of instrumentation to research in normal speech and language behaviors. Measurements include use of electronic instruments such as the oscilloscope.

SPA 6204 Advanced Studies in Communicative Disorders: Articulation 3 cr (3,0)
PR: Graduate status or C.I. Advanced theory, diagnostic techniques and therapeutic procedures for articulation disorders.

SPA 6204L Advanced Studies in Communicative Disorders: Articulation Laboratory 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in articulation disorders.

SPA 6211 Voice Disorders 3 cr (3,0)
PR: Graduate status or C.I. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate and other disorders of the vocal mechanisms.

SPA 6211L Voice Disorders Laboratory 1 cr (0,2)
PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.

SPA 6308 Auditory Evaluation and Assessment Procedures for Special Populations 3 cr (3,0)
PR: Graduate status or C.I. Audiometric testing and functional communicative assessment procedures for geriatric, pediatric, and other special populations.

SPA 6345 Amplification 3 cr (3,0)
PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electroacoustic measurements, coupling techniques, and orientation and counseling.

SPA 6353 Hearing Conservation 3 cr (3,0)
PR: Graduate status or C.I. Industrial audiometry, community noise abatement and public school hearing conservation.

SPA 6403 Advanced Studies in Communicative Disorders: Language 4 cr (4,0)
PR: Graduate status or C.I. Presentation of the syntactic, semantic and pragmatic nature of children's Language Disorders. Emphasis will be on techniques and methods of diagnosis and intervention with children from birth through adolescence.
SPA 6410 Language Problems in Adults 4 cr (4, 0)
PR: Graduate status or C.I. A study of the language disorders in adults associated with neurological problems, brain injury, systemic disease and aging.

SPA 6505 Clinical Practicum in Speech Pathology-Language-Audiology 1 cr (0, 8)
PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated with change of content.

SPA 6908* Directed Independent Studies 1-6 cr
SPA 6918* Directed Independent Research 1-6 cr
SPA 6938* Special Topics/Seminars 1-6 cr
SPA 6946* Internship, Practicums, Clinical Practice 1-6 cr
SPA 6971* Thesis 1-6 cr
*Must present at registration an authorization form which is obtained from the Department Office.
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