Degree Programs at the University of Central Florida

College of Arts and Sciences
Master of Arts
  Communication
  English
    Creative Writing
    Literature
    Technical Writing
  History
  Political Science
  Sociology, Applied
  Spanish
  Teaching English to Speakers of Other Languages (TESOL)
Master of Science
  Biology
  Chemistry, Industrial
  Computer Science
  Mathematical Science
  Physics
  Psychology, Clinical
  Psychology, Industrial/Organizational
  Statistical Computing
Doctor of Philosophy
  Computer Science
  Mathematics
  Physics
  Psychology, Human Factors

College of Business Administration
Master in Business Administration (M.B.A.)
Master of Arts in Applied Economics (M.A.A.E.)
Master of Science in Accounting (M.S.A.)
Master of Science in Taxation (M.S.T.)
Doctor of Philosophy
  Business Administration

College of Education
Master of Arts and/or Science
  Art Education
  Counselor Education
  Educational Leadership
  Educational Media
  Educational Technology
  Elementary Education
  English Language Arts
  Exceptional Student Education
  Instructional Systems
  Mathematics Education
  Music Education
  Physical Education
  Reading Education
  Science Education
  Social Science Education
  Vocational Education
Education Specialist
  Curriculum and Instruction
  Educational Leadership
  School Psychology
Doctor of Education
  Curriculum and Instruction
  Educational Leadership

College of Engineering
Master of Science in Civil Engineering (M.S.C.E.)
  Civil Engineering
  Structures and Foundations
  Transportation
  Water Resources
Master of Science in Computer Engineering (M.S.Cp.E.)
  Computer Architecture
  Digital Systems
  Knowledge-based Systems
  Software Engineering
Master of Science in Electrical Engineering (M.S.E.E.)
  Communications
  Controls
  Digital Signal Processing
  Electrical Engineering
  Electromagnetics
  Electronics
  Electro-Optics
  Microelectronics
Master of Science in Environmental Engineering (M.S.Env.E.)
Master of Science in Industrial Engineering (M.S.I.E.)
  Manufacturing Engineering
Master of Science in Mechanical Engineering (M.S.M.E.)
  Aerospace Systems
  Materials Science and Engineering
  Mechanical Systems
  Thermo-fluids
Master of Science in Optical Science and Engineering (M.S.O.S.E.)
Master of Science
  Computer Integrated Manufacturing
  Engineering Management
  Environmental Sciences
  Human Engineering/Ergonomics
  Manufacturing Systems
  Operations Research
  Precision Engineering and Manufacturing
  Product Assurance Engineering
  Simulation and Training Systems
  Simulation Modeling and Analysis
  Structures and Foundations
  Transportation Systems
  Water Resources
Doctor of Philosophy
  Civil Engineering
  Computer Engineering
  Electrical Engineering
  Environmental Engineering
  Industrial Engineering
  Mechanical Engineering
  Optical Science and Engineering

College of Health and Public Affairs
Master of Arts
  Communicative Disorders
Master of Science
  Criminal Justice
  Health Sciences/Health Services Administration
  Molecular Biology and Microbiology
Master of Science in Nursing (M.S.N.)
Master of Public Administration (M.P.A.)
Master of Social Work (M.S.W.)
Pegasus was the winged horse of the muses in Greek Mythology. He carried their hopes, their aspirations, and their poetry into the skies. Pegasus is as futuristic as tomorrow's space exploration in our solar system and into the universe beyond. The seal also bridges the gap between the humanities and space technology.

Accent on the Individual • Accent on Excellence

Correspondence:

Graduate Studies - Admissions (AD 144)  Office of Graduate Studies (AD 243)
University of Central Florida  University of Central Florida
P.O. Box 160112  P.O. Box 160212
Orlando, FL 32816-0112  Orlando, FL 32816-0212
(407) 823-2766  (407) 823-6432

The Office of Research and Graduate Studies Website is located at: http://www.orgs.ucf.edu

May 1997 • Volume XX

Cover: Initiatives from the five UCF colleges offering graduate degrees, clockwise from upper left, Health and Public Affairs, Engineering, Arts and Sciences, Business Administration, and Education, are utilized around the world as the university continues its mission to achieve global prominence in key programs and provide international focus to its curricula and research programs. UCF's roots are entwined with those of the National Aeronautics and Space Administration's Kennedy Space Center, which provided the photo of Florida from space. Special thanks to Doug Barrett of the Institute for Simulation and Training for design advice and technical assistance.

Back cover: While UCF programs reach for the stars, the university takes seriously its role as Orlando's metropolitan university. Dedication for UCF's Downtown Academic Center, pictured at lower right, was held in March. UCF also has branch campuses in Daytona Beach, Cocoa, and South Orlando. The photo of the Earth is courtesy of the National Aeronautics and Space Administration.

Additional copies of this catalog may be purchased for $2.00 in the university Bookstore or by mail for $3.50 (mail check payable to UCF Bookstore to: Catalog, UCF Bookstore, Orlando FL 32816-2444). A current catalog is issued to each student free of charge at the time of registration.
Administrative Procedures Act Policy Statement

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 published once a year and cannot always reflect new and modified regulations. Statements in this catalog may not be regarded in the nature of binding obligations on the institution or the State of Florida. While every effort will be made to accommodate the curricular needs of students, limited resources may prevent the university from offering all required courses in each semester or in day and evening sections.

Students will be held accountable for the requirements, policies, and procedures described in this catalog. Additional information or clarification of any policy or procedure may be obtained from the specified office.

The University of Central Florida values diversity in the campus community. Accordingly, discrimination on the basis of race, sex, national origin, religion, age, handicap or disability, marital status, parental status, or veteran's status is prohibited.

Sexual harassment, a form of sex discrimination, is defined as unwelcome sexual advances, requests for sexual favors, or verbal or physical conduct of a sexual nature when:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual’s employment or enrollment;
2. Submission to or rejection of such conduct by an individual is used as the basis for employment or enrollment decisions affecting such individual;
3. Such conduct has the purpose or effect of substantially interfering with an individual’s work performance or enrollment, or creating an intimidating, hostile, or offensive working or academic environment.

Sexual harassment is strictly prohibited and will be dealt with in accordance with university rule.

Employees, students, or applicants for employment or admission may obtain further information on this policy, including grievance procedures, from the Equity Coordinator. The Director of the Office of Equal Opportunity and Affirmative Action Programs is the campus Equity Coordinator responsible for concerns in all areas of discrimination. The office is located on the main campus, in Administration 330, Orlando, Florida 32816-0030. The phone number is (407) UCF-1EEO.

Drug-Free Workplace/Drug-Free Schools Policy Statement

The University of Central Florida, in accordance with legislation passed by the federal government as part of the war on drugs program, has adopted the policy statement DRUG-FREE WORKPLACE/DRUG-FREE SCHOOLS. Information regarding this policy may be obtained in Human Resources (AD 230) or the Division of Student Affairs (AD 282).

Directions to UCF Campus

From Orlando International Airport (20 Miles):

Go east on BeeLine Expressway (528) to 417 North.
Take 417 North to University Blvd.
Exit east onto University Blvd. to UCF.

From Daytona on I-4:

Exit 49 onto Route 434.
Go through Longwood and Oviedo on 434 to UCF.

From Tampa on I-4:

Exit 28 onto BeeLine Expressway East (528).
Go past Orlando International Airport to 417 North.
Take 417 North to University Blvd.
Exit east onto University Boulevard to UCF.

From South on Florida Turnpike:

Exit 254 (Orlando South - 441).
Take first right onto BeeLine Expressway East (528).
Go east past Orlando International Airport to 417 North.
Take 417 North to University Blvd.
Exit east onto University Blvd. to UCF.

From North on Florida Turnpike:

Exit 255 (Holland East-West) onto East-West Expressway East (408).
Go east through Orlando to merge with 417 North to University Blvd.
Exit east onto University Blvd. to UCF.
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Recent program changes may not be reflected in this catalog. Students should check with the appropriate graduate program coordinator for current information. Rules, policies, fees, and courses described in the catalog are subject to change without notice. Reader comments and suggestions for improving the usefulness of this catalog may be sent to: Catalog, Graduate Studies - Admissions (AD 144), University of Central Florida, P.O. Box 160112, Orlando, FL 32816-0112.
If seeking admission to a graduate program, the following documents are required to be on file before the application can be considered. Applicants to full-time programs who want to be considered for fellowships or assistantships should apply by January 15 for fall admission.

[ ] Graduate/Post-Baccalaureate Application form
[ ] $20.00 Application Fee
[ ] Residency Classification form
[ ] Official Transcripts (sent to UCF directly from former institution)
[ ] Official Test Scores (required from all applicants; sent directly from ETS)
   _____ GRE
   _____ GMAT (College of Business, Master of Health Science)
   _____ TOEFL (international students only)
   _____ GRE Subject Examination (if required by program)
[ ] Health Form
[ ] Three (3) Recommendations (if required by program)
[ ] Essay/Personal Statement (if required by program)
[ ] Resume (if required by program)
[ ] Program Application (Biology, Counselor Education, Electrical Engineering)
[ ] Financial Statement (international students only)
[ ] UCF Patent Agreement

NOTE: Social Work, Nursing, Communicative Disorders, and all Psychology programs require all admission documents (application form, residency form, transcripts, recommendations, essay/personal statement, resume) to be submitted simultaneously as a packet. Transcripts should be sealed in an envelope by the registrar of the former institution.

Send all documents to: Graduate Studies - Admissions (AD 144)
University of Central Florida
P.O. Box 160112
Orlando, FL 32816-0112
Telephone (407) 823-2766
Application Deadlines

Fall Deadlines for Specific Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology (priority deadline)</td>
<td>March 1</td>
</tr>
<tr>
<td>Business Administration, Ph.D. (summer only)</td>
<td>March 1</td>
</tr>
<tr>
<td>College of Business Administration (all master's programs)</td>
<td>June 15</td>
</tr>
<tr>
<td>Communication (fall only)</td>
<td>July 15</td>
</tr>
<tr>
<td>Communicative Disorders</td>
<td>June 15</td>
</tr>
<tr>
<td>Computer Science (priority deadline)</td>
<td>March 1</td>
</tr>
<tr>
<td>Counselor Education (master's)</td>
<td>February 1</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>May 1</td>
</tr>
<tr>
<td>Curriculum and Instruction, Specialist and Ed.D.</td>
<td>February 15</td>
</tr>
<tr>
<td>Educational Leadership, Specialist and Ed.D.</td>
<td>February 15</td>
</tr>
<tr>
<td>English</td>
<td>April 1</td>
</tr>
<tr>
<td>Nursing</td>
<td>February 15</td>
</tr>
<tr>
<td>Physics</td>
<td>March 1</td>
</tr>
<tr>
<td>Psychology</td>
<td>February 1</td>
</tr>
<tr>
<td>Clinical Human Factors, Ph.D.</td>
<td>July 1</td>
</tr>
<tr>
<td>Industrial/Organizational</td>
<td></td>
</tr>
<tr>
<td>Public Administration</td>
<td>November 1</td>
</tr>
<tr>
<td>School Psychology</td>
<td>March 15</td>
</tr>
<tr>
<td>Social Work</td>
<td>March 1</td>
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<td>Post-Baccalaureate and all programs not specifically listed</td>
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Spring Deadlines for Specific Programs

<table>
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<th>Program</th>
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<tr>
<td>College of Business Administration (all master's programs)</td>
<td>November 1</td>
</tr>
<tr>
<td>Communicative Disorders</td>
<td>November 1</td>
</tr>
<tr>
<td>Counselor Education (master's)</td>
<td>September 1</td>
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<tr>
<td>Criminal Justice</td>
<td>October 15</td>
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<tr>
<td>Curriculum and Instruction, Specialist and Ed.D.</td>
<td>September 15</td>
</tr>
<tr>
<td>Educational Leadership, Specialist and Ed.D.</td>
<td>September 15</td>
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<tr>
<td>English</td>
<td>November 1</td>
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<tr>
<td>Public Administration</td>
<td>December 1</td>
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<tr>
<td>Post-Baccalaureate and all programs not specifically listed</td>
<td>December 15</td>
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</tbody>
</table>

Summer Deadlines for Specific Programs

<table>
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<th>Program</th>
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<tr>
<td>College of Business Administration (all master's programs)</td>
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<tr>
<td>Communicative Disorders</td>
<td>April 1</td>
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<tr>
<td>Public Administration</td>
<td>April 1</td>
</tr>
<tr>
<td>Post-Baccalaureate and all programs not specifically listed</td>
<td>April 15</td>
</tr>
</tbody>
</table>

Failure to meet these deadlines may prevent admission as a regular graduate student for the term.
### Academic Calendar 1997-1998

#### Application Deadlines

- **Thesis/dissertation defense deadline**: March 1, 1997
- **Veterans’ Day**: November 11, 1997
- **Last day for refund of fees**: August 4, 1997
- **Last day for application for graduation**: August 15, 1997

#### Registration

- **Registration by appointment**: Aug. 19-20, 1997
- **Classes begin**: Aug. 21, 1997
- **Last day of late registration, Add/Drop**: Aug. 25-27, 1997
- **Last day for refund of fees**: Aug. 29, 1997
- **Audit registration**: Aug. 27, 1997
- **Last day to remove an “I” (Incomplete)**: Oct. 27, 1997
- **Final exams and special exams**: Dec. 8-13, 1997
- **Commencement**: Dec. 20, 1997

#### Graduation Studies Deadlines

- **Request thesis/dissertation defense**: Fall 1997
- **Announcement of thesis/dissertation defense**: Fall 1997
- **Submit draft to thesis/dissertation editor**: Oct. 31, 1997
- **Thesis/dissertation defense deadline**: Nov. 14, 1997

#### Holidays

- **Labor Day**: September 1, 1997
- **Veterans’ Day**: November 11, 1997
- **Thanksgiving**: November 27-29, 1997
- **M. L. King Day**: January 19, 1998

#### University Holidays 1997 and 1998

<table>
<thead>
<tr>
<th>Month</th>
<th>1997</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>JANUARY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FEBRUARY</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>MARCH</td>
<td>3</td>
<td>2</td>
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<tr>
<td>APRIL</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>MAY</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>JUNE</td>
<td>6</td>
<td>5</td>
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<tr>
<td>JULY</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>AUGUST</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>SEPTEMBER</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>OCTOBER</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>NOVEMBER</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>DECEMBER</td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

*If class meets first time Wed. or Thurs. night, Add/Drop can be adjusted. Colleges may have earlier deadlines. See individual colleges for information.*

**NOTE**: Failure to meet these deadlines may prevent admission as a regular graduate student for the term. Summer Term D is for College of Business Administration classes only.

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6
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Bob Butterworth ............................................. Attorney General
Bill Nelson ...................................................... State Treasurer
Sandara B. Morham .......................................... Secretary of State
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Director, Florida Solar Energy Center ..................................................... David L. Block
Director, Institute for Simulation and Training ................................................ A. Louis Medin
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Associate Dean .............................. Ben B. Morgan, Jr.
Associate Dean .............................. Bruce A. Whisler
Associate Dean .............................. M. Elliot Vettes
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Chair, Biology ............................... David H. Vickers
Chair, Chemistry ............................. Glenn N. Cunningham
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Chair, Computer Science ................. Terry J. Frederick
Chair, English ................................ John F. Schell
Chair, Foreign Languages and Literatures ................................... Jose B. Fernandez
Chair, History ................................ Richard C. Crepeau
Chair, Mathematics ........................ John R. Cannon
Chair, Music .................................. Lyman Brodie
Chair, Physics ................................ William T. Sifvast
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Chair, Sociology and Anthropology ...... Harold J. Corzine
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Associate Dean .............................. Richard N. Miller
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Director of Undergraduate Affairs ......... James K. Beck
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Electrical and Computer Engineering .... Wasfy B. Mikhael
Industrial Engineering and Management Systems .................... Charles H. Reilly
Mechanical, Materials, and Aerospace Engineering ................ Louis C. Chow

College of Business Administration
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Interim Associate Dean ..................... Ronald E. Michaels
Assistant Dean .............................. Robert L. Pennington
Director, School of Accounting ............ Andrew J. Judd
Chair, Economics ............................ Richard A. Hofler
Chair, Finance ................................ John M. Cheney
Chair, Hospitality Management .......... Robert C. Ford
Interim Chair, Management ................ Halsey R. Jones
Chair, Marketing ............................ Ronald E. Michaels

College of Health and Public Affairs
Dean ........................................... Belinda R. McCarthy
Associate Dean .............................. Michael J. Sweeney
Assistant Dean .............................. Joyce E. Dorner
Chair, Communicative Disorders .......... Chad Nye
Chair, Criminal Justice and Legal Studies .................................. Bernard J. McCarthy
Chair, Health Professions and Physical Therapy .................... Gregory H. Frazer
Chair, Molecular Biology and Microbiology .......................... Robert N. Gennaro
Director, School of Nursing ............... Elizabeth Stullenbarger
Chair, Public Administration ............... Wendall C. Lawther
Director, School of Social Work .......... Ira C. Colby
The University of Central Florida

The University of Central Florida opened in the fall of 1963. 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 ten-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.

UCF is a growing metropolitan university with the responsibility to deliver a comprehensive program of teaching, research, and service. Its primary mission is to provide intellectual leadership through quality undergraduate and graduate programs.

UCF offers undergraduate education rooted in the arts and sciences, providing a broad liberal education while developing competence in fields of special interest. Unique aspects of UCF's approach are its commitment to educate students for a world in which cooperation is as important as competition; in which societal and environmental impacts of new developments are as important as their technical merits; and in which technology, the arts, sciences, humanities, and commerce work together to shape the future.

The complexity of modern society requires comprehensive graduate and professional programs. UCF provides advanced education that matches institutional strengths with evolving regional, state, national, and international needs. It supports these advanced programs by recruiting excellent students, faculty, and staff and by supplying the infrastructure that enables these programs to achieve national prominence.

Basic and applied research, as well as creative activity, are integral parts of a quality education. UCF faculty are scholar-teachers. As such, they create new knowledge, new points of view, and new means of expression in a broad range of academic, professional, and socially significant areas. Their creativity fosters innovation as they convey their results, methods, values, and expressions to students, colleagues, and the public.

Service to its community is an important extension of the teaching and research mission of the university. Public service is prominent at UCF, with the university developing partnerships with the community to enrich the educational, artistic, cultural, economic, and professional lives of those it serves in Central Florida and beyond.

Education is more than classroom experience. UCF students are involved in cooperative research and participate in artistic, social, cultural, political, and athletic activities. UCF provides academic diversity by bringing to its campus national and international leaders who expose students and the community to a wide range of views and issues. UCF achieves cultural diversity by using its multi-campus facilities to serve a diverse population of traditional and nontraditional students from various races, cultures, and nationalities.

UCF is committed to the free expression of ideas, the equality of all people, and the dignity of the individual.
Accreditation

The University of Central Florida is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award degrees at the associate, baccalaureate, master's, and doctoral levels.

In addition to the regional accreditation agencies, there are a number of scientific, professional, and academic bodies conferring accreditation in specific disciplines: College of Business Administration by the American Assembly of Collegiate Schools of Business (AACSB); College of Education, Florida State Department of Education and the National Council for Accreditation of Teacher Education (NCATE); College of Engineering by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET); College of Health and Public Affairs by the American Speech-Language Hearing Association (ASHA) and the Council on Social Work Education (CSWE). UCF is listed with an "A" rating in the Report of Credit Given by Educational Institutions.

East Central Florida Area

UCF is located in East Central Florida, a region with a population of about two million. Known for its tourist attractions and high-technology industries, the area is one of the fastest growing regions in the nation. East Central Florida is noted for its many lakes. Atlantic beaches are an easy hour drive from the main campus. The area offers Walt Disney World and other attractions that draw vacationers from many countries. The area also offers Broadway productions, pop and classical music headliners, art festivals, a Shakespeare festival of UCF origin, professional sports teams such as the Orlando Magic, the Solar Bears, and the Orlando Predators.

The Orlando Campus

The 1,443-acre campus is located in the Orlando suburbs, 13 miles northeast of downtown. Sixty-seven permanent buildings—valued at more than $133 million—radiate outward from an academic core, where UCF's colleges, classrooms, and library are located. More than $22 million in new construction is underway, including a $14 million communications building and a new Health and Public Affairs building. New facilities recently completed include an $11 million student union and an $11 million building to house the Center for Research and Education in Optics and Lasers. UCF recreational facilities include lighted tennis and racquetball courts, an outdoor swimming pool, golf driving range, volleyball and basketball courts, and ball fields.

UCF Area Campuses

In addition to the academic programs offered on the Orlando campus, the University of Central Florida offers a number of upper-division programs and graduate programs at the Brevard and Daytona Beach campuses and at the Downtown Academic Center and the Professional Development Center at South Orlando. Times and dates for all courses are listed in the regularly published Schedule of Classes.
The UCF Brevard campus is co-located on the Brevard Community College campus in Cocoa. The university offers junior- and senior-level classes leading to the bachelor's degree in thirteen undergraduate majors. Eight graduate programs offer course work for the master's degree.

Graduate programs are offered in:
- Business Administration (M.B.A.) [at BCC Melbourne]
- Communicative Disorders (M.A.)
- Educational Leadership (M.Ed.)
- Elementary Education (M.A.)
- Master of Arts in Varying Exceptionalities (M.A.) [partial]
- Education - Varying Exceptionalities (M.Ed.) [partial]
- Public Administration (M.P.A.)
- Engineering

FEEDS/ITV (on videotape at Kennedy Space Center, BCC Palm Bay, and UCF Brevard - Cocoa)

The campus maintains its own undergraduate admissions, registration/records, and financial aid services offices, co-located with BCC offices in the BCC Student Center. The five colleges (Arts and Sciences, Business Administration, Education, Engineering, and Health and Public Affairs) maintain offices for staff and faculty, providing on-site advisement for graduate and post-baccalaureate students in all majors offered on the campus.

The UCF-BCC Joint Use Library offers full library services. The Florida Solar Energy Center, located adjacent to the UCF Brevard campus, conducts research on a broad range of energy-related issues. Other offices maintained on the Brevard campus include: Student Government Association, Student Affairs, cashiering services, a joint use computer lab, bookstore, and evening child care.

Records, financial aid services, and undergraduate admissions are located in the BCC Student Center. Business hours are Monday through Friday, 8:00 a.m. to 5:00 p.m. Graduate program services are offered in the college advising offices in the Lifelong Learning Center, Monday through Thursday, 9:00 a.m. to 6:00 p.m., and Friday from 9:00 a.m. to noon. Office hours are extended during registration cycles.

A Brevard Community College parking sticker is required for parking lots on the BCC campuses. Decals are free through the UCF Brevard administrative support office, suite 147 of the Lifelong Learning Center, with a valid UCF ID and proof of registration.
UCF Daytona Beach Campus

The UCF Daytona Beach Campus offers upper-division and graduate-level courses to residents of Volusia and Flagler counties. UCF courses are taught by twenty resident faculty, visiting Orlando faculty, and local adjuncts.

A wide range of services are offered for Daytona Beach students including admissions, registration, financial aid, student clubs and organizations, disability services, veterans' affairs, career resources, and others. The Daytona Beach Community College Library provides a full range of library services. Admissions, registration, and student services offices are located in Building 34. Business hours are 8:00 a.m. to 6:30 p.m. Monday through Thursday and 8:00 a.m. to 4:00 p.m. on Friday. Hours are extended during scheduled registration periods.

The following graduate degree programs are offered at the Daytona Beach Campus:

- Business Administration (M.B.A.)
- Criminal Justice (M.S.)
- Educational Leadership (M.Ed.)
- Educational Leadership (Ed.D.)
- Engineering (FEEDS/ITV-video)
- Exceptional Education
- Health Services Administration (M.S.)
- Nursing (R.N. to M.S.N.)

Additional courses and programs will be added as needs are identified.

Division of Continuing Education

The Center for Outreach Credit serves as a facilitator for the academic colleges and performs the overall planning, coordination, and management of approved off-campus credit courses, degree programs, sponsored contract courses, and accelerated on-campus instruction for students. The Center also provides consultant support to all colleges and area campuses for distance-learning entries in the Master Schedule. Registration and other logistics support services are provided to open enrollment distance-learning courses.

Credit courses and programs offered by the academic colleges and coordinated by the Center are tailored to meet the educational needs of local residents and area business, industry, and government employees. The goal of the Center for Outreach Credit is to unite the university and public/private sector resources for the purpose of providing to participants an opportunity to achieve personal aspirations and to maintain or enhance their professional and technical competencies. Open enrollment registrations facilitated by the Center for Outreach Credit do not constitute admission to the university.
Professional Development Center at South Orlando

Director: .......................................................................................................................... John Duryea
Orlando Central Park • (407) 856-6585

The Professional Development Center offers noncredit educational programs designed to meet the professional development needs of individuals and organizations throughout the state and the region. Offerings include seminars, workshops, conferences, symposia, and certificate programs that enable practitioners to seek personal enrichment and/or professional advancement. Programs are developed in cooperation with the academic colleges and institutes, and university faculty and support services are utilized to bring maximum benefit to both nontraditional and traditional learners.

Working closely with business, professional, and service organizations, the Center designs programs that best meet the needs of the working community. To substantiate the content of professional programs, as well as to offer credentials to verify a learner's participation, Continuing Education Units (CEUs) are offered to qualified and eligible participants.

The Center is located in Orlando Central Park, a site convenient to students who live or work in southwest Orange County and north Osceola County. A television studio at the Center has the capacity to receive signals for five interactive television courses. There is a small computer lab for student use, and the library is equipped with LUIS terminals. Admissions and financial assistance information is available.

Center for Multilingual Multicultural Studies

Director: .......................................................................................................................... Consuelo Stobbins
TR 547 • (407) 823-0068
Assistant Director: ........................................................................................................... Myrna Creasman
TR 547 • (407) 823-5515

Using contemporary teaching methodology and computer-assisted instruction, the Center for Multilingual Multicultural Studies provides English language instruction for international students. Four levels of instruction are offered which range from beginning to advanced, and special attention is given to preparing students for academic course work in their specialized fields of study. Full-time students enrolled at the advanced level may elect to take courses as non-degree-seeking students while enrolled in the intensive English program. Students are required to take an entry placement test to determine their level of proficiency. Student (F-1) visas are extended to qualified applicants. The Center also offers English for Special Purposes for international business personnel.

Downtown Academic Center

Director: .......................................................................................................................... Cecelia H. Rivers
36 West Pine Street, Orlando, FL 32801 • (407) 317-7700

The Downtown Academic Center is located in the heart of downtown Orlando. Situated near Orlando's Church Street Station, access to the center is easy. With four classrooms, including a 140-seat lecture hall, a multitude of credit and noncredit courses and programs are made available to UCF students as well as to the business and residential community of Orlando. The Institute of Government, housed at the center, further expands opportunities for professional development through ongoing workshops and seminars. In addition, a distributed learning center features an interactive television system that connects students to courses on the main campus and to satellite conference sites. A state-of-the-art computer lab provides the latest technology to aid student learning and enhance computer literacy. Selected courses are available by video to meet the needs of students unable to attend classes offered at set times. Admission, financial assistance, and other college information is readily available.

The Downtown Academic Center also serves as a centralized place for meetings, mini-conferences, and retreats. The AT&T executive conference room and flexible classroom space create an atmosphere conducive to hosting a variety of educational activities and cultural events to promote the mission of the university.

The Downtown Academic Center offers upper-division and graduate-level courses in Health and Public Affairs, Arts and Sciences, Business, and Education.
The Division of Information Technologies and Resources includes the Library, Computer Services, Telecommunications, and the Office of Instructional Resources. The Division has responsibility for planning, implementation, and support of information resources to serve the university's primary functions of instruction, research, and administration. Specific services and facilities provided by each of the above units are described in the following sections.

University Libraries
Director: ................................................................. Barry B. Baker
Interim Associate Director: ................................................................. Roger D. Simons
LR 512 • (407) 823-2564


The University Library, housed in a facility of 200,000 square feet, has a collection of over 1,000,000 volumes (books, journals, government documents) with approximately 5,000 subscriptions (journals, newspapers, and other serials) and over 11,000 media titles. The Library is a partial depository for U.S. and Florida documents, and U.S. Patents. LUIS, the Library's on-line catalog, may be accessed through terminals in the Library, at other campus locations, or from off-campus computers. Through LUIS, Library users are able to determine whether the UCF Library owns a particular item, and the location and availability of the item. LUIS also provides on-line access to catalogs of all state university libraries in Florida, and to ERIC, JAC, and other indexes.

Education and training for effective use of information technology and resources is made available in a state-of-the-art facility, where students have opportunities for immediate hands-on experience with presented techniques. The Library is open approximately 95 hours each week, including evenings and weekends. A shortened schedule is maintained during vacation periods, and hours are extended during the last few weeks of each semester. A staff of librarians and paraprofessionals is available to assist and advise those using the Library. Arrangements may also be made for class or small group instruction. Materials not in the Library's collections are available through the Interlibrary Loan Service. The Library also provides customized computer-produced bibliographies from any of approximately 500 different commercially available databases.

Special services are provided for the disabled. By using a computer terminal, disabled students can determine the availability of the books they need, and telephone the Library to request that books be brought to them at a convenient location on campus. A Kurzweil reading machine is available in the Library for the visually impaired; students or faculty may arrange for instruction in its use. Through the cooperation of the University's Office of Student Disability Services and the Florida Bureau of Blind Services, the Library staff will aid disabled students in obtaining special equipment they may need to use Library resources.

A Curriculum Materials Center, located in the College of Education, provides a variety of K-12 curriculum materials in various formats for student and faculty use. The collection numbers over 20,000 books and 3,500 units of all types of media.

Students enrolled in the university's area campuses in Daytona Beach and Brevard County receive a full range of services from the Daytona Beach Community College Library and the Brevard Community College Library. The UCF Library purchases library materials for addition to these libraries in support of UCF academic programs taught there. On-line access to the catalog of the Main Library collection is available from all branch campus locations and materials are delivered through a regular courier service.
Computer Services and Telecommunications

Computer Services and Telecommunications provides central support services for administrative data processing, instruction and research computing, telecommunication networks, e-mail, telephone, information technology training, user help, and microcomputer technology to the university.

Central instruction and research computing is provided primarily by computers located on the main campus as follows: Novell LAN file servers, IBM RS/6000 model 590, IBM ES/9000 model 170 and other Internet and campus facilities. There are four public access IBM PC labs in Computer Center II (CCII), the Engineering Building (ENGR), Education (EDU), and the Business Building (BA). UNIX equipment is available in CCII and ENGR. PowerMac and Macintosh labs are available in CCII and EDU. Public access labs are available for faculty and students. Most labs are open seven days a week with extended hours.

Voice Response systems are available for dial-up registration, grades, and financial aid information. Campus KIOSK workstations are available in the Administration and Library buildings for frequently asked questions and individual student record information. Additional information is available on the Knight Information System Gopher and UCF World Wide Web servers. Access to Internet and campus information servers is available to our students through Pegasus accounts provided to all newly enrolled students.

The university also operates a full-service on-campus computer store (Bldg. 541), which provides the UCF community a source for quality computer products and services at competitive prices. The store is an authorized campus re-seller for Dell, Apple, IBM, Sun, Microsoft, Lotus, and many other products. Maintenance and training support is also available from the store.

Office of Instructional Resources (OIR)

LIB 157 • (407) 823-2571

Instructional Resources supports UCF with multimedia design and production, television production, audio production, photography, graphics (print and nonprint) technologies, and a full range of audiovisual and classroom support services. OIR’s facilities include the Digital Image Processing Lab (DIPL), located in the Research Pavilion in the Central Florida Research Park. In association with its community partners, DIPL offers UCF faculty access to state-of-the-art digital imaging technologies including digital image processing, digital document scanning, and CD-ROM production. OIR’s Faculty Multimedia Center (LIB 156) provides multimedia production and training resources for faculty using Macintosh and Windows personal computer systems.

OIR provides UCF with a full array of distributed learning delivery systems including live interactive video, which services several rooms on the main campus, the Orlando Downtown Academic Center, and the branch campuses at Brevard and Daytona; an ITFS network that serves the main campus, the Downtown Academic Center in Orlando and the Branch campuses in Brevard and Daytona; Ku and C-band satellite reception; and cable television delivery on the main campus. OIR supports UCF’s Web-based distributed learning programs with Web training for faculty and Web design and production facilities.

Distance and Distributed Learning

Course Development for Interactive Distributed Learning

Course Developer: Barbara Truman

Academic Affairs, Administration (AD) 395-C • (407) 823-3718

World Wide Web: http://pegasus.cc.ucf.edu/~ucfdist/distance

UCF offers students convenient opportunities to take credit courses through a variety of interactive distributed technologies. Interactive (ITV) courses are broadcast in real-time using two-way video and two-way audio between the main campus, Brevard and Daytona campuses, and Downtown Academic Center. ITV courses may be enhanced with multimedia delivery and may originate from any of the receive sites using a compressed video system.
Learning on-line through distributed courses allows students to participate virtually via computer using e-mail, computer conferencing, and the World Wide Web. Traditional courses use on-line components to enhance classroom activity, while distributed on-line courses replace some class meetings. Fully on-line courses have minimal class meetings and involve additional media such as audio and video tapes. UCF's virtual campus puts the home back in homework by bringing the university to students with on-line courses and services. See http://pegasus.cc.ucf.edu/~ucfdist/ for more information. Courses are listed each semester in the Schedule of Classes.

Instructional Television
ENGR 387  •  (407) 823-2481

The university offers a variety of courses by way of television. They are available either live or on tape at various locations both on and off campus. Live courses may be viewed at the Brevard and Daytona Beach campuses, as well as at selected sites around the Greater Orlando area. Live courses may also be viewed on a cable channel in the dorms and at several fraternity and sorority houses. Some courses are also broadcast to individual homes through local cable companies in Brevard and Orange counties. Courses on tape are available in the learning centers or libraries at all of the university's campuses. Courses available on tape or live television are listed each semester in the Schedule of Classes.
Research Opportunities

An important goal of the University of Central Florida is to develop excellence in key areas of graduate study and research. UCF is dedicated to teaching and research, to scholarship and the transmission of that scholarship to students. Graduate students work one-on-one with faculty mentors in studios, libraries, and laboratories, where students and faculty engage in creative research for the benefit of society.

Faculty members at UCF successfully compete for research support, attracting more than $32 million annually from private and public sources. Of this, more than $14.7 million was funded by the federal government in 1995-96, primarily from the Department of Defense. A locally based company, Lockheed Martin, is the largest source of private funding.

Companies have invested in UCF's graduate programs by providing distinguished professorships and endowed chair opportunities for faculty engaged in research and by providing resources to educate graduate students through mechanisms such as the Lockheed Martin funding of the UCF Academy for Mathematics and Science in the College of Education and the Industrial Fellows Program in the College of Engineering.

The university has several nationally and internationally recognized research institutes. The Florida Solar Energy Center (established in 1975 and located adjacent to the campus of Brevard Community College in Cocoa, FL), the Center for Research and Education in Optics and Lasers (CREOL, founded in 1986), and the Institute for Simulation and Training (IST, founded in 1982) conduct a significant amount of the total research for the university. These institutes actively involve graduate students in their research activities and assist in supervising their graduate theses and dissertations. These three institutes account for more than 50 percent of all sponsored research funding at the university. For more information about sponsored research at UCF, visit the Office of Research and Graduate Studies website at: http://www.orgs.ucf.edu.

Other organized research units also complement the activities of the academic departments. A few examples include the Center for Economic Education, the Florida-Canada Linkage Institute, the Florida-Eastern Europe Linkage Institute, the Institute for Social and Behavioral Sciences, the Center for Applied Human Factors in Aviation, the Phillips Institute for the Study of American Business Activity, the Institute of Statistics, the Center for Executive Development, and the Small Business Institute.

In addition, UCF is situated next to the Central Florida Research Park, where many companies provide research opportunities for students. For those students who may find it difficult to commute to campus, courses are provided through distance-learning opportunities. Students may be employed with companies providing real-world research, while pursuing a graduate degree through distance learning at the same time.

The Central Florida Research Park, adjacent to the main UCF campus, is a university-related research park established by the Florida Legislature in 1976. The park is a cooperative effort among the University of Central Florida, the Orange County Research and Development Authority, and the Orange County Board of County Commissioners (who appoint the members of the Authority). The governing body of the park is the Orange County Research and Development Authority.

The objectives of the Central Florida Research Park are in keeping with the legislative action which enabled its creation: "to encourage and promote the establishment . . . of research and development activity combining the resources of . . . institutions of higher learning, private sector enterprises involved in pure or applied research, and state or federal governmental agency research."
Research Opportunities

The ultimate goal of university-related research parks is to establish an academic/industry community resulting in a unique approach to the creation of a more effective cooperative academic/industrial endeavor. The university and officials of the Central Florida Research Park believe that the potential for the establishment of close ties between the university and industry will create an attractive environment conducive to the location of research-oriented industry in the park. This activity will enrich and support the academic, teaching, and research programs of the university. The university, in turn, as a community of scholars, reservoir of knowledge past and present, and creator of new knowledge and discovery, can provide the necessary expertise and human resources to enhance the research and development activities required and planned by park residents.

Totally planned to provide a campus-like environment for business adjacent to UCF, the Central Florida Research Park consists of more than 1,000 acres of land. Businesses that desire a "university relationship" can purchase or lease land in the Research Park on which to construct a facility or can lease space for office, office/lab, or light manufacturing activities.

The Institute for Simulation and Training (IST) is located in the Research Park. The Naval Air Warfare Center Training Systems Division (NAWCTSD) and the Army Simulation, Training and Instrumentation Command (STRICOM), the focal point of the nation's simulation and training industry, have their headquarters in the Research Park. More than $700 million in federal contracts is granted by the Army and Navy each year.

Currently more than 80 companies are located in the Research Park pursuing activities in simulation and training, lasers, optical filters, behavioral sciences, diagnostic test equipment, and oceanographic equipment. Approximately 5,500 employees currently work in the Research Park including many students and faculty.

Research Park tenants are involved with the University of Central Florida through sponsored research, using faculty as consultants and using graduate and undergraduate students for intern programs and part-time employment. Research Park tenants can also contract with the university for the use of the library computer resources and laboratory facilities. Cooperative projects range from technical research to developing business plans and employee training programs.

Research facilities include access to a DEC MPP 1200 parallel processor and a Harris Nighthawk NH-3800 processor within the Computer Science Department, IBM RS/6000 model 580 and IBM 4381 model T92 processors within the Computer Services department, ES/9000 model 740 with three vectors at the Northeast Regional Data Center and access via the Internet to worldwide computer facilities. In addition to the normal complement of laboratory instrumentation, scale-up and industrial control equipment is available for chemistry. Well-equipped laboratories are available for research in all areas of biology, as are a greenhouse and accompanying Arboretum, an extensive herbarium, a vertebrate collection, the Feller's House, which is a research facility located on the Canaveral Seashore, and outstanding inland and coastal natural resources for fieldwork.

The Molecular Biology and Microbiology Department has a full complement of laboratory equipment including complete animal and tissue culture facilities. Cooperative agreements with area hospitals and other research organizations ensure a high degree of professional interaction and the opportunity for a variety of joint research projects.

The engineering departments maintain modern, well-equipped laboratories and shop facilities especially in microelectronics, manufacturing, combustion, and environmental engineering. Close liaison is maintained with the Florida Solar Energy Center and the Central Florida Research Park. In addition to the fully equipped instrumental biofeedback research laboratory and psychological testing laboratory, there are physiological research laboratories and communicative disorders facilities.
The university's research efforts include sponsorship of a number of journals in a variety of disciplines.

Balanced Reading Instruction. Dr. Tim Blair, Editor
The Canadian Review. Patrick Stewart, Editor
Cypress Dome (student literary magazine). Dr. Donald Stap, Advisor
Educational Forum. Dr. M. L. Kysilka, Editor
Florida Journal of Curriculum and Supervision. Dr. M. L. Kysilka, Associate Editor
The Florida Reading Quarterly. Dr. Rosie Webb Joels, Editor
The Florida Review. Russell Keeler, Editor
Global Perspectives. Dr. John C. Dipierro, Managing Editor
International Journal of Computers and Industrial Engineering. Dr. Gary E. Whitehouse and Dr. Yasser A. Hosni, Editors
International Journal of Mathematics and Mathematical Sciences. Dr. Lokenath Debnath, Chair and Professor of Mathematics, Managing Editor of the Journal
The Journal of Reading Education. Dr. Richard A. Thompson, Editor
Public Administration in the 1980's. Dr. Peter W. Colby, General Editor

Quill
Quill is a select club on the UCF campus that was organized in 1982 to recognize and honor faculty of the university who are authors of one or more books. Criteria of eligibility have been set up by the faculty, and there is an induction of new members at the annual meeting.

Scroll
Scroll is a select club on the UCF campus that was organized in 1987 to recognize and honor faculty of the university who have shown sustained research activities. Criteria of eligibility based on a significant number of peer-reviewed articles in international and national journals have been set up by the faculty. Evaluation of nominees is done by a faculty committee and new members are inducted annually.
Institutes and Centers

Center for Applied Human Factors in Aviation (CAHFA)
Director and Chief Scientist: Dr. Jefferson M. Koonce
PH 302-O • (407) 823-1011 • FAX (407) 823-5862

The Center for Applied Human Factors in Aviation (CAHFA) has as its mission the enhancement of safety in the nation’s airspace system through applied human factors research, systems design, and training strategies. Chartered in 1990, CAHFA is a research consortium established between UCF and Charter partner Embry-Riddle Aeronautical University, Daytona Beach, Florida. CAHFA’s professional staff maintains offices on both campuses. The complementary strengths of the two universities are combined to create a research resource that is without peer for solving a vast assortment of aeronautical human factors problems. CAHFA research initiatives are targeted to significantly reduce human factors-related accidents and incidents by determining the efficacy of and by developing strategies for achieving improvements in human performance.

Center for Economic Education
Director: Dr. Robert L. Pennington
BA 325 • (407) 823-2870

The Center for Economic Education strives to increase public knowledge of economic principles and their application in daily life. Researchers at the Center develop, collect, and distribute economic educational materials. They also consult with and provide instruction to area schools (K-12), community colleges, and community organizations. Instruction focuses on the principles of economics and their use in making rational economic decisions. Affiliated with the National Council on Economic Education and the Florida Council on Economic Education, the Center also conducts research in economic education.

Center for Executive Development
Director: Mr. Donald C. Hoke
BA 237 • (407) 823-2446

The Center for Executive Development (CED) of the College of Business Administration at UCF is committed to providing contemporary and relevant management and executive development programs. Utilizing the resources of the school faculty, visiting executives, leading educators, and other distinguished guests, the Center provides training and seminars in topics covering the spectrum of business topics and issues. Over 5,000 participants are served by the Center annually. Programs last from one day to over two weeks in duration, as well as several longer term certificate and degree programs. Examples of current programs include: Management Development Series 2000 (“mini MBA” certificate program), Human Resource Development Training, Annual Accounting Conference, Lessons in Leadership Speaker Series, TEAM-Net® (a computerized decision-making system), and customized international programs.

Academic Program
The Center coordinates the Executive MBA Program. This program has been designed to meet the needs of individuals who seek an advanced-level learning experience and value the opportunity of learning with colleagues facing similar leadership and managerial challenges. Qualified applicants complete eleven courses in “lock-step” fashion over a seventeen-month period, meeting every other Friday and Saturday from 8 to 5. Two off-campus residencies are included. Further, an international component will be offered in 1998 as an elective to interested students midway through the academic schedule. Admission to the EMBA Program requires at least five years of full-time, progressive managerial experience in addition to university academic requirements. Professional or senior public service work is considered the equivalent of managerial experience.
Center for Research and Education in Optics and Lasers (CREOL)

Director: Dr. M. J. Soileau
Chair of Academic Affairs Committee: Dr. M. G. Moharam
CREOL/UCF, P.O. Box 162700, Orlando, FL 32826-2700 • (407) 658-6800

CREOL is the State University System of Florida's Center of Excellence for research and education in optical and laser sciences and engineering. CREOL was established in 1986 to bring together diverse disciplines into a cohesive program in optics and lasers. Research activities at the Center are integrated with the academic programs to ensure involvement of both students and faculty. CREOL has 28 faculty positions devoted to lasers and optical sciences and engineering, of which 21 have been filled by scholars from around the world. CREOL faculty are among the best in the laser/optics fields—half hold the rank of Fellow in major national and international societies associated with optics (e.g., Optical Society of America, OSA, the International Optical Engineering Society, SPIE). The faculty serve in major leadership positions in these societies, including service on the boards of directors and as officers of the societies. In a typical year approximately 50 percent of the faculty are asked to chair, co-chair, or serve on organizing committees of major national and international conferences dealing with their research specialties. The faculty and students of CREOL typically produce over 150 scholarly works per year. CREOL is located in a modern 82,000-square-foot research facility.

Research Program
CREOL research projects reflect the interdisciplinary nature of the faculty and their diverse interests, and is supported by federal, state, and industrial research grants. Faculty and students pursue joint research projects with industry and government laboratories. Current research activities include: laser propagation, laser/material interactions, nonlinear optics, integrated and guided-wave optics, infrared systems, optical signal processing, laser development, detector technology, ultra-fast phenomena, modern x-ray optics and lithography, laser plasma, nonlinear optical spectroscopy, diffractive optics, thin film optics, free electron lasers, photonics, optoelectronics, semiconductor optical device integration, growth of nonlinear and laser host materials, solid state and diode pumped lasers, laser-aided material processing and manufacturing, glass processing and characterization, optics manufacturing, and much more. The research facilities include fifty laboratories equipped with over $10 million of state-of-the-art optics equipment.

Academic Program
The academic program involves students from various science and engineering departments and reflects the diverse interests of the faculty and students. Degrees in Optical Science and Engineering, Optical Physics, Electrical Engineering, Mechanical Engineering, and Physics are available at the master's and doctoral levels. More than 25 specialized courses in electro-optics and lasers as well as advanced electrical engineering and physics courses are taught regularly. Graduate assistantships are available with stipends ranging from $12,000 to $15,000 for twelve months. Exceptional students will be considered for Assistantship enhancements of up to $4,000 through the Litton Foundation. Prestigious National Science Foundation (NSF) Graduate Traineeships are available for exceptional Ph.D. students for up to $22,500 per year including tuition. NSF programs require that applicants be a U.S. citizen or permanent resident.

Industrial Affiliates Program
CREOL has established an industrial affiliate program to facilitate strong cooperative relationships with industry. The program provides businesses and manufacturers with the benefits of cutting-edge research and with access to the expertise and facilities of CREOL. Faculty members are teaming with Florida-based small businesses to help them compete for federally sponsored Small Business Innovative Research (SBIR) programs. The program provides industry with effective ways to contribute to and sustain the research and teaching in laser and electro-optical technology.

Research Experience for Undergraduate Students
Summer undergraduate fellowships are available through the Research Experience for Undergraduates Program in Optics and Lasers. Students receive a $3,300 stipend and a housing allowance, with funds provided jointly by the National Science Foundation and
CREOL. Ten students per year are selected from around the United States to participate in an 11-week research project. The program encourages talented students, particularly minorities and persons with disabilities, to pursue graduate studies in optics and lasers.

**Dick Pope, Sr., Institute for Tourism Studies**

**Director:** ........................................... Dr. Ady Milman  
BA 410 · (407) 823-2186

The Dick Pope, Sr., Institute for Tourism Studies is dedicated to improving the quality of the tourism product and increasing the benefits of tourism accruing to the industry, the state and local community. To this end, the Institute is involved in a variety of programs in the fields of research and public awareness.

The research includes the collection, development and dissemination of information relevant to the tourism and hospitality industries in the areas of marketing, consumer behavior and visitor satisfaction, feasibility, economic, motivational, and forecasting. Some of the Institute's patrons include tourism promotion agencies at the state and local levels; tourism development commissions; professional associations; and private enterprises such as attractions, hotels, motels, food-service establishments, ground and air transportation companies, travel agencies and tour operators, and other related businesses.

The Institute devotes significant efforts to increasing public awareness of the tourism industry in Florida and elsewhere, and of the contribution of the industry to the social and economic welfare of the general public.

**Florida-Canada Linkage Institute**

**Director:** ........................................... Dr. Mark Soskin  
Daytona Beach Campus · (904) 255-7423

The Florida-Canada Linkage Institute is hosted by the University of Central Florida for the state of Florida. The Institute's purpose is to create and foster educational, commercial, cultural, and social ties between Canada and Florida.

**Florida-Eastern Europe Linkage Institute**

**Director:** ........................................... Dr. Raymond A. Shapak  
HPB 350D/E, PO Box 160155, Orlando, FL 32816-0155  
(407) 823-3847 · FAX: (407) 823-3649 · E-mail: shapak@pegasus.cc.ucf.edu

The Florida-Eastern Europe Linkage Institute (a Class II state-mandated activity) is a state-wide effort hosted by the University of Central Florida in partnership with Lake Sumter Community College, and is designed to create and foster educational, commercial, cultural, and social exchanges between the countries in central and eastern Europe and the state of Florida. The Institute, funded and administered through the Office of Academic Affairs and located in the College of Health and Public Affairs on the main campus of the University of Central Florida, promotes the development of linkage through expanded public/private dialogues on cooperative research and technical assistance, cultural exchanges, the enhancement of language training, and student/faculty exchange programs.

**Institute of Government**

**Director:** ........................................... Ms. Marilyn Crotty  
(407) 317-7745 · FAX: (407) 317-7750

The Institute of Government, an affiliate of the Florida Institute of Government, is housed in the College of Health and Public Affairs and provides training and technical assistance to federal, state, and local government agencies and intergovernmental associations. Training workshops, certification programs, conferences, seminars, applied research projects, citizen surveys, strategic planning, and organizational development programs are among the services offered by the institute.
Florida Solar Energy Center (FSEC)

Director: Dr. David Block
1679 Clearlake Road, Cocoa, FL 32922-5703 • (407) 638-1000 • FAX: (407) 638-1010

Created by the Florida legislature in 1974, the Florida Solar Energy Center is the largest and most active state-supported renewable energy and buildings research institute in the United States. FSEC functions as the energy research institute of Florida and is one of the research institutes of the University of Central Florida. It is located on a 20-acre research complex on UCF's Cocoa campus, 35 miles east of the main campus in Orlando.

FSEC employs a staff of 150. Of that number, approximately 75 are professionals with expertise in engineering and energy research, buildings science, energy analysis, policy analysis, and education and training. The remainder of the staff comprises technical and clerical support personnel and university student assistants.

FSEC annually receives $3 million in operating funds from the state of Florida. The institute also contracts to perform research for external sponsors. The value of these contracts and grants ranges from $5 million to $8 million annually. Total funding from 1975 to 1996 exceeds $70 million.

FSEC has gained national and international respect for its program activities in:

- Photovoltaic systems, applications, and cells
- Energy and building systems
- Indoor air quality
- Advanced HVAC systems
- Solar thermal systems
- Hydrogen energy from renewable resources
- Pollutant detoxification
- Photoelectrochemical processes
- Alternative fueled vehicles

Research at FSEC is based on experimental data from highly instrumented laboratories and field test sites. Detailed analytical models are developed and validated with the experimental data. Systems analysis, cost-benefit analysis, and technology transfer follow research that demonstrates technology feasibility. Results are published and widely disseminated by national as well as local media.
Institute for Simulation and Training (IST)

Executive Director: Dr. A. Louis Medin
3280 Progress Drive, Orlando, FL 32826-0544 • (407) 658-5000 • FAX: (407) 658-5050

The Institute for Simulation and Training (IST) is an internationally recognized research institute that focuses on technology advancement in training systems, education, and simulation and modeling. IST was established in 1982 at the University of Central Florida and is located in the Central Florida Research Park, adjacent to the UCF campus. The Naval Air Warfare Center Training System Division (NAWCTSD) and the Army Simulation, Training and Instrumentation Command (STRICOM) are also located in the Research Park. Additionally, more than 150 training and simulation companies maintain a presence in the Orlando area, a designated Center of Excellence for Simulation and Training technology.

The institute serves this simulation and training community by providing a wide range of research services and working with university faculty to help develop curriculum and degree programs in simulation and training disciplines. UCF is the first university in the nation to offer a master’s degree track in simulation systems.

IST’s research staff consists of scientists, engineers, and students. Program managers and principal investigators have complete freedom to tailor interdisciplinary research teams to specific research projects. Several faculty members and graduate students have presented award-winning papers at major conferences throughout the country.

IST researchers conduct basic and applied research for a broad range of training devices and programs. IST research areas include: simulation networking, visual simulation (including a Virtual Reality testbed), training systems effectiveness, artificial intelligence/expert systems, team training, computer graphics and animation, user interface design, computer architectures, simulation modeling, cognitive/information processing, database design and development, and instructional systems design. Laboratories, work space, and administrative offices comprise nearly 38,000 square feet of total floor space. Major laboratories include the Visual Systems Lab, Language Technology Lab, Communications Lab, Low Cost Flight Trainer Lab, Mathematics Simulation Lab, and Advanced Learning Technology Transfer Center.

In its role as a leader in the simulation and training community, the institute has undertaken a program of technology transfer. Included in this effort is the development of research projects with potential commercial applications, adaptation of military technology to civilian educational markets, and the communication of research results through seminars, publications, and workshops.

Institute of Statistics

Director: Dr. Mark E. Johnson
CCII 226 • (407) 623-2269

The Institute of Statistics provides statistical consulting and analytical support to all areas of the university. The institute makes valuable contributions to research by supporting non-statistical researchers with statistical consulting assistance during the planning of experiments and investigations, analysis of data, and the evaluation of results. The institute also provides statistical support to various governmental agencies and private organizations.

Institute for Technical Documentation

Director: Dr. Daniel Jones
FA 301 • (407) 823-2212

The Institute for Technical Documentation offers a variety of services for client companies, including the development of original technical documentation, the translation of documentation written in foreign languages, and the development of seminars to assist clients in writing their own documentation.
The institute consists of a core of permanent professional staff, supplemented by university faculty, staff, and students, all of whom have demonstrated expertise in technical writing of documentation. These services are enhanced by the cooperative efforts of educators, engineers, foreign language experts, psychologists, and scientists who act as consultants to the institute.

Trained writers, established facilities, and continued contact with personnel in industry and research enable the institute to engage in a wide variety of documentation projects.

**Small Business Development Center**

**Director:** Mr. Aloyse T. Polfer  
BA 309  •  (407) 823-5554

The Small Business Development Center (SBDC) is part of a statewide organization designed to promote economic development by responding to the needs of the small business community. The SBDC, located in the College of Business Administration at the University of Central Florida, is responsible for a geographic area including Orange, Osceola, Lake, Citrus, Brevard, Volusia, Flagler, Seminole, and Sumter counties. Regional centers located at Brevard Community College, Daytona Beach Community College, and Seminole Community College assist small business in these areas. Assistance is provided through workshops and individual counseling in the following areas:

- Marketing  
- Franchising  
- Personnel  
- Sources of Financing  
- Bookkeeping  
- Product Innovation  
- Business Tax  
- Business Plan Development  

Additional programs provide assistance to clients in the areas of government contracting, energy conservation, and international trade.

**Small Business Institute**

**Director:** Dr. Ron Rubin  
BA 346  •  (407) 823-2692

Business schools have for some years been interested in getting students out of the classroom and involved with real business problems rather than "textbook" situations. By sponsoring the Small Business Institute (SBI) program, the University of Central Florida does not only satisfy this need, but at the same time provides free professional help to small business people who are in need of managerial guidance.

The SBI program uses a team of senior-level undergraduate or graduate-level students who, under faculty supervision, provide management counseling and technical assistance to small business clients. Examples of these services are: general management audits, development of business plans, establishment of accounting systems, design of inventory systems, cost analysis, pricing strategies, and evaluation of alternative markets.

The major objective of the College of Business Administration at the University of Central Florida is to educate men and women for positions of productive responsibility in business and the professions. UCF's Small Business Institute program stresses analytic ability and the student's learning skills in recognizing and coping with change. At the same time, the program provides on the job experience and sound academic training for the student.
Space Education and Research Center (SERC)
Director: (TBA)
12424 Research Parkway, Suite 157, Orlando, FL 32826
(407) 658-5599 • FAX: (407) 658-5595

The Space Education and Research Center (SERC) is an interdisciplinary organization that relies on faculty participation from all five colleges of the university. SERC’s goal is to maximize space research opportunities for UCF faculty and students, while providing highly valued results to the space community. SERC’s objectives are to:

- Facilitate the performance of research to advance space technology.
- Serve as a catalyst to advance educational opportunities and experiences.
- Provide researchers with access to the upper atmosphere and space.
- Upgrade UCF capabilities through training and development programs.
- Advocate UCF’s contributions to commercial space services.
- Be an active participant in the international space community.

Space research areas of interest include advanced launch systems, communications, the earth system sciences, educational technology, and space optics. Over 50 faculty members at the university have expertise and experience in these areas. In education, SERC serves to aid in the development of new space-related courses and programs. SERC also works with industry, government, and the Central Florida school districts to improve science and mathematics education through the use of space applications and technology.

Other Centers

Additional centers providing opportunities for graduate student research are:

Dr. Phillips Institute for the Study of American Business Activity
Director: Dr. David Scott • (407) 823-5903

Environmental Systems Engineering Institute
Director: Dr. James S. Taylor • (407) 823-2785

Florida Sinkhole Institute
Director: Dr. S. Kuo • (407) 823-5644

Transportation Systems Institute
Director: Dr. Haitham Al-Deek • (407) 823-5798

Institute for Exercise, Physiology and Wellness
Director: Dr. Frank Rohter • (407) 823-2049

Institute for Research and Program Development in Education
Director: Dr. Gail West • (407) 823-5695
Admission to the University and Graduate Programs

Graduate Studies (AD 144) coordinates the admissions process with the appropriate program coordinator and the dean of the college to admit prospective students to graduate study in areas for which they are applying. Graduate Studies also admits students who are not applying for a degree program as post-baccalaureate students. Please note that post-baccalaureate admission to UCF does not guarantee admission to graduate status in a degree program.

Graduate Admission Documents

In seeking admission to a graduate program, the following documents are required to be on file before the application can be considered. Applicants are responsible for requesting that the supporting documents be sent directly to:

Graduate Studies - Admissions (AD 144)
University of Central Florida
P.O. Box 160112
Orlando, FL 32816-0112

Application information is also available at: http://www.orgs.ucf.edu

☐ Completed, signed Graduate/Post-Baccalaureate Application form.
☐ Residency Classification form.
☐ $20 application fee unless you are a former UCF student. This fee is not refundable.
☐ Official Transcripts (sent to UCF directly from all former institutions where degrees are earned or transfer credits are desired). Proof of baccalaureate or master’s degree is required.
☐ Official Test Scores (GRE or GMAT required of every applicant, sent directly from ETS)
   — GRE
   — GMAT (College of Business, Master of Health Science)
   — TOEFL (See “International Students” in this chapter.)
   — GRE Subject Examination (where required)
☐ Health Form
☐ Three (3) Recommendations (if required by program)
☐ Essay/Personal Statement (if required by program)
☐ Resume (if required by program)
☐ Program Application (Biology, Counselor Education, Electrical Engineering)
☐ Financial Statement (international students only)
☐ UCF Patent Agreement

NOTE: Social Work, Nursing, Communicative Disorders, and all Psychology programs require all admission documents (application form, residency form, transcripts, recommendations, essay/personal statement, resume) to be submitted simultaneously as a packet. Transcripts should be sealed in an envelope by the registrar of the former institution.

Applications, residency forms, and health forms should be typed or clearly printed in black ink. All documents become part of the UCF files and will not be returned to the applicant or duplicated for any purpose outside the university. For specific program information, refer to the appropriate department descriptions in the college sections of this catalog. Program application deadlines are listed under “Application Deadlines” in this catalog.
Accreditation

For the purposes of this catalog, "accredited institutions" means those institutions accredited by the six regional associations. Students with degrees from nonaccredited institutions will not be accepted into graduate programs at the University of Central Florida. Due to Florida Board of Regents rules and accreditation, this policy will not be waived. The six regional associations are:

- New England Association of Schools and Colleges
- Middle States Association of Colleges and Secondary Schools, Commission on Institutions of Higher Education
- North Central Association of Colleges and Schools, Commission on Colleges and Universities
- Northwest Association of Secondary and Higher Schools, Commission on Higher Schools
- Southern Association of Colleges and Schools
- Western Association of Schools and Colleges, Accrediting Commission for Senior Colleges and Universities and Accrediting Commission for Junior Colleges

Applications

Applications for admission to the university for degree-seeking or non-degree-seeking (post-baccalaureate) study may be obtained from Graduate Studies - Admissions (AD 144). Completed applications must be submitted to the same office.

UCF students who graduate with a baccalaureate degree and wish to continue their studies must file an application for admission to either a graduate degree program or for non-degree (post-baccalaureate) admission. No fee is required of returning UCF students who have previously paid an application fee.

Official Transcripts

To be granted admission to UCF in either graduate or post-baccalaureate status, all applicants must submit official transcripts showing a baccalaureate degree and the grades for the last 60 semester (90 quarter) hours of attempted undergraduate work directly to Graduate Studies - Admissions (AD 144). If grades were transferred in from other schools in the last 60 semester hours, official transcripts from those schools also must be sent. If applying to the Business, Social Work, or Psychology programs, all transcripts from all colleges attended are required. Final acceptance into degree-seeking graduate status is not granted unless an applicant's official transcripts and necessary test scores are on file so that they can be evaluated for admission.

Graduate Examinations

The Board of Regents of the State of Florida requires that every student take either the Graduate Record Exam (GRE) or the Graduate Management Admission Test (GMAT) before the student can be accepted into graduate student status. Some programs may also require the GRE subject test before admission into graduate student status. Official copies must be mailed directly from the Educational Testing Service to Graduate Studies - Admissions (AD 144) and be on file before graduate student status can be granted. UCF recommends that any individual contemplating class work beyond the bachelor's degree take the GRE or GMAT at the earliest possible date to avoid problems associated with a delay of acceptance into a graduate program. Both the GRE and the GMAT are given four times a year on the UCF main campus. For registration dates and procedures, contact the UCF Counseling and Testing Center at (407) 823-2811. Computerized GRE examinations are available daily at Sylvan Learning Centers. Preparatory courses are offered through the Division of Continuing Education at (407) 823-6100.

Educational Testing Service's policy, effective with the October 1985 GRE test, is to report scores only until September 30 following the fifth anniversary of the test date. If ETS cannot provide an official copy, students will need to repeat the GRE or GMAT and have an official score reported to Graduate Studies - Admissions (AD 144).
Records Deadline - Supporting Documents

If the program has a specific deadline, all supporting documents are due by that deadline (see "Application Deadlines" at the front of this catalog). For all other programs and post-baccalaureate applicants, all supporting admissions documents should be received by Graduate Studies no later than July 15 (fall admission), December 15 (spring admission), or April 15 (summer admission). 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. Failure to submit records will result in registration holds for all succeeding terms.

Social Work, Nursing, Communicative Disorders, and all Psychology programs require all admission documents to be submitted simultaneously in a packet. Transcripts should be sealed in an envelope by the registrar of the former institution.

Records - Validity of Documents

All supporting admission documents must be received directly from the issuing institution or testing agency. If the university finds that an applicant has made a false or fraudulent statement or a deliberate omission on the application, residency affidavit, health report, or any accompanying document or statement, that applicant may be denied admission. If the student is enrolled when such fraud is discovered, the student may be immediately withdrawn (with no refund), further enrollment denied, and credit earned and any degree based on such credit invalidated. Actions for this type of offense are handled administratively by the Office of Student Affairs after notification to the alleged violator and hearing by that office.

Confidentiality of Student Records

State regulations and the federal Family Educational Rights and Privacy Act of 1974 guide the procedures for confidentiality of student records. Students who have questions or specific requests concerning the confidentiality of records should contact the Office of the Dean of Students. The university does sell mailing lists, on request, to independent vendors, so if students do not wish their names on such a list, they should notify the Dean of Students. The Golden Rule outlines the university procedures for confidentiality.

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 will be mailed to the applicant upon receipt of the application for admission. Immunizations and diagnostic procedures may be required of students by the university prior to any registration. University requirements for vaccinations or immunizations may be waived upon receipt of appropriate documentation from the student that the waiver is requested on the basis of religious grounds or on the recommendation of a university physician.

Where physician examinations or certificates are required, they must be signed by a doctor of medicine or by a doctor of osteopathy. The university reserves the right to refuse registration to any student whose health record or report of medical examination indicates the existence of a condition that may be harmful to members of the university community.

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 year with no additional application fee. Reactivation is the process by which the original application can be reactivated and considered for admission without having to resubmit all application materials. Admission is not guaranteed by completing a reactivation form. After a year, student application files are destroyed. An application fee is required if a student applies again after the one-year period. When reactivating an application, please check program deadlines and requirements to ensure that all requirements are met.
Admission to the University

Admission as a post-baccalaureate student is not admission to a graduate program. The admission process begins with the receipt of the Graduate/Post-Baccalaureate Application form and fee at Graduate Studies. Within two weeks, Graduate Studies acknowledges receipt of the application form and fee and notifies the applicant of any deficiencies in the application (e.g., official transcripts, GRE or GMAT test scores, letters). Providing Graduate Studies with the required information in a timely manner expedites the admission process. Many departments do not view an application until it is complete.

The application information is forwarded to the appropriate degree program. Copies of transcripts, test scores, recommendations, and personal statements are also forwarded to the degree program as soon as they are received.

Non-degree-seeking post-baccalaureate applicants will receive notice of acceptance to the university and registration information from Graduate Studies.

Readmission to the University

A regularly admitted student who has not been registered for two major semesters (spring/fall) must make application for readmission through Graduate Studies approximately one month before classes begin for the new semester. (See "Continuous Attendance" below.)

Continuous Attendance

Graduate students should be aware of two policies regarding continuous attendance at the university. The first may affect continuing status as a graduate student. The second affects the student’s option to fulfill degree requirements under any UCF catalog in force during the student’s most recent period of continuous attendance.

- A student may not be guaranteed continuing graduate status if he or she does not enroll in the university for a period of two major semesters (spring/fall). When a student applies for readmission, after having been out two or more semesters, the program will review the student’s record to determine if he or she will be continued in graduate status or be reverted to post-baccalaureate status.

- Graduation policy allows a student to fulfill degree requirements as listed in their official program of study on file in the office of their major. The program of study should use the catalog associated with the entry term into graduate status of the student. Continuous attendance is interrupted when a student drops out of school for any term other than the summer term. Because students must occasionally interrupt their attendance for a brief period, a student will be considered to have interrupted continuous attendance only if the interruption is for two or more consecutive terms (spring/fall). Under these circumstances, a student may lose the option of fulfilling the degree requirements originally listed in their official program of study already on file, and will graduate using the latest graduate catalog.

Admission to a Graduate Program

After receiving copies of all transcripts, standardized test information, and other documents required by the department from Graduate Studies, the degree program coordinator will admit (either regular or provisional) the applicant as a degree-seeking graduate student or deny the applicant.

Appeals Procedure for Admissions

Students who are not accepted 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. The appeal procedure consists of the student writing a letter to the program coordinator indicating the desire to appeal and the reasons for the appeal. The program coordinator may ask the department or program graduate committee to examine the necessary information and recommend a response to the appeal. The program coordinator will recommend an admissions action to the department chair.

Should the department chair deny the appeal and there are new circumstances, facts, or other matters that the student feels warrants consideration the student may request further consideration from the College by writing a letter to the graduate coordinator of the
Admission to the University and Graduate Programs

Admission Classifications

A student who does not fulfill the academic conditions for REGULAR admission may be admitted to REGULAR status if the GPA is 2.0 or more and upon recommendation by the program coordinator and the dean of the college indicating the desire to appeal further and the reasons why an appeal is sought. The graduate coordinator may ask the College Graduate Committee to examine the necessary information and recommend a response to the appeal. The graduate coordinator will recommend an admission action to the college dean.

Should the college dean deny the appeal, and there are new circumstances, facts, or other matters that the student feels warrants consideration, the student may request further consideration from the university by writing a letter to the Director of Graduate Studies indicating the desire to appeal further and the reasons why an appeal is sought. The Director may ask the Graduate Council to examine the necessary information and recommend a response to the appeal. The Director will recommend an admission action to the Vice President for Research and Graduate Studies.

Graduate Status—Regular

All students who wish degree-seeking status must submit an official GRE General Test score (or an official GMAT score as required). Some programs also require the GRE Subject Test. 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. Programs may require a minimum GRE General Test score more stringent than the Board of Regents requirement.

- A baccalaureate degree or equivalent from a regionally accredited university and 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 attempted semester hours); OR, a total score of 1,000 or higher on the General 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 and official GRE or GMAT score. Even though an applicant may qualify for minimum admission on the basis of the undergraduate grade point average or having a previous graduate degree, an official GRE or GMAT score must be on file before admission to Graduate Status.

- A student must be accepted by the program coordinator and the dean of the college offering the particular degree program sought. Requirements in addition to the minimums stated above may be specified by the individual degree programs.

- International students must demonstrate their proficiency in the English language as one of the conditions of admission. International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score on the Test of English as a Foreign Language (TOEFL) before they can be admitted to the university.

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 admission is sought.

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.

If a student does not maintain a 3.0 GPA in the graduate program of study, he or she will be placed on ACADEMIC PROVISIONAL status for 9 semester hours, then reverted to post-baccalaureate status if the GPA is still unsatisfactory. A student, with regular or provisional status, whose overall GPA falls below 2.0 will be reverted immediately to post-baccalaureate status. (See "Appeals" in the "University Graduate Regulations" chapter.)
Post-Baccalaureate Status
Post-baccalaureate status is considered to be non-degree-seeking. Students are generally placed in this category at their request. International students are not eligible for post-baccalaureate status unless they hold a baccalaureate degree from a regionally accredited university in the United States.

A student may elect to remain in post-baccalaureate status for various reasons (e.g., requirements in a graduate program at another institution, personal improvement, meeting job requirements, and removing academic deficiencies). While in post-baccalaureate status, students are allowed to take graduate courses, in some departments, on a space-available basis. Post-baccalaureate students register the last day of registration. Not all departments accept post-baccalaureate students and the procedures for enrollment into graduate-level classes vary with each department. Students should check with the individual departments or colleges before attempting to register.

All students who take graduate-level course work while in post-baccalaureate status should be aware of the limit of 9 semester hours of graduate-level course work that can be transferred into a graduate degree program if a student is given graduate status.

Change of Major or College
When students wish to change their major or college, after having been admitted to a graduate program, they must file a new application form for the new program at Graduate Studies (AD 144). The program coordinator of the new program will then decide whether to admit the student. Post-baccalaureate students wishing to apply to a degree program must also file an application for that degree program. Students who have been admitted in provisional status in a degree program must file a new application if they wish to be accepted by another graduate program.

Second Master’s Degree
Completion of one master’s program at UCF may qualify a student for a second master’s degree. Individuals seeking a second master’s degree must file a separate application for that program and complete the normal UCF master’s degree requirements for the second degree.

Up to nine (9) semester hours from a completed master’s program at 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.

Transcript Requests
Transcripts of a student’s UCF academic record may be requested by the student through the Office of the Registrar. A student’s academic record can be released only upon written authorization by the student. When requesting a transcript be sure to include your full name and social security number and indicate the names and complete addresses to whom transcripts are to be sent. If grades or degree statements for the current term are needed, indicate that the transcript request is to be held until the final semester reports are posted. The first two transcripts are provided at no cost to the student. For additional transcripts, there is a charge of $5.00 each. The check or money order should be made payable to UCF. Cash payments can be accepted only by the Cashier’s Office (Monday 8:30-6:30; Tuesday-Friday 8:30-4:00). Students requesting transcripts may do so in person or by writing to: Transcript Request, Office of the Registrar, University of Central Florida, P.O. Box 160114, Orlando, FL 32816-0114.
International Students

UCF adheres to the principle that the university is primarily a community of scholars, both national and international, in pursuit of knowledge, and active in teaching, studying, and doing research. The presence of international students on the campus contributes substantially to the quality of the educational experience for everyone. It can bring to the classroom learning environment unique viewpoints and perceptions which would otherwise be lost to the U.S. students. Effective personal contact across cultures can reduce errors in understanding one another's problems and foster a climate of international peace and cooperation among people of the world today.

International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score on the Test of English as a Foreign Language (TOEFL) before they can be admitted to the university. When the official test score is received in Graduate Studies, a copy will be sent to the graduate program coordinator, who evaluates the student's record and determines admission or denial to the program. Students who are offered Graduate Teaching Assistant positions must also take and pass the Test of Spoken English before they will be allowed to teach.

Each program has determined the minimum required TOEFL score, 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>
<td>550</td>
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<tr>
<td>Biology</td>
<td>650</td>
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<tr>
<td>Chemistry, Industrial</td>
<td>500</td>
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<tr>
<td>Communication</td>
<td>550</td>
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<tr>
<td>Computer Science</td>
<td>550</td>
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<tr>
<td>English</td>
<td>575</td>
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<tr>
<td>Foreign Languages and Literatures</td>
<td>550</td>
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<tr>
<td>History</td>
<td>575</td>
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<tr>
<td>Mathematical Science</td>
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<tr>
<td>Physics</td>
<td>550</td>
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<tr>
<td>Political Science</td>
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<td>Psychology</td>
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<td>Sociology, Applied</td>
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<td>Statistical Computing</td>
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<tr>
<td>College of Business Administration</td>
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</tbody>
</table>

International applicants should have their transcripts evaluated and the evaluation sent directly (by the evaluating agency) to Graduate Studies - Admissions (AD 144) at the University of Central Florida along with an official copy of their transcripts and a certified English translation. Transcript evaluators include Josef Silny & Associates, Inc., P.O. Box 248233, Coral Gables, FL 33124-8233; and World Education Services, Inc. (WES), P.O. Box 745, Old Chelsea Station, New York, NY 10011. Students will be notified if additional information is required to clarify a transcript. The following programs require only document evaluation: Computer Science, Engineering, English, Health, Mathematical Science, Political Science, and Statistical Computing. All other departments require course-by-course evaluations. Students must adhere to deadlines published in the catalog.

International students are not eligible for post-baccalaureate status unless they hold a baccalaureate degree from a regionally accredited U.S. university.

International students cannot be accepted provisionally or conditionally; if accepted, they must be accepted in regular graduate status.
International Student Mandatory Health and Accident Insurance

Each international student accepted for admission must, prior to registration, submit proof of compliance with the Board of Regents mandatory health and accident insurance (effective fall semester 1992). Written proof of insurance, must be provided to the International Student Services Office and must be valid at all times. Cancellation of the policy or stoppage of the premium will result in administrative withdrawal from all classes.

If the insurance is issued by an insurance carrier from outside of the United States, a notarized statement, in English, must be provided attesting to meeting the minimum coverage mandated by the State of Florida.
Registration Information

During each academic semester, registration is held for all new, currently enrolled, degree-seeking, and non-degree-seeking students for the following term. Registration consists of these periods:

- Advanced Registration for continuing students, which is normally held immediately after the midterm of the current semester for the next semester
- Regular Registration for new students, which is normally held one or two days immediately before the start of the semester
- Add/Drop, which is held during the first week of classes for each semester

Spring Advanced Registration is held following midterm for the fall semester. Summer and fall Advanced Registrations are held concurrently immediately following the midterm of the spring semester.

Registration is available by telephone (with an 800 as well as local number), in the college advising offices, and at walk-by. The dates and times of each of these registration periods are listed in the Schedule of Classes.

Registration information and course schedules are also both available on-line.

<table>
<thead>
<tr>
<th>Registration:</th>
<th><a href="http://www.ucf.edu">http://www.ucf.edu</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Schedules:</td>
<td><a href="http://pegasus.cc.ucf.edu/~wwwdata/tally2.html">http://pegasus.cc.ucf.edu/~wwwdata/tally2.html</a></td>
</tr>
</tbody>
</table>

**Schedule of Classes**

The Schedule of Classes is published two times a year. One edition contains the summer and fall terms and the second edition contains the spring term. The Schedule of Classes is distributed by the colleges and departments.

**New Graduate Students**

All new first-term graduate students must have residency, health, and patent forms completed before they are allowed to register at UCF. Holds placed on registration will be removed once the forms are received. Forms may be obtained in Graduate Studies - Admissions (AD 144).

**Continuing Graduate Students**

Continuing graduate students register by telephone. They may pick up their registration (Audit) form in their departments. All continuing students should register early to ensure that courses will be offered. For graduate students with fellowships or assistantships, failure to register early may result in delays in receiving assistantship paychecks and sometimes result in the loss of tuition waivers. Continuing graduate students registering for Internship, Independent Study, Thesis or Dissertation hours, or research report hours must fill out a Registration Agreement form obtained from their advisor or department office. The college graduate office will normally register students into these courses. The TouchTone registration system cannot be used for registering for these classes.

**Post-Baccalaureate Students**

All post-baccalaureate students should check with the departments where they want to take courses before they register to learn what is required by that department to register. Certain classes are restricted, and it is best to find this out first. In the College of Education, post-baccalaureate students can ONLY register for 5000- and 6000-level classes. In the College of Business Administration, post-baccalaureate students cannot register for graduate courses. The College of Engineering will only allow post-baccalaureate students to register with special approval from the program coordinator. Post-baccalaureate students who want to register for College of Arts and Sciences or College of Health and Public Affairs courses should check with the individual programs for more detailed information.
Post-baccalaureate students must be registered for 12 hours to be considered full-time. Post-baccalaureate students who already have certification elsewhere (i.e., from a College of Education in another state) are not eligible to receive financial aid. In general, post-baccalaureate students are not eligible for financial aid, assistantships, fellowships, or tuition waivers, although it is best to check with the Office of Student Financial Assistance for specific details.

Only up to nine hours taken in post-baccalaureate status may be used toward a graduate degree.

Audit Registration
Auditors are those students wishing to attend classes without receiving academic credit. To audit a class, the student must file a regular application and be accepted as a degree-seeking or non-degree-seeking student. Audit forms are available in the Registrar's Office and must be filled out by the student and must be approved by the college where the course is taught. Students registering for credit during regular registration, late registration, or add/drop may not change to audit status, but must remain in the course or withdraw through normal withdrawal procedures.
Holds
Holds may be placed on students' records, transcripts, grades, or registrations because of financial or other obligations to the university. Satisfaction of the hold is required before a release can be given. In order to obtain an immediate release on financial holds, payment must be made in cash, cashier's check, or money order.

In order to release Graduate Studies holds, the students must provide the documents lacking from their records; or if the hold is labeled "denied," they must stop by Graduate Studies (AD 144) and switch to post-baccalaureate status.

Those students who are placed on nine-hour holds must see their advisor and have the advisor request that this hold be removed, or they may sign a form provided by Graduate Studies stating they are not taking courses toward a graduate degree. If the advisor is seen, then the advisor will contact Graduate Studies to have the hold removed.

Address Changes
The address the university uses for students is taken from the application for admission or readmission. It is the student's responsibility to make the appropriate changes to their address. Address changes can be made in Graduate Studies, the Registrar's Office, or at any of the kiosks located on campus.

Address changes can also be made by writing to Graduate Studies - Admissions (AD 144) or the Registrar's Office. Written requests must be signed and the student's social security number provided.

Enrollment Certifications
To confirm enrollment in the university, students should go to the Registrar's Office, AD 161. A picture identification is required. Enrollment certifications for a current term are available after add/drop.

Student Records
Student records submitted to the university become the property of the university and cannot be returned to the student or released to a third party. Copies of student records can be released if a written request signed by the student is received by Graduate Studies (AD 144). Student records are stored in paper form in the vault in the Registrar's Office. Once the student has been absent from the university for three academic years, the records are transferred to optical disk storage and the paper copies are destroyed.

Withdrawals
Students may withdraw from courses after the end of add/drop. The withdrawal time period begins the first business day after add/drop through the date specified in the UCF academic calendar as the deadline for withdrawals. This date is normally the midpoint of the semester. Students wishing to withdraw from a class must present their picture identification card and sign the withdrawal form in the Registrar's Office, AD 161.

Withdrawals may be accomplished by mail, but mail requests must be postmarked no later than the published date for withdrawals that is published in the UCF academic calendar. Students who wish to withdraw after the published deadline must file a petition in the Enrollment and Academic Services, AD 210, (407) 823-2691.

Financial Support
Graduate students who will be supported on assistantships must see their program coordinator to see that their employment contract form is filled out. If tuition waivers are desired, then they must also fill out a Graduate Tuition Fee Waiver Request Form with the program coordinator and attach the employment contract to it (PAF). This should be done before fees are paid; for continuing students, this should be done before the new semester begins.
Fee Payments
All graduate students must pay their tuition and fees at the end of add/drop. It is important to do this as students will be dropped from courses at this time. If a department or college has not recorded tuition waivers by then, students must pay all tuition and fees. If a department or college has waived partial tuition and it is recorded, then students must pay the remainder of the tuition owed and all of the fees by the end of add/drop. It is important for graduate students to register early to provide the department or college enough time to record tuition waivers.

Fellowships
All graduate students who are receiving fellowships should register as early as possible, and see the Fellowships and Financial Support Coordinator (AD 144) to ensure that arrangements are made to receive proper payment.

Student Responsibility to Inform Offices
All graduate students who need or have financial aid to attend UCF should be sure to tell appropriate offices when receiving advisement about desired goals.
Financial Information

Graduate education is an important investment for both the student and the community. Graduate education enables students to enter new career fields with more choices as to their work assignments. It provides enrichment and a deeper understanding of a chosen field. Educated employees improve the quality of life in the State of Florida. The cost of this investment is very reasonable.

A student’s basic expenses at the university will be for tuition, course-related fees, textbooks, other instructional supplies, room and board, and miscellaneous items.

**Tuition and Fees**

Required fees are established by the Board of Regents and the Florida State Legislature and are subject to change without notice. Fees are affected by residency status as noted in the “Florida Residency for Tuition Purposes” section in this chapter.

Tuition not paid by the payment deadline date for each term will result in late payment fees.

The following schedule applies to all University of Central Florida students.

A. **Application Fee** — $20.00. Must be paid by U.S. check or money order (required with all applications for admission to the university unless the applicant has attended UCF previously). The fee is not refundable.

B. **Registration Fees** per semester are shown below for main campus, area centers, and continuing education courses. Zero-hour registration students are assessed one credit hour at the Florida Resident Tuition rate at the course level for which the student is registered.

### 1996-97 Fee Schedule

*(1997-98 fees were not available at the time of publication.)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Florida Resident (0000-4999)</th>
<th>Florida Resident (5000-7999)</th>
<th>Non-Florida Resident (0000-4999)</th>
<th>Non-Florida Resident (5000-7999)</th>
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<tbody>
<tr>
<td>Matriculation</td>
<td>$40.75</td>
<td>$93.66</td>
<td>$40.75</td>
<td>$93.66</td>
</tr>
<tr>
<td>Non-Resident Fee</td>
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<td>-0-</td>
<td>166.52</td>
<td>257.85</td>
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<tr>
<td>Building Fee</td>
<td>2.32</td>
<td>2.32</td>
<td>2.32</td>
<td>2.32</td>
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<tr>
<td>Capital Improvement Fee</td>
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<td>2.44</td>
<td>2.44</td>
<td>2.44</td>
</tr>
<tr>
<td>Undergraduate Financial Aid Fee</td>
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<td>4.08</td>
<td>2.03</td>
<td>4.08</td>
</tr>
<tr>
<td>Non-Resident Financial Aid Fee</td>
<td>-0-</td>
<td>-0-</td>
<td>8.32</td>
<td>12.89</td>
</tr>
<tr>
<td>Activity and Service Fee</td>
<td>6.95</td>
<td>6.95</td>
<td>6.95</td>
<td>6.95</td>
</tr>
<tr>
<td>Athletic Fee (capped at 12 hrs)</td>
<td>6.50</td>
<td>6.50</td>
<td>6.50</td>
<td>6.50</td>
</tr>
<tr>
<td><strong>Total per Hour</strong></td>
<td>$60.99</td>
<td>$116.55</td>
<td>$235.83</td>
<td>$387.29</td>
</tr>
</tbody>
</table>

### Other Fees: Resident and Non-Resident Students

- **UCF Health Fee** (fall and spring terms - main campus course offerings) $47.30
- **UCF Health Fee** (summer term - main campus course offerings) 35.20
- **UCF Materials and Supplies Fee** (approved courses only - varies per course) 2.00-15.00
- **Campus Card Fee** 10.00
- **Campus Card Replacement Fee** 15.00
- **Late Registration Fee** (see “E” below) 50.00
- **Late Payment Fee** (see “E” below) 50.00

**Returned Check Fees:**

- Check amounts up to $50.00 25.00
- Check amounts over $50.00 and less than $300.00 30.00
- Check amounts over $300.00 $40.00 or 5%, whichever is greater
FINANCIAL INFORMATION

C. Room and Board (estimated)
Residence Hall Rooms (per semester) $1,005.00-1,535.00
Charge for late housing payment $50.00
Board plans (meal plans) $700.00-900.00

University housing for graduate students is scarce, and graduate students should search for inexpensive off-campus apartments. Most apartments charge from $400 to $500 per month for a one-bedroom unit.

D. Books and Supplies per semester (estimated) $300.00

E. Late Registration and Late Payment Fees
- A $50 late registration fee will be assessed all students who register during the late registration period and pay fees by the deadline.
- A $50 late payment fee will be assessed all students who pay fees after the deadline.
- Both a $50 late registration fee and a $50 late payment fee will be assessed all students who both register late and pay fees after the deadline.

All payments accepted after course cancellation notices are mailed, approximately the third week of classes, must be cash, cashier’s check, or money order.

F. Vehicle Registration (required of everyone operating a motor-powered vehicle on campus) per calendar year for all students, including full-time students, part-time students, and courtesy students from other institutions.
Student decal fee $68.00

G. Student Health Fee
The Student Health Fee is assessed to all students registered in main campus course offerings.

H. Transcripts
First two transcripts are provided at no charge. Each additional copy $5.00

Florida Residency for Tuition Purposes

To qualify as a Florida Resident for tuition purposes, students must:

Be a U.S. Citizen, Resident Alien, Parolee, Cuban National, Vietnamese Refugee, or other refugee or asylee so designated by the U.S. Immigration and Naturalization Service,

AND

Have established a legal residence in this state and maintained that legal residence for 12 months immediately prior to the term in which they are seeking Florida resident classification. The student residence in Florida must be as a bona fide domiciliary rather than for the purpose of maintaining a mere temporary residence or abode incidental to enrollment in an institution of higher education, and should be demonstrated as indicated below (for dependent students, as defined by IRS regulations, a parent or guardian must qualify),

AND

Submit the following documentation (or in the case of a dependent student, the parent must submit documentation) prior to the last day of registration for the term for which resident status is sought:

☐ Documentation establishing legal residence in Florida must be dated at least one year prior to the first day of classes of the term for which resident status is sought. The following documents will be considered in determining legal residence:
  A. Declaration of Domicile.
  B. Proof of purchase of a home in Florida in which the student resides.
  C. Proof that the student has maintained residence in the state for the preceding year (e.g., rent receipts, employment records).

☐ Documentation establishing bona fide domicile in Florida which is not temporary or merely incidental to enrollment in a Florida institution of higher education. The following documents will be considered evidence of domicile even though no one of these criteria, if taken alone, will be considered as conclusive evidence of domicile:
  A. Declaration of Domicile.
  B. Florida voter registration.
  C. Florida vehicle registration.
  D. Florida driver license.
  E. Proof of real property ownership in Florida (e.g., deed, tax receipts).
FINANCIAL INFORMATION

F. A letter on company letterhead from an employer verifying permanent employment in Florida for the 12 consecutive months before classes begin.
G. Proof of membership in or affiliation with community or state organizations or significant connections to the State.
H. Proof of former domicile in Florida and maintenance of significant connections while absent.
I. Proof of reliance upon Florida sources of support.
J. Proof of admission to a licensed practicing profession in Florida.
K. Any other factors peculiar to the individual which tend to establish the necessary intent to make Florida a permanent home and that the individual is a bona fide Florida resident, including the age and general circumstances of the individual.

☐ No contrary evidence establishing residence elsewhere.
☐ Documentation of dependent/independent status (notarized copy of most recent IRS tax return).

OR

Become a legal resident or be married to a person who has been a legal resident for the required 12-month period,

OR

Be a member of the Armed Forces on active duty stationed in Florida, or a spouse or dependent,

OR

Be a member of the full-time instructional or administrative staff of a state public school, community college or university in Florida, a spouse or dependent,

OR

Be a dependent and have lived five years with an adult relative who has established legal residence in Florida,

AND

File a notarized residence affidavit with Graduate Studies - Admissions (AD 144).

Graduate Studies reserves the right to require additional documentation as seen necessary to accurately determine the resident status of any student.

Appeals of Late Fees

Students who wish to appeal a late registration, late payment, or return check service charge fee may make their appeal to the Fee Appeals Committee by initiating a student petition (Form 41-561). This form can be obtained from Enrollment and Academic Services, Student Affairs, the University Cashier, or the Student Accounts Section of Finance and Accounting. Students must submit their petitions to Student Accounts, Room 112, Administration Building, and may appear (not mandatory) before the committee. To avoid complications, students should pay all fees, including late fees, and if the appeal is granted, they will receive a refund of the late fees.

Check Cashing

The University Bookstore cashes personal checks not exceeding $50.00. The university collects service fees on all checks returned. Future check-cashing privileges may be denied.

Past-due Accounts

All financial obligations to the university must be met if good standing is to be maintained. Failure to meet obligations can result in the withholding of grades and transcripts and in the denial of registration and readmission to the university. The services of a professional collection agency and recourse to the courts may also be invoked if deemed necessary. All costs of collection, including attorney’s fees, are borne by the debtor.

Payment Procedures

Payment may be made in the Cashier’s Office, AD 108. Hours are Monday, 8:30 a.m. to 6:30 p.m., and Tuesday-Friday, 8:30 a.m. to 4:00 p.m. Credit cards are not accepted. Payments (NO CASH) may be placed in the Cashier’s night depository on the north (pond) side of the Administration Building; INCLUDE SOCIAL SECURITY NUMBER ON CHECK OR MONEY ORDER. Payment guidelines for off-campus registration are contained on the off-campus registration form.
Refund of Fees

Mailed payments (check or money order only) must be postmarked no later than the due date to be considered on time and avoid the late fee. Address payment to: University Cashier, University of Central Florida, P.O. Box 620000, Orlando, FL 32891-8449.

Do not assume your registration will be canceled if you do not pay fees or attend classes.

A refund of fees will be made under the following conditions upon presentation at the Student Accounts Office of a Certification of Withdrawal issued by the Registrar. No refunds will be made under this policy except upon proper application. Any debts to the university will be deducted up to the full amount of the refund.

A. A full refund when:
   1. Any class is dropped before the end of the Add/Drop period.
   2. Cancellation of the course by the university.
   3. Student is denied admission to an offered course by the university for whatever reason.

B. Partial refund (25% of the total tuition paid):
   1. Complete withdrawal from the university prior to the end of the fourth week of classes, during a 16- or 17-week semester, or at the end of the first quarter of classes during a mini-semester or summer semester (rounded out to the end of the week in which the first quarter occurs). Student must present withdrawal slip and request the refund from Student Accounts.

C. Refunds for exceptional circumstances at any time upon withdrawal for one or more courses.
   1. Up to 100% of tuition and registration fees due to 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. Pro rata refunds for first term at UCF students:
   1. Between 40% and 90% of tuition and dorm charges for students who fully withdraw before 50% of the term has elapsed. Applies only to UCF students in their first term. An administrative fee defined as the lesser of 5% of all charges or $100 will be deducted from the refund.

Graduate Student Support Opportunities

Graduate students may receive financial assistance in the form of fellowships, tuition waivers, loans, or assistantships. Students may inquire about these opportunities at the following offices:

Fellowships and Financial Support Coordinator (AD 144) .................. 407-823-6497
Fax: ............................................... 407-823-6442
Student Financial Assistance Office (AD 120) .......................... 407-823-2827
Loans .................................................. Fax: 407-823-5241
Holds on records, graduate status ........................................ Fax: 407-823-0442

An on-line financial aid information web page is available for specific information concerning financial aid, grants, and fellowships. The address is:

http://www.finaid.org

Non-degree-seeking post-baccalaureate students are not eligible for financial aid.
Tuition Waivers

Full-time graduate assistants are eligible to receive tuition waivers for part of their tuition costs. Students should contact the departmental program coordinator and fill out a Request for Tuition Waiver Form when they register for classes. Fee waiver monies are used to assist graduate students to progress toward their degrees. Instate tuition waivers are available for qualified Florida residents. Out-of-state tuition waivers are offered to qualified non-Florida residents. Part-time students and post-baccalaureate students are not eligible to receive tuition waivers.

Graduate Teaching and Research Assistants must be enrolled full-time (six credit hours in the fall and spring terms and three credit hours in the summer) to receive a tuition waiver. Students taking only thesis or dissertation hours are required to be enrolled in at least one hour of thesis or dissertation to be considered full-time and receive a tuition waiver. Graduate Teaching and Research Assistants who are pursuing a non-thesis option and are in their graduating semester, as determined by their college, may also receive a waiver at the discretion of the college. Full-time graduate teaching and research assistants and associates are eligible for FICA and FUTA exemptions if they work less than 20 hours per week.

Rules that govern the use of tuition waiver monies for graduate students are:

1. Graduate students must be full-time students (defined above) and in good standing with a GPA of 3.0 or higher. The student must be enrolled in classes full-time for the term in which they receive the waiver and employed as a graduate teaching or research assistant for at least 10 hours/week (0.25 FTE) on average, or receiving a fellowship in the amount of $3250 or higher for the academic year.
2. If more than one unit employs a student who creates the waiver, the waiver money generated by the student is credited to both units proportional to the contribution of the student stipend.
3. The units of those students on fellowships will receive credit for the waiver generated by the fellowship student.
4. Fee waiver money is to be allocated to the colleges and institutes, rather than administrative offices such as Academic Affairs, Student Affairs, etc.; Graduate students who work in these offices should go to their units for tuition fee waiver support.
5. If a student drops a course for which a fee waiver has been received but remains full-time, the waiver money received for the class must be returned to the university. Holds on student records will prevent students from registering for classes, receiving transcripts, or receiving grade reports until the money is returned.
6. If a student drops a course for which a fee waiver has been received and becomes part-time as a result, all waiver money must be returned to the university. Any such funds will be reallocated to the unit from which they originated. Holds on student records will prevent students from registering for classes, receiving transcripts, or receiving grade reports until the money is returned. (In extreme cases, a student may petition for an exception to this.)
7. If a graduate student assistant is dismissed or resigns at any point during the semester, tuition waiver funds received by the student must be returned to the university.
8. Waiver money is only provided for courses taken as necessary for progress toward a student's degree.
9. Waiver money is limited to 9 terms for master's students, 12 terms for doctoral students beyond the master's degree, or 21 terms for doctoral students without a master's degree.

All graduate assistants and fellows (the fellowship pays at least $3250 per academic year), regardless of their tax status, are eligible to receive tuition waivers and will generate tuition waiver authority according to Board of Regents guidelines.
FINANCIAL INFORMATION

Tuition Fee Waivers for State of Florida Employees

State employees, faculty, and staff who use a tuition fee waiver for course work (up to 6 credit hours) without payment of the registration fees must register on the day and time provided by the Registrar. Employees who register prior to the prescribed time and date will have an invalid fee waiver and will be liable for all applicable fees on courses enrolled. It is the responsibility of the employee to register only on a space-available basis, and this is only during the prescribed time as indicated by the Registrar. In addition, the tuition fee waiver cannot be used for courses that require increased costs. These courses include, but are not limited to: courses offered through the Center for Continuing Education, independent study, supervised research, supervised teaching lab, thesis hours, dissertation hours, internship, co-ops, practicum or applied, individualized instruction in music, art, or dance, etc.

Tuition Fee Waivers for Senior Citizens

Persons 60 years of age or older who meet Florida residency requirements may register to audit classes without payment of tuition and application fees. Registration is on a space-available basis during the last hour of Add/Drop Registration. The tuition fee waiver cannot be used for courses that require increased costs. These courses include, but are not limited to: courses offered through the Center for Continuing Education, independent study, supervised research, supervised teaching lab, thesis hours, dissertation hours, internship, co-ops, practicum or applied, individualized instruction in music, art, or dance, etc. A Florida Residency Affidavit is required in order to establish Florida residency. A completed Student Health History must be filed prior to registration. Inquiries should be directed to Enrollment and Academic Services, AD 210, 823-2691.

State Tuition Exempt Program (STEP)

Eligible members of the active Florida National Guard may receive a waiver of 50 percent of tuition and lab fees. Registration is on a space-available basis only during the time designated by the Registrar.

Fellowships

Fellowship information is available from several sources. Weekly grants information, listing federal fellowship opportunities for graduate students, are sent to program and graduate coordinators and other interested faculty who may be contacted for specific opportunities related to their specific fields of study. Published fellowship deadlines are approximate and subject to change.

Graduate Studies will provide a list of fellowship opportunities to graduate students when they apply to the university. Books, such as the Graduate Scholarship Directory, listing fellowship opportunities are available at the Reserve Desk of the Library for students to study. Graduate Studies lists fellowship opportunities that are timely on the WWW access site:

http://pegasus.cc.ucf.edu/~gradfaid/

National Science Foundation Fellowships

Information concerning National Science Foundation Fellowships may be obtained from:

stisserv@nsf.gov and URL: http://www.fastlane.nsf.gov/

NSF Mentoring Assistantships are available for first-time graduate students and consist of three months of stipend support to participate in summer research. NSF encourages electronic applications. Applications are usually due by early November.

University Graduate Enhancement Awards

Funds are available through University Graduate Enhancement Awards to provide financial enhancements to selected graduate programs in order to enable them to be nationally competitive in attracting outstanding graduate students. Graduate programs can provide further details about this award.

Deadline for Proposals: early January
Incentive Graduate Fellowships
Incentive Graduate Fellowships assist outstanding graduate students who demonstrate financial need. Fellowships are one-year awards of $3250 paid in two terms. Fellowships are awarded in the fall and spring. Applicants must complete a Free Application for Federal Student Aid (FAFSA) to demonstrate financial need. This award is funded by differential tuition funds. Contact the Fellowships and Financial Support Coordinator for more information.

Deadline for Applications: mid-May and mid-October

UCF Undergrad to Grad Fellowships
UCF Undergrad to Grad Fellowships are merit-based awards for first-year graduate students who will have completed their undergraduate degrees at UCF in December 1997, May 1998, or August 1998 and who will continue in UCF graduate programs, either master's or doctoral, in the 1998-1999 academic year. Students must be nominated for this award. Fellowships are awards of $5,000 per year and are accompanied by an assistantship and a full tuition waiver. The fellowship is guaranteed for two years provided the student makes continuing academic progress. This award is funded in part by differential tuition funds. Contact the Fellowships and Financial Support Coordinator for more information.

Deadline for Nominations: late March

Minority Fellowships
Many fellowship opportunities exist for minority students. Those coordinated by Graduate Studies are described below.

Graduate Studies Summer Mentoring Fellowships
The purpose of the program is to allow minority graduate students, within the first year of graduate study, to work closely with a faculty member. Both provisional and regular students are eligible. Students must be U.S. citizens and be eligible to be given graduate status during the summer or fall term. Students must take 6 hours of graduate research or independent study in a mentoring arrangement with a faculty member. The six hours must be taken in a single term. The student must write a report on the course work taken (independent research, independent study) and this report must be turned in to Graduate Studies as well as the faculty advisor, for reporting purposes. The faculty mentor's duties involve counseling the student and, more important, engaging the student in activities related to the faculty member's research, is paid a supplement.

Each student receives $3250 for the summer, depending on funds made available from the State of Florida. Students receive a deferment on their fees until they receive their checks paid through the Office of Student Financial Assistance (AD 120). No tuition waivers are provided with this fellowship. Students are responsible for their tuition, board, books, and miscellaneous fees out of the stipend.

Application forms are available in Graduate Studies from the Fellowships and Financial Support Coordinator. Between 10 and 20 fellowships are awarded depending on funds available from the state of Florida and differential tuition funds.

Deadline for Applications: late March

UCF Foundation Minority Graduate Fellowships
The University of Central Florida Foundation has made available several fellowships for $3250 each, paid in two equal installments of $1625 at the beginning of the fall and spring terms. These fellowships are awarded on the basis of academic merit to minority graduate students. The fellowship starts in the fall term. Applicants must be U.S. citizens and must not be receiving any other scholarship aid (except for out-of-state waivers). Students must be enrolled full-time (a minimum of six hours) each term, and must have regular graduate status by the fall semester. Students must also be first-time UCF graduate students, beginning with the spring, summer, or fall terms of the award year. Students may work to supplement this fellowship.
Application forms are available in Graduate Studies from the Fellowships and Financial Support Coordinator. Instate tuition waivers of up to six hours are provided with this fellowship for each term.

Deadline for Applications: late February of each year

**Auzenne Graduate Fellowships**

Black graduate students who are formally enrolled (or admitted) into a graduate program at UCF are eligible for this State of Florida Fellowship. The university receives approximately eight fellowships per year from the state. The fellowship provides $5000 per year ($2,500 in the fall term, $2,500 in the spring term). Students must be enrolled for 9 hours or more in the fall and spring terms and must be Florida residents. No tuition waivers are provided with this fellowship.

Application forms and guidelines are available from the Fellowships and Financial Support Coordinator.

Deadline for Applications: early March of each year

**FAMU Feeder Fellowships**

Outstanding Florida A & M University graduates who participate in the Feeder program are eligible for this award. One to two fellows are selected each year from the nominations received. Program coordinators select outstanding candidates from nominees with interest in their programs and the University Fellowship Committee selects the recipients of the award. The award is for two years and includes a tuition waiver.

Selection of candidates is made in mid-January.

**FGAMP Fellowships**

Florida Georgia Alliance for Minority Participation in Science, Engineering, and Mathematics Fellowships are awarded to doctoral students from AMP-designated minorities. Recipients must be U.S. citizens and American Indian, Alaskan Native, Hispanic, Black, or Pacific Islander (not Asian). Awards are for a minimum of $4000 per year and include an assistantship and a full tuition waiver. Students must be nominated for this award. This award is funded by a grant from the Florida Georgia Alliance for Minority Participation in Science, Engineering, and Mathematics.

Deadline for Nominations: mid-February

**McKnight Fellowships**

The State of Florida through the Florida Education Fund makes about 25 fellowships available each year to prospective black, first-time doctoral students. An annual stipend of $11,000 per year is provided as well as instate tuition for up to nine (9) hours of graduate course work each term. This fellowship can be used at the following Florida Institutions: Barry, FAMU, FAU, FIU, FIT, FSU, Nova, UCF, UF, U Miami, and USF. Currently enrolled black U.S. citizens who hold or will receive a bachelor's or master's degree from a regionally accredited college or university are eligible. Currently enrolled doctoral students at the above institutions are not eligible. Fellowships are especially encouraged in agriculture, biology, business, chemistry, computer science, engineering, marine biology, mathematics, physics, and psychology.

Application forms are available in Graduate Studies from the Fellowships and Financial Support Coordinator.

Deadline for Applications: postmarked to the Florida Endowment Fund for Higher Education, 201 East Kennedy Boulevard, Suite 1525, Tampa, Florida 33602 by January 15 of each year.
National Science Foundation Minority Graduate Fellowships
NSF Minority Graduate Fellowships are available to American Indians, Black/African Americans, Hispanics, Native Alaskans, and Native Pacific Islanders. Eligibility is limited to those who have completed no more than 30 semester (45 quarter) hours of graduate study in science and engineering fields since completing a baccalaureate degree in science or engineering.

Information concerning National Science Foundation Fellowships can be obtained from: stisserv@nsf.gov and URL: http://www.fastlane.nsf.gov/

Electronic applications are encouraged, and applications are usually due by early November.

Student Loans
Graduate students are eligible to apply for financial aid by completing the Free Application for Federal Student Aid (FAFSA) from the Office of Student Financial Assistance (AD 120). Applications should be received before March 1 to be considered for a Perkins Loan or Federal College Work Study. Graduate students may be considered for the Federal Stafford Loan, the Perkins Loan, and the Federal College Work Study Program. Short-term loans are also available for graduate students.

In order to be eligible for a Federal Stafford Loan, graduate students must be degree-seeking, enrolled in at least 3 hours at UCF, and maintain academic progress. The maximum subsidized loan amount for graduate students is $8500. An Entrance Interview is required of first-time borrowers at UCF.

To obtain a loan, students must not be in default on any educational loan or owe repayment on a grant at this or any other institution. Students must supply a financial aid transcript from all previously attended post-secondary institutions, whether or not any financial aid was applied for or received. Only U.S. citizens or eligible noncitizens (e.g., resident aliens) are eligible for Stafford Loans. In order to be eligible for Perkins Loans, students must be enrolled for a minimum of six (6) graduate credit hours.

Short-term loans are available to cover books and supplies, or for unexpected emergencies. This loan is not for tuition and fees. These funds are normally available within 3-4 working days after application processing once classes have begun. Up to $300 may be requested; more may be obtained for graduate students only under special conditions that generally are recommended by Graduate Studies.

Non-degree-seeking post-baccalaureate students are not eligible for student loans.

College Work Study Program
The College Work Study Program is a federally funded source of student financial assistance. The goal of this program is to stimulate and promote part-time employment of students who are in need of earnings from work to pursue their degrees. Students are advised to find jobs that fit with their future career plans.

The Office of Student Financial Assistance is responsible for administering student employment under the Federal College Work Study Program (FCWS) as well as OPS employment.

Federal College Work Study is available to graduate students who demonstrate financial need. Graduate students must be enrolled at least half-time (3 credits), be U.S. citizens, and maintain satisfactory academic progress to be eligible for the College Work Study Program. All students desiring to work on campus as student assistants must meet the following qualifications, which are intended to protect their academic progress and comply with state and federal requirements.
FINANCIAL INFORMATION

Student Rights and Responsibilities Concerning Financial Aid

- Students have the right to full information about the financial aid programs available at UCF, our application procedures and deadlines, and the criteria used to determine a financial package.
- Students have the right to appeal decisions made by the Office of Student Financial Assistance.
- Students have the right to equitable treatment of their financial assistance applications. Although each student’s case is analyzed individually, eligibility standards are applied uniformly without regard to race, gender, religion, creed, national origin, or physical handicap.
- All student records are confidential.
- It is the student’s responsibility to review and understand all information and instructions, meet all deadlines, and provide all information and documentation accurately. Errors and omissions can cause delays and prevent students from receiving assistance. Misrepresentation is a violation of the law.

Graduate Student Assistantships

Graduate students often receive assistantships from their departments while pursuing graduate studies. Graduate students are paid to teach, conduct research, or perform other tasks for departments.

Full-time graduate students may be employed as Graduate Research Assistants (GRAs), Graduate Teaching Assistants (GTAs), or as Graduate Assistants (GAs). Appointments for GTA/GRAs may be for any duration up to 12 months, as required by the conditions of their employment but normally are contracted by term. GAs will be appointed one time, continuing until the student is taken off the payroll through a Personnel Action form.

Eligibility and application guidelines for graduate assistants are established by the colleges and departments, as are pay scales. To apply for an assistantship, contact the program coordinator. It is often helpful to write directly to the program coordinator and request an assistantship when applying to the university. All graduate assistants must be employed at more than minimum wage ($5.50 per hour), for a minimum of 10 hours/week and a maximum of 20 hours per week. Part-time students (those registered for less than 6 hours in the fall and spring terms, 3 hours in the summer term, or 1 hour of thesis or dissertation during any term) and post-baccalaureate students are not eligible to receive assistantships.

Each college has guidelines for determining pay rates for graduate students. Factors included are the stage of the students' graduate studies, discipline, and prior educational or research experience.

Graduate Research Assistants (GRAs) and Graduate Teaching Assistants (GTAs) must be registered as full-time degree-seeking students, and may work between 10 and 20 hours per week. They may be assigned to professors to assist with research activity, or be assigned as graders, lab assistants, or classroom teachers. Only those graduate students who have passed more than 18 credit hours of graduate course work in the major may be classroom teachers of record. All graduate students must sign a contract with the university for employment.

The appropriate title to be used for students, i.e., Graduate Teaching Assistant, Graduate Research Assistant, or Graduate Assistant, will be determined by the employer hiring the student (Vice President, Dean, Director, etc.) on the basis of the duties to be performed.

To be employed, students must be classified as GRADUATE students by the end of the add/drop period for that term. Post-baccalaureate students may be employed, but must be classified as Student Assistants (not Graduate Assistants). Students receiving graduate assistantships may not be simultaneously employed as a student assistant or adjunct faculty. Graduate Assistants are not faculty and are not able to receive faculty parking privileges or faculty ID cards.
Employment of International Students

According to INS regulations, graduate students who are on an F-1 or J-1 visa may accept employment at UCF (either on or off campus) without prior INS approval as long as the student is enrolled full-time and employment does not displace a U.S. resident. Off-campus locations must be affiliated with the university either through contractually funded projects or associated with the university's curricula.

Offers of employment to work on campus should be sent with the admission letter so the student can include the funding on the Confidential Financial Statement. On-campus employment is limited to no more than 20 hours per week while school is in session. Such employment may be full-time during vacation periods for students who are eligible and intend to register for the subsequent academic term. On-campus employment is not permitted after completion of the study program, unless the student is issued a Form I-20A-B to begin a new program and intends to enroll for the next regular academic year, term, or session.

Students who received a bachelor's degree at one school and will start a master's degree at UCF are eligible to work during the summer at either the original school or UCF as long as a Form I-20A-B was issued for the new master's program.

International (F-1) students may extend their stay in the United States for one year for practical training after their graduation. Students should contact the International Student Services Office for details.

Requirements for Graduate Teaching Assistants

Graduate students employed as Graduate Teaching Assistants must not be the instructor of record or teach independently unless they have at least 18 hours of graduate course work in the major. New Graduate Teaching Assistants are required to attend the university Graduate Teaching Assistants Workshop held yearly in the fall, before teaching classes at the university.

Graduate Teaching Assistants and Graduate Assistants with access to student records must maintain the confidentiality of all student records and information. Any violation of this results in immediate dismissal.

English Competency for Graduate Teaching Assistants

All graduate students involved in classroom instruction who received their undergraduate degrees from foreign institutions must take the Test of Spoken English (TSE) or the Foreign Service Institute Language Proficiency Interview (LPI). Spoken English language competence of graduate students involved in classroom instruction is covered in BOR rule 6C-6.0091, as follows:

A. Presently Involved in Classroom Instruction

The spoken English language competence of all graduate students involved in classroom instruction, other than in courses conducted primarily in a foreign language, shall be ascertained by the respective department or college during the annual evaluation. Graduate students found to be potentially deficient in oral language skills shall be required to achieve a score of 220 on the TSE or a 3 on the LPI. If the score is within the range of 190-210 on the TSE or a 2+ on the LPI, the student may teach one semester while enrolled in appropriate English language instruction, beyond which time the score of 220 on the TSE or 3 on the LPI shall be required before the teaching assignment can be continued.

B. New Students

The college or department will make an assessment during evaluation of an applicant's credentials of graduate students seeking assignment as a classroom instructor. If found to be potentially deficient in oral language skills, the applicant shall be required to achieve a score of 220 on the TSE or 3 on the LPI either taken at the university upon arrival or in the country of origin in accordance with a special agreement between the university and the country of origin.
Graduate students who score within the range of 190-210 on the TSE or who achieve a 2+ on the LPI shall be allowed to teach one semester while enrolled in appropriate English language instruction, beyond which time the score of 220 on the TSE or 3 on the LPI shall be required before the teaching assignment can be continued.

FICA and FUTA Exemption Guidelines

The Internal Revenue Service (IRS) excludes certain types of student wages from the IRS definition of “employment” for purposes of FICA and FUTA tax withholding. The Internal Revenue Code (IRC) 3121[b][1][B] provides in part that wages paid by a university to one of its student employees who is enrolled full-time and regularly attending classes are exempt from the FICA and FUTA tax withholding. The university has the sole discretion whether to treat a student’s employment at UCF as exempt from FICA and FUTA withholding taxes.

The university provides assistantships for graduate students to gain research and/or teaching experience as part of their education toward a graduate degree. Graduate students are defined as those with a pay classification of 9181-9185.

To be eligible for this IRS exemption, a graduate assistant must be (1) enrolled full-time at UCF, (2) regularly attending classes, and (3) be employed for less than or equal to 20 hours/week as a graduate assistant. Under this classification, services that are performed by graduate students as a general rule qualify as incidental to their primary purpose of pursuing a course of study at the university.

Criteria for FICA/FUTA Exemption Eligibility
1. All graduate students seeking employment with the university must be enrolled as full-time students to have an assistantship at UCF. Further, they are eligible for the FICA and FUTA exemptions only if they are assistants and enrolled full-time. In any given term, graduate students are considered full-time when they are registered for six hours in Fall or Spring terms, and three hours in Summer terms. Also, students taking only thesis or dissertation hours will be required to be enrolled in at least one hour of thesis or dissertation to be considered full-time.
2. Graduate students who have assistantships are limited to working a maximum of 20 hours per week, regardless of the number of departments in which they have assistantship support.
3. Graduate students who work more than 20 hours per week at UCF are subject to employee FICA and FUTA taxes and must file a Multiple Employment/Excess Hours Form with the university. Students should consult their program coordinators for more information.
4. Students who have assistantships at UCF for not more than 20 hours per week during inter-sessions should not be subject to FICA since their assistantships are of a limited nature and incidental to their role as students.
5. Students must be (1) enrolled full-time, (2) regularly attending classes during the A or C Summer session and (3) working as an assistant at UCF to receive FICA and FUTA exemptions for the Summer.
6. Generally, students who are on fellowships are not subject to FICA since they do not have to account for hours of employment per week.
7. Graduate students who do not have assistantships from UCF are not eligible for these special exemptions.
Organization of Graduate Studies

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The Office of Research and Graduate Studies Website .................................................. http://www.orgs.ucf.edu

The Vice President for Research and Graduate Studies is responsible for overseeing all activities related to research and graduate studies on campus.

Graduate Studies works in conjunction with the Faculty Senate Committees and the college and department graduate coordinators and is responsible for developing university-wide graduate policies, coordinating graduate activities, distributing tuition fee waivers to the colleges, ensuring program standards, and coordinating recruitment of graduate applicants and admitting graduate students to the university. Students apply to the university through this office and their files are sent to the colleges and departments for enrollment decisions. Graduate student records are kept indicating the status of the student and are updated by this office as students progress through their academic programs. Any policy questions about graduate issues should be directed to the Office of Graduate Studies, the Graduate Policy and Curriculum Committee, or the Graduate Council. Operational procedures should be directed to the Office of Graduate Studies (AD 243) or to the individual college or department coordinators.

The Fellowships and Financial Support Coordinator is responsible for keeping the office up-to-date on changes in financial assistance for graduate students. The coordinator formulates and recommends policies and procedures to effectively administer programs for graduate students in areas of fellowships, assistantships, tuition waivers, and other forms of support for graduate students. In addition, the coordinator assists in resolving specific graduate student financial assistance problems, and in disseminating information in regard to university rules.

The Thesis and Publications Editor is responsible for assisting graduate students in preparing theses and dissertations. The goal is to support students, faculty, and staff through the thesis/dissertation process and to facilitate effective scholarly communication. In support of these efforts, the editor holds workshops for graduate students to provide guidance and explain in detail the policies and procedures associated with writing a thesis or dissertation. The editor performs the final review and ensures that all theses and dissertations are acceptable to University Microfilms International (UMI) standards.

The Academic Coordinator handles Course Action Requests and Special Topics for the Graduate Council, serves as a liaison for the Graduate Policy and Curriculum and Graduate Coordinators committees, and coordinates the graduation certification process for the university. The coordinator also records information, petitions, and appeals.

The Data Analyst responds to external surveys concerning enrollment information, provides summary information for the programs concerning the inquiry, admissions, and registration processes, and designs and maintains database information important to the functioning of Graduate Studies.
College and Department Coordinators

College Graduate Coordinators work with Graduate Studies to coordinate graduate department activities, recruit graduate students, distribute fee waivers to the departments, ensure program standards for the colleges, and prepare an annual report to Graduate Studies on their activities. The Department Program Coordinators work with the College Graduate Coordinators and are responsible for recruiting graduate students, distributing tuition fee waivers to individual students, ensuring program standards in their department, and preparing an annual report to the College Graduate Coordinators on their activities.

Graduate Policy and Curriculum Committee

The Graduate Policy and Curriculum Committee is a standing committee of the Faculty Senate and reports to the Senate on Graduate Policy and Curriculum matters. The Committee consists of 14 members, at least five of whom are current Faculty Senate members. The composition of the committee consists of a nonvoting library representative, two members from each college, except Arts and Sciences which has four. The Vice President for Research and Graduate Studies and the Director of Graduate Studies are ex-officio members of this committee.

The Graduate Policy and Curriculum Committee deals with policy issues and standards for the university. New graduate program requests are reviewed by the Graduate Policy and Curriculum Committee. The program proposals will be sent to the Office of Research and Graduate Studies for initial review. The proposal may undergo some editing changes, corrections, and format changes to meet Board of Regents requirements. Once the final program review request is ready, it is forwarded to the Graduate Policy and Curriculum Committee for final approval. The Graduate Policy and Curriculum Committee will then transmit its recommendations to the Vice President for Research and Graduate Studies for submittal to the Office of Academic Affairs, and the Board of Regents.

Duties of the Graduate Policy and Curriculum Committee:
1. Reviews and recommends university-wide graduate policies and standards.
2. Reviews all new proposals for Board of Regents planning and implementation of graduate programs including deletion of existing programs.
3. Reviews all matters referred by the Graduate Council.
4. Transmits its recommendations to the Faculty Senate Steering Committee, which normally submits these recommendations to Graduate Studies on behalf of the Provost.
### College Graduate Coordinators

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### Department Program Coordinators

<table>
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<tr>
<th>Degree Program</th>
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<th>E-mail</th>
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<tbody>
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**ORGANIZATION OF GRADUATE STUDIES**
A subcommittee, the Graduate Council, hears petitions for variances from graduate policies and procedures, reviews graduate course action requests, and monitors the maintenance of graduate program quality. The Graduate Council consists of six faculty members, one representative from each College except for Arts and Sciences, which has two members, and the Director of Graduate Studies who serves as an ex-officio member.

Recommendations concerning petitions and course action requests will normally be forwarded from the Graduate Council to Graduate Studies for action. Course action requests will then be forwarded to the Board of Regents for common course numbering. A student petition will be considered in the Graduate Council when the department and college have reviewed the request and denied the petition or when the student is requesting exception to university policies or regulations. Results of student petitions will be forwarded from the Graduate Council to the Graduate Studies Office, which will notify the student and department of the action taken and return the file to the department.

Duties of the Graduate Council (Subcommittee):
1. Reviews annual reports from all the colleges on the status of the graduate programs and makes necessary recommendations to the Graduate Policy and Curriculum Committee.
2. Reviews graduate course additions, revisions, and deletions.
3. Reviews new tracks, options, or specialty areas proposed within an existing degree-granting program.
4. Hears academic exceptions to graduate policy and procedures from students or coordinators after consideration by the department and college.
5. Reviews all graduate programs on a periodic basis, including the five-year SUS Program Review.
6. Recommends the Excellence in Graduate Teaching Award Recipient each year.
7. Recommends to the Graduate Policy and Curriculum Committee policies and procedures which it deems appropriate.
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 college descriptions (see Arts and Sciences, Business Administration, Education, Engineering, Health and Public Affairs).

Student Status

Students who are taking graduate classes may be classified in several ways. Those classifications are defined as:

- **Regular Graduate Student**—a student who has been accepted into a degree program with no conditions or provisions and is seeking a graduate degree.

- **Provisional Graduate Student**—a student who does not meet BOR criteria for GPA or GRE/GMAT requirements, but for other reasons is accepted as a degree-seeking student by a program. Conditions may be attached to the admission that may have to be fulfilled before the student is made a Regular Graduate Student. Only 10 percent of all new students in any degree program may be Provisional.

- **Conditional Graduate Student**—a student who meets BOR criteria, but does not meet program requirements to be accepted as a Regular Graduate Student. Conditions may be attached to the admission that may have to be fulfilled before the student is made a Regular Graduate Student. This student is degree-seeking.

- **Non-degree-seeking or Post-Baccalaureate**—a student who has not been accepted into an academic program and is not seeking a graduate degree. Students who are allowed to take graduate courses in this category can only transfer 9 credit hours into a graduate program.

Student's Responsibility

It is the student's responsibility to keep informed of all rules, regulations, and procedures required for graduate studies. Graduate program regulations will not be waived or exceptions granted because a student pleads ignorance of the regulations or claims failure of the advisor to keep him or her informed.

University Closings

In the event of some extraordinary event (such as a natural disaster or prolonged power outage), the President shall determine whether it is necessary to cancel classes and approve administrative leave for employees in affected areas. With final examinations and other academic matters, department chairs, in consultation with their faculty and with the college dean, shall determine appropriate policy.

UCF Employment

Full-time graduate students may be offered the opportunity to work as graduate assistants. All graduate assistants (GTAs, GRAs, and GAs) must work more than 10 hours per week, but not more than 20 hours per week. Students who want to work hours in excess of 20 hours per week must complete an Multiple Employment/Excess Hours Form. If approved by the Graduate Council and Graduate Studies for compelling reasons, students will be subject to withholding (FICA and FUTA) taxes, and their employing entities will also be subject to withholding (FICA and FUTA) taxes (see "FICA and FUTA Exemption Guidelines" in this catalog).

Appeals

When unusual situations arise, petitions for exceptions may be requested by the student. Requests for consideration of exceptions to departmental rules should be made in writing to the department program coordinator. A Graduate Petition Form may be used for this request. The program coordinator may ask the department or program graduate committee to examine the necessary information and recommend a response to the petition. The program coordinator will recommend to the department chair whether the petition should be granted. If the department is considering an exception solely to a departmental policy or rule, the petition may not have to be considered further. Should the student wish to appeal the departmental decision, the student or department may request in writing to the graduate coordinator that the college reconsider the decision.
If the petition requires an exception to a college policy or rule, the student or department may request in writing that an exception be made at the college level. The college graduate coordinator may ask the college graduate committee to examine the petition at the request of the department or student once the department has made its recommendations. The college graduate coordinator will recommend to the college dean whether to grant the exception to college policy. If the college is considering an exception solely to a college policy or rule, then the petition may not have to be considered further. Should the student wish to appeal the college decision, the student or college may request in writing that the university reconsider the decision.

If the petition requires an exception to a university policy or rule, the student or college may request in writing that an exception be made at the university level. The Director of Graduate Studies may ask the Graduate Council to examine the petition at the request of the college or student once the college has made its recommendation. The Director of Graduate Studies will recommend to the Vice President for Research and Graduate Studies whether the exception should be granted.

**General Requirements for All Graduate Programs**

**Program of Study and Academic Performance**

A 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 for a 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 Program of Study form (either a SASS audit or written form) may be obtained from the department program coordinator or college graduate coordinator, prepared and given to the program coordinator to be placed in the student’s permanent file. The Program of Study, once established, cannot be altered solely due to poor academic performance by the student.

**GPA in Program of Study**

A graduate student’s GPA shall be calculated on only those courses specified on the individual’s Program of Study (not including required prerequisites).

A minimum of a 3.0 GPA in 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 students have not attained an overall graduate GPA of 3.0 in the program of study at the end of the 9 semester hours, they will be reverted to POST-BACCALAUREATE status. (Students admitted on PROVISIONAL status are similarly given 9 semester hours to attain a 3.0 GPA.) If a student wishes to appeal a change in status, an appeal may be filed with the department program coordinator. (See “Appeals” in this chapter.)

No graduate-level courses with a grade of “D” are acceptable in a program of study. In addition, no 4000-level courses or transfer 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 post-baccalaureate status.

**Maximum Hours of Unsatisfactory Grades**

A student may earn a maximum total of 6 semester hours of “C” grades in the program of study. The final program of study may not contain unresolved “I” grades. 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 in the program of study. There is no forgiveness policy on graduate grades. Exceeding 6 semester hours of unsatisfactory (more than 6 semester hours of “C” or unresolved “I”) grades in a specified graduate program of study is reason for reversion to post-baccalaureate status.
Incomplete Grades
A grade of "I" (incomplete) is assigned by the instructor when a student is unable to complete a course due to extenuating circumstances, and when all requirements can clearly be completed in a short time following the close of regular classes. The Registrar's Office must be notified of the appropriate grade to be assigned 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 date may, at the discretion of the instructor, result in the assignment of an "F" grade, or a "U" grade for thesis or research report hours. 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 the permanent record. Incomplete grades cannot be used on the program of study.

Review of Performance
The primary responsibility for monitoring performance standards rests with the degree program. However, the college and university may monitor a student's progress and may revert any student to post-baccalaureate status if performance standards as specified above are not maintained. Satisfactory academic progress in a program also involves maintaining the standards of academic and professional integrity expected in a particular discipline or program. Failure to maintain these standards may result in termination of the student from the program.

A degree program may revert any graduate student to post-baccalaureate 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 post-baccalaureate status, reinstatement to graduate student status can occur only through a formal appeal process. (See "Appeals" in this chapter.)

Course Requirements

Course Loads
A full-time graduate student must take at least 6 credit hours each semester, with 12 semester hours being the maximum load. During the summer term, full-time is 3 credit hours and half-time is 2 credit hours. In order to meet residency requirements, doctoral and specialist students must register for 6 hours in two contiguous terms. During the terms a student is registered for special courses such as thesis, dissertation research, or dissertation writing, the hours may vary. Students taking only thesis or dissertation hours will be required to be enrolled in at least one hour of thesis or dissertation research to be considered full-time.

Students receiving veterans' education benefits should refer to the "Office of Veterans’ Affairs" and "Veterans’ Benefits" sections in the "Student Services and Organizations" chapter in this catalog.

Course Levels of Graduate Work
7000-Level Courses. These courses are designed for doctoral students.

5000-Level Courses. These courses are designed for graduate students. Undergraduate registration in 5000-level courses is allowed only in special situations with prior approval by the college. Undergraduate students must be within nine hours of graduation, have a minimum 3.0 GPA, and not register for more than a total of twelve hours in that term.

5000-Level Courses. Courses at the 5000 level may be utilized toward satisfying the graduate degree requirements and may be taken by graduate students, and seniors with permission.

Other. Under special circumstances 4000-level courses may be applied toward a graduate 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
Transfer of Credit
When Accreditation Is Uncertain

Students who believe they have mastered the content of a graduate-level course should present a portfolio to the program coordinator documenting the learning experience. If the committee after examining the portfolio believes the student has mastered the content presented in a graduate-level course, the student should be allowed to demonstrate that mastery through examination. (See "Credit by Examination or Waiver" below.) Correspondence courses are not acceptable toward a graduate program of study; however, extension or continuing education courses may be accepted.

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

Credit by Examination or Waiver

Examination credit may be used to satisfy program course requirements, but not credit hour requirements. Certain program requirements or courses may be waived at the discretion of a program, although the total hours required for the program must be satisfied.

Thesis, Research Report, and Dissertation Grades

For thesis (XXX 6971 or 6973), dissertation (XXX 7980), and research report (XXX 6909) courses, satisfactory (S) or unsatisfactory (U) grades are used to reflect student progress in these courses. Should a student in a given term be given an incomplete, then this grade should be changed to an S or U, upon completion of the work. Other grades are not allowed to be given in these courses. Students who do not maintain satisfactory progress in their research may be reverted to post-baccalaureate status.

Public Access

Students, faculty, staff, and other interested parties are strongly encouraged to attend thesis and dissertation final defense sessions. Notices providing date, time, and location of such meetings must be distributed to all academic departments.

These sessions are educational and informative for graduate students and provide an opportunity for colleagues to observe the work of their peers with students. At the discretion of the Chair of the Committee, questions may be invited from the audience. That part of the session involving committee discussion leading to a vote on the acceptance of the work will be closed. Sessions may be recessed briefly to excuse visitors and the candidate before this stage begins.
Degree Application Process

Application for Degree
An Intent to Graduate form must be filed with the program coordinator by the last day of registration for the term of graduation. If the student does not graduate in that term, a new form must be filed at the beginning of the term of anticipated graduation.

Thesis and Dissertation Requirements
An oral defense of a thesis or dissertation is required with copies of the approved thesis or dissertation being prepared in accordance with program, college, and university requirements. The Graduate Studies Thesis and Dissertation Manual describes UCF’s formatting requirements for theses/dissertations and outlines the steps graduate students must follow to submit their theses/dissertations to Graduate Studies for binding. Graduate students can purchase the manual in the UCF Bookstore, use the copies on reserve at the Reference Services Desk in the UCF Library (second floor), or access this information on the editor’s website at:

http://pegasus.cc.ucf.edu/~editor

Each semester the Thesis and Publications Editor presents workshops to inform graduate students about procedures, deadlines, and requirements associated with preparing a thesis and dissertation.

Certification for Degree
Students who wish to complete their degree requirements in a given semester must take their oral defense and turn in their final unbound copies to the Thesis and Publications Editor in Graduate Studies by the dates shown in the Graduate Catalog.

The college of the degree program must certify through the College Dean that all program and college requirements have been met. Degree certification forms are forwarded to Graduate Studies for final determination that all program, college, and university requirements have been met. Graduate students who have completed all the requirements for the degree and have successfully completed the required thesis or dissertation may request a letter to that effect prior to the receipt of the degree. Such letters will be issued by Graduate Studies.

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., for review of thesis or research report by faculty or editorial staff, for completion of internships, or for examinations). Therefore, unless the graduate program certifies to Graduate Studies that no UCF resources will be utilized, a student must be registered in the term of graduation.

Students sit by the reflection pond in front of the Administration building.
Master's Programs

University Admission Standards

Admission to graduate status requires a bachelor's degree from an accredited institution and a minimum of a 3.0 GPA in the last 60 attempted semester hours of undergraduate studies, or a score of at least 1000 on the combined verbal-quantitative portion of the GRE or a score of at least 450 on the combined verbal-quantitative portion of the GMAT, or a master's degree from an accredited institution and GRE or GMAT scores. A GRE or GMAT (Business Administration) exam score is required of all applicants. Admission to the university does not constitute admission to a master's program. Meeting minimum university admission standards for graduate status may not satisfy master's program admission requirements. Additional or higher criteria may be required by the college or department. An applicant's character, integrity and general fitness to practice a particular profession may also be considered in the admission process.

Applicable Credits and Courses

Total Hours Required

A minimum of 30 semester hours (combined course work and thesis) is required, although many programs require more than this. For the thesis option, at least 24 semester hours of course work must be earned exclusive of thesis. For the non-thesis option, at least 50 percent of the credits offered for the degree must be in a single field of concentration. Some colleges offer a course work only option, in which a thesis is not required, although a research report may be required.

Course Levels

6000-Level Courses. A minimum of fifteen credit hours (including thesis hours) of an individual's program of study must be in 6000-level courses, which are designed for graduate students. Exceptions to this requirement must be approved by the Graduate Council. Exceptions to this rule have been granted to Computer Science, Mathematics, Statistics, and English.

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.

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.

Transfer of Credit

Work taken at an accredited institution before a student is given graduate status at UCF may be transferred into the student's program of study. Transfer course work may come from the following areas:

- Work taken as a post-baccalaureate student at UCF
- Work taken at institutions within the State University System (SUS)
- Work taken at other accredited institutions not in the SUS
- Work taken while in graduate status in another major while at UCF

No more than 9 semester hours total of graduate credit may be transferred into the graduate program from UCF post-baccalaureate work or from other accredited institutions.

Institutions not in the State University System must be fully accredited by a regional accrediting association of the Commission on Accreditation (e.g., the Southern Association of Colleges and Schools). In all instances, only grades of B or better will be transferred.

Time Limitation for Degree Completion

The student has seven years from the date of admission (prerequisite, articulation, and foundation courses are exempt) to the master’s program to complete the degree. No course older than seven (7) years at the time of graduation may be used in the Program of Study for a master's degree.
Examinations

Evaluation
All examination procedures and other evaluations 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 appropriate culminating academic experience is required of all master's degree students. It may include a thesis defense, written or oral examination, research report, capstone course, presentation and defense of a portfolio of student work, or other appropriate scholarly activity of a type that has been approved by the Graduate Council.

Advisory Committees

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 and (2) approve the necessary appointments.

The Director of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee, or to appoint a co-advisor. There may be two advisors appointed by the program, the Academic Advisor who oversees the satisfaction of university requirements, and in thesis degree programs, a Thesis Advisor who may oversee the thesis research. The Academic Advisor must be a UCF faculty member in the program granting the degree.

The Academic Advisor is normally necessary when there is considerable flexibility in course work, or where the student is conducting research and working with a thesis advisor who is not a UCF faculty member. Both thesis and non-thesis programs may find it useful to appoint an Academic Advisor.

Thesis Advisory Committee
A student seeking a degree requiring a thesis shall have a Thesis Advisory Committee of at least three members with the designation of chair and/or thesis director being optional. This committee shall recommend to the Dean of the college the design of the student's program of study, 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.

Thesis

In some programs, students are required to complete a thesis. An oral defense of the thesis is required with copies of the approved thesis being prepared in accordance with program, college, and university requirements. The UCF Thesis and Dissertation Manual describes formatting requirements for theses/dissertations and outlines the steps graduate students must follow to submit their theses/dissertations to Graduate Studies for binding. Graduate students can purchase the manual in the UCF Bookstore, use the copies on reserve at the Reference Services Desk in the UCF Library (second floor), or access this information on the editor's website at http://pegasus.cc.ucf.edu/~editor

Each semester the Thesis and Publications Editor presents workshops to inform graduate students about procedures, deadlines, and requirements associated with preparing a thesis and dissertation.

Students who wish to complete their degree requirements in a given semester must take their oral defense and turn in their final unbound copies to the Thesis and Publications Editor in Graduate Studies by the dates shown in the Graduate Catalog.

Enrollment Requirement
Master's level students who are engaged in thesis or research report-related activity must be enrolled for at least 1 credit hour each semester during which this activity takes place. This requirement does not negate the requirement that all graduate students be enrolled the term they graduate. (See "Registration in Term of Graduation."

Thesis Defense
The Dean of the college, or designee, will normally attend all thesis defenses. Thesis defenses will be approved by a majority vote of the Thesis Advisory Committee.
Education Specialist Programs

Education Specialist (Ed.S.) degrees are awarded in Educational Leadership, Curriculum and Instruction, and School Psychology. The Ed.S. degree provides an opportunity for professionals in leadership positions in an educational environment to receive in-depth academic study. This degree provides the opportunity for the development of a high level of professional proficiency in such areas as instruction, supervision, administration, curriculum, and current research literature. Because the purpose of the Ed.S. degree may differ from those of the Ed.D., credit earned in an Ed.S. program is not automatically transferable to a doctoral program. Instead, if a holder of an Ed.S. degree enters a doctoral program at a later date, the doctoral advisory committee will decide how much of the credit earned in the Ed.S. program will be credited toward the doctorate. In any case, only 30 hours taken prior to doctoral status may be transferred into the doctoral program of study. The primary goal of the Ed.S. degree is teaching or acquiring professional proficiency in a specialized education-related area.

Specialist Admission Standards

Admission to the Education Specialist program requires (1) a master's degree from a regionally accredited institution (except in the case of the School Psychology Specialist program, which does not require a master's degree, but does have other special admission criteria), (2) a combined score of 1000 (Verbal and Quantitative Sections of the General Graduate Record Examination), (3) other criteria as required by the individual departments, and (4) a recommendation for admission by the appropriate College of Education Graduate Admissions Committee. Admission to the university does not constitute admission to a specialist program.

Examinations

Two examinations are required. Educational Leadership majors must successfully complete one 3-hour examination in their major area and one 3-hour examination in an area of specialization. Curriculum and Instruction majors must successfully complete one 3-hour examination in their teaching specialty and one 3-hour examination in the Educational Foundations area.

Program of Study and Academic Standards

A program of study (i.e., required course work) will be specified by the student's program area and approved by the college. Minimal core requirements for the Ed.S. degree consist of 36 hours beyond the master's degree in an approved program, which must include a minimum of 12 graduate-level hours in the specialization area, 6 graduate-level hours in research/statistics, and additional core requirements that are specific to each of the Ed.S. degrees. An overall 3.0 GPA must be maintained on all graduate work attempted. All other academic standards which apply to master's students will not be lower for specialist students.

Transfer of Credit

In the Educational Leadership program:
Total transfer credit can never exceed 9 semester hours. All credit must be earned after the master's degree with the maximum being 9 semester hours from accredited institutions.

In the Curriculum and Instruction program:
Up to 30 hours of credits earned during the master's degree are transferable into the specialist degree.

Time Limitation and Continuous Attendance

The student has seven (7) years from the date of admission (prerequisite, articulation, and foundation courses are exempt) to the specialist program to complete the degree. No course older than seven (7) years, at graduation, may be used in the program of study for a specialist degree. Students who do not maintain continuous enrollment (excluding summers) will be reverted to post-baccalaureate status.
Doctoral Programs

University Admission Standards

Eligibility for admission to a doctoral program should be limited to superior students who have demonstrated intellectual ability, high achievement, and adequate preparation for advanced study and research in a chosen field.

Minimum university standards for admission to a doctoral program require a bachelor’s degree from an accredited institution and a minimum of a 3.0 GPA in the last 60 attempted semester hours of undergraduate studies, or a score of at least 1000 on the combined verbal-quantitative portion of the GRE or a combined verbal-quantitative score of at least 450 on the GMAT, or a master’s degree from an accredited institution and GRE or GMAT scores. A GRE or GMAT (Business Administration) score is required of all applicants. However, meeting minimum university admission standards may not satisfy doctoral program admission requirements. Additional or higher criteria may be required by the college or department.

Examinations

To avoid confusion of terminology for examinations, all programs should use the following terms:

Qualifying Examination. This title designates the examination (optional by programs) which is used to determine if students should continue with their doctoral studies. It is normally given within the first year of the doctoral program. This is a written examination and is permanently filed in the student’s permanent records.

Candidacy Examination. This title is used for the examination which the student takes prior to admission to Candidacy Status. This is a written examination and is permanently filed in the student’s permanent records. It is normally taken near the end of completion of course work, and must be passed before being allowed to enroll in dissertation hours.

Dissertation Proposal Examination. After passing the general Candidacy Examination, the student will write and defend a Dissertation Proposal in an oral examination.

Dissertation Defense. This is an oral examination (or defense) on the dissertation.

Completion of Qualifying Examination

Eligibility to continue a doctoral program should be 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 allow a student continuing progress toward a doctorate is made by the graduate committee of the program area concerned and the Dean of the college on the basis of the qualifying examination and/or other criteria as specified by the individual program area. This exam is normally taken within the first year of a doctoral program.

Program of Study

A program of study (i.e., required course work) will be specified by the student’s program area and approved by the college. 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 program area.

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 taken at UCF outside the student’s program area. A university-wide minimum of at least 15 hours of dissertation hours are required for all doctoral programs. Specific programs may require more.

Independent Study Hours

No more than 12 total semester hours of independent study (including those hours counted toward a master’s degree) may be applied to a doctoral program of study.
Academic Standards

Academic standards for doctoral students will meet or exceed those previously stated for master's programs.

Special Degree Requirements

Each student may be expected to demonstrate an appropriate competency in a related area. The appropriate competency must be carefully defined by the program area and approved by the student's committee and the Dean of the college. Any course credit earned in attaining such a skill does not count toward minimum hour requirements.

Residency Requirements

Each student is expected to complete two contiguous semesters in full-time graduate student status after acceptance into a doctoral program. Doctoral students must be registered a minimum of 6 semester hours during this time.

Transfer Credit

Up to 30 semester hours of credit from an accredited institution may be transferred into a doctoral program, and will be determined on a case-by-case basis by the graduate committee of the program area generally at the time the student is admitted to the program. The transfer hours will consist of a maximum of six hours of 4000-level work, no 3000-level courses, and no courses with grades of less than "B." The College of Engineering allows up to 36 credit hours, including up to 6 thesis credits, to be transferred from the master's program.

Time Limitation for Degree Completion

The student has seven (7) years from the date of admission to the doctoral program to complete the dissertation. No courses taken since the program entry date at UCF may be older than seven (7) years and used in the program of study.

Examination Committee

In some programs a doctoral examination committee will be formed consisting of several faculty members representing the appropriate disciplines and approved by the Dean or college designee to administer qualifying and/or candidacy examinations. In many cases this committee will consist of the program graduate committee. All members will evaluate and vote as to whether students have successfully completed the exams.

Candidacy

Admission to Candidacy

Students may not be admitted to candidacy until a Doctoral Committee has been appointed, and the Committee has certified that the student has successfully completed the Candidacy Examination and demonstrated the qualifications necessary to successfully complete requirements for the degree. Only after admission to candidacy may a student register for dissertation hours (XXX 7980). The admission to candidacy will be approved by the college graduate coordinator and forwarded to Graduate Studies for status change.

Candidacy Examination

The purpose of the Candidacy Examination is for the student to demonstrate knowledge of the field, including theory, bibliography, and research methodology. The examinations must be written and should be based on the student's plan of study and may be a defense of a written dissertation proposal. Written examinations are administered and established on campus by the student's Doctoral Committee in coordination with the college. All written original examination materials will be kept in a permanent file.

Enrollment in Dissertation Hours

The student must continue to enroll for at least one semester hour of dissertation credit each semester after attaining candidacy status until the oral defense of the dissertation has been made. Post-candidacy enrollment is allowable for a maximum of four (4) years subject to the seven (7) year time limitation.

NOTE: Generally enrollment in 3 credit hours is required while students are in residence at UCF and placing substantial time demands on their professors. For part-time and non-resident students enrollment of at least one semester hour is required. Colleges may have more stringent 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.

Dissertation Advisory Committee Composition
Doctoral students must have a Dissertation Advisory Committee once exams are passed. The 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 or designee of that College. Program areas may further specify additional committee membership. All members should be in fields related to the dissertation topic. The Director of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee, or to appoint a co-advisor.

All members vote on acceptance or rejection of the dissertation proposal and the final dissertation. The dissertation proposal and final dissertation must be approved by a majority of the committee.

Dissertation Preparation
The Graduate Studies Thesis and Dissertation Manual describes UCF’s formatting requirements for theses/dissertations and outlines the steps graduate students must follow to submit their theses/dissertations to Graduate Studies for binding. Graduate students can purchase the manual in the UCF Bookstore, use the copies on reserve at the Reference Services Desk in the UCF Library (second floor), or access this information on the editor’s website at http://pegasus.cc.ucf.edu/~editor

Each semester the Thesis and Publications Editor presents workshops to inform graduate students about procedures, deadlines, and requirements associated with preparing a thesis and dissertation. Those students who have just passed Candidacy are encouraged to attend a workshop.

Students who wish to complete their degree requirements in a given semester must take their oral defense and turn in their final unbound copies to the Thesis and Publications Editor in Graduate Studies by the dates shown in the Graduate Catalog. Doctoral students also must provide one unbound copy for microfilming by University Microfilms International (UMI). The editor will send dissertations to UMI, with the student's completed UMI form and microfilming fee.

Dissertation Defense
The dean of the college or his/her designee will normally attend all dissertation defenses. Dissertations will be approved by a majority vote of the advisory committee.

Special Scholar Programs

Traveling Scholars
The university participates in the Board of Regents Traveling Scholar Program (6C-6.07) enabling a graduate student to take advantage of special resources available on another campus but not available on the home campus; for example, special course offerings, research opportunities, unique laboratories, and library collections. A traveling scholar is a graduate student who, by mutual agreement of the appropriate academic authorities in both the sponsoring and hosting institutions, receives a waiver of admission requirements of the host institution and a guarantee of acceptance of earned resident credits by the sponsoring institution.

A traveling scholar must be recommended by his or her own graduate advisor, who will initiate a visiting arrangement with the appropriate faculty member of the host institution. After agreement by the student's advisor and the faculty member at the host institution, graduate deans at both institutions will be fully informed by the advisor and have the authority to approve or disapprove the academic arrangement. A student will register at the host institution and will pay tuition and/or registration fees according to fee schedules established at that institution.
Each university retains its full right to accept or reject any student who wishes to study under its auspices. A traveling scholar will normally be limited to one term on the campus of the host institution (6-hour restriction).

A traveling scholar is not entitled to displacement allowance, mileage, or per diem payments. The home university, however, may at its option continue its financial support of the traveling scholar in the form of a fellowship or graduate assistantship with any work obligation to be discharged either at the home or at the host institution.

The Traveling Scholar form, available in the department offices, must be used for documentation. This form must be completed and prior approval obtained before any course work can be taken.

As part of the Traveling Scholars agreement, SUS institutions agree to accept one another’s entrance requirements and credits. All Traveling Scholars are required to submit the Student Health History and immunization requirements according to UCF and BOR policies. Credit is not automatically transferred into the graduate program of study. The student must request an official transcript be sent from the host institution to Graduate Studies (AD 144, P.O. Box 150112, Phone 823-2766), and the program coordinator must complete the Program of Study so that the credits can be entered into the student database. Credits earned will be considered resident credits and are not counted as “transfer” credits under the “nine-hour” rule. These hours may count toward UCF residency requirements if prior approval is obtained. Graduate students are not allowed to be traveling scholars in their final, or graduation, term.

The following policy and procedures allow departments to invite international visitors to study or participate in our research activities at UCF. These scholars will be designated as Visiting Scholars or Visiting Research Scholars. The policy is directed to those who do not wish to earn a degree, but who may audit courses in the post-baccalaureate, non-degree-seeking status for professional development and who normally have complete financial support provided by some outside agency. These visitors will have J-1 Exchange Scholar Visa status, limited to one year, which can be extended. J-1 visa holders must return to their home country; they may not request to remain in the United States. Visitors seeking degrees will use regular UCF admission procedures and must qualify for an I-20 Certificate of eligibility for an F-1 Student Visa.

Because visitors participating in the international scholars program will be required to audit courses at UCF, scholars must fill out the UCF Graduate/Post-Baccalaureate Application and pay the $20 application fee. The deadline is about four (4) months before the beginning of a term. A faculty member, as Faculty Sponsor, must accept the responsibility for recommending, advising, and directing the activities of the scholar. The procedure for extending an invitation is as follows:

1. If financial support will be provided to the visiting scholar using university resources, then the approval of the university must be obtained on all correspondence with the visiting scholar. Written arrangements should be made with the Vice President for Research and Graduate Studies for financial support prior to invitations to visiting scholars.

2. The Department Chair will submit a recommendation to the Dean specifying the Faculty Sponsor, documenting anticipated activities, and providing the following information on the Visiting Scholar:
   a. Date of birth
   b. City and country of birth
   c. Country of residence if different from country of birth
   d. Place of work (academic institution, business firm, etc.)
   e. Current position held in country of residence
   f. Academic background
   g. Professional experience
   h. Source and amount of financial support (recommended honorarium, if any)
   i. English proficiency
   j. Dates of visit
k. Statement of how the Visiting Scholar will participate in research and what will be accomplished
l. Office space, equipment, etc. which will be required for scholar’s use

3. If arrangements are approved, the Dean will notify the Vice President for Research and Graduate Studies that the College is extending an invitation. The Chair’s recommendation will be included with the notification. These will be sent to Graduate Studies so that the invitation and application may be placed in the student’s official university file.

4. Graduate Studies will then forward copies of the information to the International Student Services Office. A copy of the recommendation will also be sent to the Director of International Student Services asking that Form IAP-66 for the J-1 Visa be issued.

5. The Faculty Sponsor will then correspond with the visitor detailing the conditions of the visit, including whatever limited financial support and facilities will be provided and what is expected of the Scholar, with copies of this correspondence sent to the International Student Services Office and the Vice President for Research and Graduate Studies. The Scholar will be asked to write a brief report at the termination of the visit.

During each academic term of the visit, the Visiting Research Scholar will be required to audit one hour of XXX 6918, Directed Research, under the direction of the Faculty Sponsor and also may be permitted (or required) to audit regular courses. The Visiting Scholar will be admitted to post-baccalaureate status and will audit courses as directed and approved by the Faculty Sponsor. The Visiting Scholar will not be permitted to take courses for credit unless formally admitted to a degree program or upon written approval from the Dean of the college in which the student is studying.

The international visiting scholar will be appointed Visiting Research Scholar or Visiting Scholar in the College and may be given a modest honorarium. Such scholars will normally not be maintained on the College payroll, but are expected to have extended financial support.

### Academic Common Market Scholars

The university is a participant in the Common Market Program with other universities in the Southeast offering access to both undergraduate and graduate courses in selected fields. Arrangements can be made for certified Florida residents to earn a graduate degree at a participating university, and be treated as an instate student at that university. This program can be used only when the field of study is not available in the home state and the participating institution approves. Students taking part in this program will have to apply and be accepted by a participating university, notifying that university of their planned attendance as an Academic Common Market Scholar. The participating universities are:

- Alabama
- Arkansas
- Florida
- Georgia
- Kentucky
- Louisiana
- Maryland
- Mississippi
- Oklahoma
- South Carolina
- Tennessee
- Texas
- Virginia
- West Virginia

Both Florida and Texas only participate at the graduate level. For further information, please contact Graduate Studies at 623-6432 (AD 243, P.O. Box 160212).

### Linkage Agreements

The State of Florida has established various linkage agreements to assist in the development of stronger economic and social ties between Florida and strategic foreign countries. Linkage Institutes are set up throughout the state, and provide out-of-state tuition exemption to scholars from the foreign countries represented by the institutes. To participate in these exemptions, students must apply to the Linkage Institute for the country in which they reside for out-of-state tuition exemption. Students participating are required to return home after their tenure of graduate study for a length of time equal to the exemption period. Each institute develops its own criteria for selection of students, and typically support the out-of-state fees for about 20 to 30 scholars a year.
The institutes established in Florida are listed below with their contact persons:

Florida-Brazil Institute  
Dr. Elizabeth Lowe, UF  
904-392-0375

Florida-Canada Institute  
Dr. Mark Soskin, UCF  
904-255-7423, ext. 4014/4015

Florida-Caribbean Institute  
Dr. Mark Rosenberg, FIU  
305-348-2894

Florida-China Institute  
Dr. Erasmo Gerato, FSU  
904-644-1414

Florida-Costa Rica Institute  
Dr. William Derr, Valencia Community College  
904-644-1414

Florida-Eastern Europe Institute  
Dr. Raymond A. Shapek, UCF  
407-823-3647

Florida-France Institute  
Dr. Erasmo Gerato, FSU  
904-644-1414

Florida-Israel Institute  
Dr. William B. Stronge, FAU  
954-236-4150

Florida-Japan Institute  
Dr. Mark Orr, USF  
813-974-4090

Florida-West Africa Institute  
Dr. Glen Goltrmann, UWF  
904-599-3562

Proprietary and Confidential Information

If thesis or dissertation work is supported by a contractual agreement with an outside sponsoring agency, and provision was made in the agreement to delay disclosure of the study's results for the purpose of filing a patent or copyright, then this section describes procedures for handling the thesis/dissertation. (See also "Patent and Invention Policy" for explanations of rights associated with patents and copyrights.)

1. Only for those theses and dissertations where a prior written agreement was made with an outside sponsoring agency or where the university wishes to pursue a copyright/patent may publication of the thesis/dissertation be delayed. Review and delay of disclosure of the thesis/dissertation will normally not exceed one term.

2. The review by the outside sponsoring agency or by the university for the purpose of copyright or patent will follow the oral defense of the document. If it appears that the review process will delay certification of the degree or if the delay of disclosure is exercised, the certification process will be completed prior to deposit. The document will be held by the college or the Office of the Vice President for Research and Graduate Studies and deposit in the Library will take place following the delay.

3. No graduate degree will be awarded when the thesis or research report, after a reasonable interval, is not available to the public. If material is sensitive, classified, or will be or has been patented, it may be placed in the Office of the Vice President for Research and Graduate Studies for a specified period.

4. Contractual agreements that contain provisions for review and delay of disclosure shall be reviewed by the Vice President for Research and Graduate Studies, and exceptional cases shall be considered by the Graduate Council. Exceptional cases include a delay of disclosure for more than one year and/or review prior to the oral defense.

5. The student and the student's Advisory Committee shall be informed of the possibility of the delay of disclosure at the time of appointment of the Advisory Committee.
The "Patent and Invention Policy for Graduate Students" is included here in its entirety. Departments and colleges should discuss this policy with graduate students at orientations.

PREMISE: UCF has three fundamental responsibilities with regard to graduate student research. They are to (1) support an academic environment that stimulates the spirit of inquiry, (2) develop the intellectual property stemming from research, and to (3) disseminate the intellectual property to the general public. UCF owns the intellectual property developed using university resources. The graduate student as inventor will according to this policy share in the proceeds of the invention.

1. University Authority and Responsibilities: Department of Education (6C7-2.029 Copyrights and Patents, pp. 1461 and 1462) authorizes the university to take any action necessary to secure letters of patents, copyrights, and trademarks on any work produced by a graduate student's research done in a thesis or dissertation, or in connection with dissertation problems.

2. Definitions: For the purposes of this policy the following definitions shall apply:
   (a) A work includes any copyrightable material (other than journal articles) such as printed material, computer software or databases, audio or visual materials, circuit diagrams, architectural and engineering drawings, lectures, musical or dramatic compositions, choreographic works, pictorial or graphic works, and sculptural works.
   (b) An invention includes any discovery, invention, process, composition of matter, article of manufacture, know-how, design, model, technological development, strain, variety, culture of any organism, or portion, modification, translation, or extension of these items, and any mark used in connection with these items.
   (c) Instructional Technology Material includes motion pictures, film strips, photographic and other similar visual materials, live video and audio transmissions, computer programs, computer-assisted instructional coursework, programmed exhibits, and combinations of the above materials, which were prepared or produced in whole or part by a graduate student, and which are used to assist or enhance instruction.
   (d) University Support includes the use of university funds, personnel, facilities, equipment, materials, or technological information, and includes such support provided by other public or private organizations when it is arranged, administered, and/or controlled by a university.
   (e) Student-generated Effort means that the ideas come from the graduate student alone outside the field or discipline for which the graduate student is employed by the university, the work was not made with the use of university support, and the university is not held responsible for any opinions expressed in the effort.
   (f) Research means the inquiry or examination in some field of knowledge undertaken to establish facts or principles that are true. Research, as used in this policy, does not include work done in an internship or coop setting where new knowledge in a field is not actively sought, but rather a setting that offers a real life experience for the graduate student.

3. Work(s)
   (a) Student-generated Effort - A work made solely by the graduate student, outside the field or discipline for which the graduate student is employed by the university, is the property of the graduate student, who has the right to determine the disposition of such work and the revenue derived from such work.
   (b) University-supported Efforts - If the work was not made solely in the course of student-generated efforts, the work is the property of the university, and the graduate student shall share in the proceeds therefrom.
   (c) Disclosure
      1. Upon creation of a work that is potentially patentable, and prior to any publication, the graduate student shall disclose to the Vice President for Research and Graduate Studies, or representative, any work made in the course of university-supported efforts, together with an outline of the project and the conditions under which it was done.
      2. The Vice President for Research and Graduate Studies, or representative, shall gather information to assess the relative equities of the graduate student and the university in the work.
3. Within sixty days after such disclosure, the Vice President for Research and Graduate Studies, or representative, will inform the graduate student whether the university seeks an interest in the work.

4. The graduate student and the university shall not commit any act which would tend to defeat the university's or graduate student's interest in the work and shall take any necessary steps to protect such interests.

4. Invention(s)
   (a) Student-generated Efforts
   All inventions made outside the field or discipline in which the graduate student is employed by the university and for which no university support has been used are the property of the graduate student.
   (b) University-supported Efforts
   An invention made in the field or discipline in which the graduate student is employed by the university, or receiving university support, is the property of the university and the graduate student shall share in the proceeds therefrom.
   (c) Disclosure
   1. A graduate student shall fully and completely disclose to the Vice President for Research and Graduate Studies, or representative, all inventions which the graduate student may develop or discover while a graduate student of the university, together with an outline of the conditions under which it was done. With respect to inventions made during the course of approved outside employment, the graduate student may delay such disclosure, when necessary to protect the outside employer's interest, until the decision has been made by the outside employer whether to seek a patent.
   2. If the university wishes to assert its interest in the invention, the Vice President for Research and Graduate Studies, or representative, shall inform the graduate student within 120 days of the graduate student's disclosure.
   3. The division of proceeds generated by the licensing or assignment of an invention, shall be according to the established royalty division set forth in the patent policy of the university, pp. 1461-2, paragraph (c).
   4. The graduate student and the university shall not commit any act which would tend to defeat the university's or graduate student's interest in the invention and shall take any necessary steps to protect such interests.

5. Release of Rights
At any stage of making the patent applications, or in the commercial application of an invention, if it has not otherwise been assigned to a third party the right to pursue its interests, the Vice President for Research and Graduate Studies, or representative, may elect to withdraw from further involvement in the protection or commercial application of the invention. At the request of the graduate student in such case, the university shall transfer the invention rights to the graduate student, in which case the invention shall be the graduate student's property, and none of the costs incurred by the university or on its behalf shall be assessed against the graduate student.

6. University Policy
(a) The university has a policy addressing the division of proceeds between graduate students and faculty when the research is done and results in a dissertation, Department of Education (6C7-2.029 Copyrights and Patents, pp. 1461 and 1462).
The university also has a policy addressing the division of proceeds between faculty and the university. It is contained in the Patents and Copyrights Policy of the Division of Sponsored Research. This same division of royalties will apply in the disbursement of royalty income to graduate students, unless this has been negotiated in a contractual agreement at the start of research.
(b) Graduate students will be required to sign a Patent and Invention Agreement before they are accepted by the university.
(c) All research done by graduate students enrolled at the University for and with companies must have a contractual agreement negotiated at the start of that research.
(d) The Graduate Studies Procedures Manual details when dissertation or thesis dissemination can be delayed because of patent concerns. This can only occur when a prior contractual agreement has been entered into including provisions for review and delay for dissertation purposes. (See "Proprietary and Confidential Information.")
Student Services and Organizations

Student Services and Organizations Office of the Dean of Students Student Affairs collectively refers to the Student Affairs Division and its many functional departments responsible for the administration and management of programs, services, facilities, and activities designed to support the educational mission of the university. The Division, headed by the Vice President for Student Affairs, administers programs involving personal counseling, testing, housing, health services, international student services, student disability services, recreational services, career planning and placement, student organizations, veterans' affairs, and other special activities. Students are invited to consult the staff of Student Affairs concerning any aspect of campus life.

Through the Student Affairs Division, the university sponsors a variety of cultural and entertainment programs which contribute to the student's social, cultural, recreational, and academic development. Students can become better acquainted with fellow students and faculty members through participation in student activities. The university provides ample opportunity to become a member of occupational, professional, social, and honorary organizations.

Office of the Dean of Students

The Office of the Dean of Students is the primary source for students seeking information on nonacademic areas of the university. Additionally, the Dean and the Associate Dean supervise the judicial affairs process and counsel students confronted with a variety of difficulties, referring students for specialized professional services as necessary.

The Student Affairs Division annually publishes the student handbook, The Golden Rule, which contains more detailed information on student life. Copies may be obtained in the Student Affairs Suite, Room 282, Administration Building. Students are urged to take advantage of the many services and educational programs available through the Dean of Students Office and the Division.

Student Government

Student Government's purpose is representing student views on issues affecting UCF and promoting progressive changes to create improvements in campus life. In advocating better communication and understanding among the UCF family, Student Government also provides numerous services that affect student life. These services currently include legal services, computer labs, discount tickets to movie theaters and theme parks, free local calling on campus telephones, vehicles for club and organization use, and funding for recreational services and Campus Activities Board programming. Money which Student Government allocates for these services comes from the Activity and Service Fees that students pay during registration.

Additionally, UCF clubs and organizations may receive funding for events, projects, and conventions from the Student Government Senate, SG's legislative body. Student Government also coordinates its efforts with the Florida Student Association in lobbying for students' rights on the local, state, and national government levels.

Student Government's structure is modeled closely after our federal government system in that there are three branches: Legislative, Judicial, and Executive. The Executive branch, composed of the Student Body President and Vice President and their cabinet and staff, oversees the daily administrative operation of Student Government. The Legislative branch funds campus clubs and organizations and also passes bills and resolutions that benefit the student body. The Judicial branch oversees hearings concerning student rights violations.

All students are encouraged to take an active role with UCF's Student Government. For information on how to be involved with SG or how your club or organization can receive funding, please call the Student Government Association offices located in the Student Union at (407) 823-2191, or visit the SG website at:

http://pegasus.cc.ucf.edu/~sga
Graduate Student Council

Graduate students, regular and post-bacs, belong to the Graduate Student Council upon enrollment at UCF. The Graduate Student Council was formed to provide a voice for graduate students on campus. The Council acts on behalf of all graduate students concerning issues that pertain to them. The Council provides information to new graduate students at college orientations. For more information about this organization, please call Graduate Studies (623-6432) or consult GSC’s website at:

http://pegasus.cc.ucf.edu/~gsa/

Student Services

Student Legal Services
Student Center, Room 227 • (407) 823-2538

Student Legal Services provides students with advice and consultation, including court representation, in selected areas of law such as landlord/tenant, consumer, simple wills, and noncriminal traffic. Each eligible student (an undergraduate or graduate enrolled at UCF) is entitled to consult with a Program Attorney, about any legal matter not excluded by program guidelines, free of charge. Students in need of legal services should contact Student Legal Services at (407) 823-2538, or Student Center Room 227. This service is by appointment only. No legal advice is given over the phone.

University Counseling and Testing Center
Student Center, Room 203 • (407) 823-2811

The University Counseling and Testing Center, located in the Student Center, offers a professional staff of psychologists and counselors to assist students through educational, vocational, and career counseling; and personal, social, relationship, marriage, and family counseling.

The Center presents special programs throughout the year, including training in relaxation and coping skills, self-hypnosis training, stress reduction training, and group psychotherapy. All Center services are free to UCF students.

Career Resource Center - Career Planning and Placement
Student Center, Building 7F • (407) 823-2361
KnightLink (24-hour jobline): (407) 823-6200

The Career Resource Center provides a broad range of career-related services to UCF students, alumni, and employers. The center runs five career expos and fairs, over 100 weekly career planning mini-classes and hosts several hundred employer recruiting visits each year. To help students navigate the complexities of the job market, the center offers the Resume Expert ($25.00) database information management system which can refer their resumes to interested employers. Full-time and part-time jobs now are listed on a 24-hour telephone jobline called KnightLink (407-823-6200). An employer information library can provide needed information. An interactive computer guidance program called CHOICES is available along with Career Development Coordinators to assist with individual career needs.

Students just beginning studies at UCF are encouraged to begin thinking about careers as soon as possible. For more information, please visit the center.

Housing

Regularly enrolled single students paying registration fees for a minimum of nine semester hours may apply for assignment to university residential units. However in the residential halls, priority is given to incoming Freshmen who occupy approximately 50 percent of the university's housing capacity and current residents who occupy most of the remaining spaces. The university does have a new apartment complex for upper-level, single students. Applicants interested in the apartment complex units should contact the Housing Office for more information. There is no married student housing.
Off-Campus Housing
As extremely limited campus housing is available to graduate students, most graduate students live in apartments and condominiums located near campus. Rates average $400-$500 for a one-bedroom apartment. The Graduate Student Handbook has more information concerning off-campus housing. Within a two-mile radius of the UCF campus there are numerous apartments and duplex communities in addition to a privately-owned residence hall complex. Sidewalks, bike paths, and LYNX bus service connect many of these facilities with the university. Students living off-campus are invited to participate in one of the university meal plans.

Student Health Services (SHS)
Recognizing the importance of life-style in health and the prevention of disease, Student Health Services combines quality care for illness and accidents with an aggressive health education and life-style enhancement program. A Student Wellness Advocate Team (SWAT) enhances the health promotion efforts of the Wellness Center. The Student Health Advisory Committee (SHAC) serves as liaison representing students for health center programs and operation.

The Student Health Center (SHC) is staffed by medical and osteopathic physicians, advanced registered nurse practitioners, physician assistants, registered nurses and a full complement of other medical support personnel. Full referral service to Orlando area specialists is established. The effort is always made to refer patients to providers who accept their insurance or meet their HMO requirements.

Each student who pays the UCF health fee is entitled to the benefits provided through the SHS and outlined in the SHS brochure. Copies of the brochure are available in the SHC and in the Student Affairs Suite, and are mailed to students along with the optional health and accident insurance materials.

Office consultations and most SHS programs are provided without additional costs. Laboratory tests, x-rays, medications, and some supplies require additional but significantly reduced payments, which may be made with cash or credit card.

Optional Health and Accident Insurance may also be purchased by response to the mailers or by contacting the Student Affairs Division or Student Government. Please remember that optional health and accident insurance is not part of the SHS program, but is designed to provide for health coverage needs which are beyond the scope of the SHS.

Charges incurred outside the SHC are the responsibility of the student. A variety of laboratory and x-ray tests are available at the SHC. Testing for HIV (AIDS virus) is not done routinely in our laboratory because a program for anonymous testing is available elsewhere, and arrangements for highly confidential AIDS testing on campus may be made by calling the HIV AIDS Education office at UCF-AIDS (407-826-2437) or Health Resource Center (407-823-5841).

Information concerning these programs may be obtained through the SHC at (407) 823-2701 during regular hours.

When the SHC is not open, students can use the "Hot Line" phones at the front and back doors of the building to obtain Police Department help for urgent needs.

By Board of Regents regulation, each student must demonstrate Rubella and Rubeola immunity prior to registration. The SHC cannot provide all immunization services to meet this requirement. Immunizations are made available within limited hours during orientations to help those who have been unable to receive immunization prior to that time.

Medical records are held in the strictest confidence.

Faculty, staff, and retired employees may obtain flu shots at the SHC. Faculty and staff are seen only on an acute or emergency basis for a fee.
Blood drives are held several times annually on campus by the Central Florida Blood Bank. Students, faculty, staff, and family members are eligible for credits from the blood bank simply by identification and demonstrated need, even if they have not donated blood. Contact the Nurse Supervisor at (407) 823-5275 to make arrangements.

**Student Union**
The UCF Student Union is the center of student life on campus. The Student Union serves the entire campus community with a wide variety of programs, services, and facilities including restaurants, shops, a pub and game room, computer lab, meeting rooms, and student offices. The building is open seven days a week when school is in regular session. The Student Union and Student Center are partially funded through Activity and Service fees allocated by the Student Government.

Reservations for space in the Student Union or Student Center can be made at the Student Union information desk, or by calling 823-0001. Student Union administrative offices are located in the Student Union, Room 312.

**Office of Student Activities**  
Student Union, Room 208  •  (407) 823-6471

The Office of Student Activities provides programs, resources, and services that enhance student life at the University of Central Florida. The Office of Student Activities registers over 200 student organizations and advises the Campus Activities Board (CAB), the Consultants for Effective Leadership (CEL), Volunteer UCF, and Leadership Services. Other programs and services sponsored through this office include the Knights of the Roundtable and Family Weekend. Information about student activities is distributed via the Student Activities Handbook. For further information regarding student activities, call (407) 823-6471 or visit the Office of Student Activities, Student Union, Room 208, or visit the office’s website at:

http://pegasus.cc.ucf.edu/~osa
Recreational Services
The Office of Recreational Services offers a wide variety of sports and recreational opportunities to the students of UCF and their immediate families as well as some opportunities to UCF faculty, staff, and the surrounding community. These opportunities include intramural sports leagues and tournaments, organized recreation and fitness programs, unstructured open recreation, sports-related special events, and racquet stringing. Equipment may be checked out for use on and off campus.

The Office of Recreational Services is located next to the pool. The phone number is (407) 823-2408.

Office of Student Information and Evening/Weekend Student Services
Office: (407) 823-3111
Student Information “Buzzline”: (407) 823-5479

The Office of Student Information and Evening/Weekend Student Services is a one-stop communication center committed to gathering and disseminating information to students. In addition, the office provides student services to students taking classes in the evenings and on weekends. The office also administers a Student Information “Buzzline,” which can be called 24 hours a day.

Information Booth and Evening Student Services
8:00 a.m. to 9:00 p.m. Monday through Thursday
Second-floor Administration Building, Education Building Lobby, and College of Business Lobby
8:00 a.m. to 5:00 p.m. Friday (same locations as above)

Weekend Student Services
10:00 a.m. to 2:00 p.m. Saturday at SG Kiosk • (407) 823-2060
2:00 p.m. to 5:00 p.m. Sunday at SG Kiosk • (407) 823-2060

International Student Services
Ying Center Building • (407) 823-2337

The International Student Office provides services for all international students and resident aliens. Its central role is to assist international students and scholars, attending UCF, to adjust to the changing life-style in order to achieve their educational goals and gain a meaningful living experience in the United States. The office provides a wide range of special services including issuance of immigration forms 1-20 A/B and IAP-66, assistance in locating off-campus apartments, counseling on personal, financial, academic, and cross-cultural communication matters, advisement in immigration and tax matters, promotion of social activities, and home visits in Central Florida. More information may be obtained from the International Student Services Office, Ying Center Building, or by calling (407) 823-2337.

Multicultural Student Services
Director: A. J. Range • AD 145 • (407) 823-2716

The office of Multicultural Student Services (MSS) provides comprehensive academic support, cultural enrichment, consultation, and referral services that promote the recruitment, admission, retention, and graduation of African-American, Hispanic American, Asian-American, and Native-American students. MSS offers personalized advising and support, monitors academic progress, sponsors a six-week summer program, Seizing Opportunities for Academic Retention (SOAR), formerly EOP, and designs and coordinates cultural and social activities to assist ethnic minority students in realizing their academic, career, and personal goals. MSS serves as the focal point of operations in addressing the specific needs, issues, and concerns that confront ethnic minority students at UCF.
Student Disability Services
AD 123, P.O. Box 160160, Orlando, FL 32816-0160 • (407) 823-2371

Student Disability Services provides information and orientation to campus facilities and services, assistance with classroom accommodations, assistance with course registration, handicapped parking decals, counseling, and referral to campus and community services for students with disabilities. Services are available to students whose disabilities include, but are not limited to, hearing impairment, manual dexterity impairment, mobility impairment, specific learning disability (such as dyslexia), speech impairment, visual impairment, or other disabilities which require administrative or academic adjustments.

Students who have a disability that may require special assistance are requested to voluntarily contact the Office of Student Disability Services. All information is confidential and will be used only to assist the student.

Information and assistance are available for faculty members working with students who have disabilities.

A Telecommunication Device for the Deaf (TDD) is available for hearing-impaired or speech-impaired persons with TDD's to contact the university (phone (407) 823-2116 TDD calls ONLY).

Creative School for Children
Phone: (407) 823-2726

The Creative School for Children (Educational Research Center for Child Development) provides an educational program, including kindergarten and first grade, for children two through seven years old. The daily program is planned and conducted by degreed teachers. The program provides 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. Experiences in observation and training in academic areas are made available to university students. Opportunities for educational research are available to university faculty and graduate students.

A Flex Time program is provided for children three through five years of age. This program provides educational activities for children who need part-time schedules.

The school conducts a recreational camp for elementary school children during summer semester.

Office of Veterans' Affairs
Student Center, Room 132 • (407) 823-2707

The Office of Veterans’ Affairs (OVA) is a center for all veterans, including students who are using VA educational benefits to further their education. The office has a professional staff augmented by student veterans to assist in providing information concerning entitlement, filing claims to the Department of Veterans Affairs (DVA), and certifying enrollment at the university. The office also provides counseling for personal and academic concerns, tutorial assistance, and referral to various community agencies. Veterans and eligible dependents must be certified through the Office of Veterans’ Affairs to receive DVA educational benefits. The office monitors the academic progress of all those receiving DVA educational benefits.

All veterans and dependents are urged to contact the office at an early stage in the process of applying for admission; especially post-baccalaureate students and students pursuing a Florida Teachers Certification.
Veterans' Benefits

Veteran and dependents eligible to receive VA benefits must make initial contact with the Veterans Certification Office. To maintain eligibility for DVA education benefits, students must adhere to the policies and procedures contained in the UCF "Student Veteran Handbook" and DVA rules and regulations. A copy of the "Student Veteran Handbook" can be obtained at the Office of Veterans' Affairs.

Students eligible for DVA education benefits, may also be eligible for a VA Deferral of Tuition and Fees. The VA Deferral due date is published in the Class Schedule each semester. STUDENTS ELIGIBLE FOR FINANCIAL AID ADEQUATE TO COVER TUITION AND FEES ARE NOT ELIGIBLE FOR THIS DEFERMENT.

Veterans, Reserve, and National Guard members and eligible dependents who are graduate or post-baccalaureate students (including those pursuing the Florida Teaching Certificate) are required to carry 6 semester hours in courses numbered 5000 and above for full-time benefits; 4-5 semester hours in courses numbered 5000 and above for three-quarter time benefits; and 3 semester hours in courses numbered 5000 and above for half-time benefits. Students pursuing course work while in a post-baccalaureate status can only receive benefits for courses that will be accepted for transfer into a graduate program when they are given graduate status (normally 9 semester hours).

Graduate and post-baccalaureate students may take undergraduate courses, if a required part of the program of study, but must take a least one graduate-level course (5000 level or above) to be paid at the above rate. Students who are taking only undergraduate-level courses must carry at least 12 semester hours for full-time benefits; 9-11 semester hours for three-quarter time benefits; and 6-8 semester hours for half-time benefits. Five (5) semester hours or less will be reimbursed at the cost of tuition and fees or quarter-time depending on the DVA education benefit program. Note that a different method is used to compute training time for the summer semester. Contact the Office of Veterans' Affairs for clarification and guidance.

In order to receive veterans' educational benefits, students must maintain satisfactory academic progress, and conduct. Accordingly, benefits will be terminated for individuals who are disqualified, excluded, suspended or expelled from the university. If reinstated by the university and College of major following disqualification, exclusion, suspension or expulsion, the veteran or eligible dependent must contact the Office of Veterans' Affairs to have their DVA educational benefits restarted. Graduate students will continue to receive education benefits as long as the GPA earned each semester meets the college of major requirement (normally a 3.0). Students who fail to maintain graduate standing and are reverted to post-baccalaureate status can only be certified for courses required by the program and needed to matriculate.

University Ombuds Office
AD 338F  •  (407) 823-8440

The Office of the Ombuds Officer provides members of the university community assistance and advice regarding concerns related to the university. These services are available to every member of the university community—students, staff, faculty, and others. Any type of concern may be brought to the attention of this office: academic, financial, housing, consumer, work-related, or personal. The university Ombuds Officer is a neutral facilitator and will listen to your concern, help you explore options, offer suggestions and advice, and assist in the resolution of your concern. Referral and direction to appropriate individuals and offices, and clarification of university policies and procedures are services of the office. All proceedings in individual cases will be held confidential by the Ombuds Officer unless otherwise authorized by the complainant, or otherwise required by applicable law, including without limitation, Chapter 119, Florida Statutes.

The university Ombuds Officer is located in the Administration Building, Room 338F. Appointments may be made by calling 823-8440.
Other Student Services on Campus

UCF Alumni Association
Administration Building, Room 340 • (407) UCF-ALUM

The University of Central Florida Alumni Association was developed to maintain awareness and support of the university by our alumni. Membership is open to all alumni and friends of the university. Membership in the alumni association provides many benefits, including:

- Subscription to *Pegasus*, the Alumni Association's award-winning magazine that keeps you up-to-date on university and alumni happenings
- Career resources and placement opportunities available nationwide
- Discounts on hotels, rental cars, theme parks, internet service, and more
- Free borrowing at the UCF Library (main branch)
- 15% discount on UCF logo items at the UCF Bookstore
- Free or discounted admission at Association-sponsored alumni events
- Personal and professional networking opportunities
- Plus more than 40 other benefits and services available only to dues-paying members of the UCF Alumni Association!

In addition, the Alumni Association provides over $40,000 each year in scholarships to UCF students.

For more information on becoming a member of your UCF Alumni Association or to find out about our scholarships, contact the Alumni Association at (407) UCF-ALUM or stop by Administration 340. (For unique activities to take part in while a student at UCF, ask for information about joining the Student Alumni Association.)

University of Central Florida Foundation, Inc.
Phone: (407) 249-4740

The UCF Foundation, Inc. is a nonprofit, tax-exempt corporation directed by a sixty-member community-based Board of Directors that encourages, solicits, receives, and administers private gifts and bequests of property and funds for scientific, educational, and charitable purposes. All gifts to UCF are received and processed through the Foundation for support of the university.

University Bookstore
P.O. Box 162444, Orlando, FL 32816-2444 • (407) 823-2665

The university Bookstore is owned and operated by the University of Central Florida. The university Bookstore is located in the Student Services Building and is open to the public. In addition to textbooks and school supplies, this facility offers a complete line of UCF insignia clothing and gift items. The *UCF Graduate Catalog* is available at the Bookstore. It costs $2.00 at the store or $3.50 if it is mailed. A brochure of UCF items is available for mail-order purchases (write to the address above to request a brochure).

Campus Security Information and Reports
Police Department, UCF, P.O. Box 163550, Orlando, FL 32816-3550 • (407) 823-2429

In accordance with title 34, Sections 688.41 and 688.47, Code of Federal Regulations, campus security reports are available upon request by current and prospective students. Summaries of campus security activities appear regularly in the student newspapers and are available to other interested parties by contacting the university Police Department.
College of Arts and Sciences

The College of Arts and Sciences consists of seventeen academic departments, thirteen of which offer graduate degrees: Biology, Chemistry, Communication, Computer Science, English, Foreign Languages and Literatures, History, Mathematics, Physics, Political Science, Psychology, Sociology and Anthropology, and Statistics. The specific programs for the various degrees are listed below.

College Administration

K. L. Seidel ........................................... Dean
B. B. Morgan, Jr. .................................... Associate Dean
B. A. Whisler ........................................ Associate Dean
H. Sweet .............................................. Associate Dean
E. Vites ................................................ Assistant Dean

Advisement

Graduate Studies in the College of Arts and Sciences
Graduate Studies assists students in the College of Arts and Sciences in matters concerning college and university requirements and procedures. Admission materials, acceptance notification, program of study, graduate committee memberships, thesis and dissertation approvals, fellowship and financial aid information, waiver and petition forms, graduation certifications, etc., are processed through this office for all graduate students in the college. Questions concerning university and college graduate policies affecting Arts and Sciences majors should be directed to Graduate Studies in HFA 518 or by calling (407) 823-0218.

Programs

Doctor of Philosophy
Computer Science
Mathematical Science
Physics
Psychology (Human Factors)

Master of Science
Biology
Chemistry, Industrial
Computer Science
Mathematical Science
Physics
Psychology (Clinical and Industrial/Organizational)
Statistics (Statistical Computing)

Master of Arts
Communication
English
Foreign Languages and Literatures (Spanish and Teaching English to Speakers of Other Languages [TESOL])
History
Political Science
Sociology (Applied)

General Requirements

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.

The General Graduate Record Examination is required for graduate status in all programs even if a student is acceptable on the basis of a grade point average.

Each department is headed by a chair who reports to the dean of the college. A program coordinator is designated for each graduate 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.
Art Department

Robert T. Reedy ........................................................................... Chair
Office: VAB 117A, Phone: (407) 823-2676

Thomas Brewer, Ph.D. .................................................... Program Coordinator
Office: ED 158, Phone: (407) UCF-3714, e-mail: tbrewer@pegasus.cc.ucf.edu

Art Faculty
K. Congdon, Ph.D. ............................................................... Professor
M. Wahlman, Ph.D. ............................................................ Professor

The College of Arts and Sciences does not offer a graduate program in Art (M.F.A.), however, a Master of Education Degree in Art Education (M.Ed.) is offered through the College of Education in cooperation with the Department of Art. For specifics about courses, see the Art Education listing in the College of Education.

Biology Department

D. T. Kuhn ........................................................................... Program Coordinator
Office: BIO 110, Phone: (407) 823-2141, e-mail: dkuhn@pegasus.cc.ucf.edu

Biology Faculty
L. M. Ehrhart, Ph.D. ............................................................. Professor
L. L. Ellis, Ph.D. ............................................................... Professor Emeritus
J. L. Keevenig, Ph.D. ............................................................. Professor Emeritus
D. T. Kuhn, Ph.D. ............................................................... Professor
J. A. Osborne, Ph.D. ............................................................. Professor
F. F. Snelson, Jr., Ph.D. ........................................................... Professor
I. J. Stout, Ph.D. ............................................................... Professor
H. C. Sweet, Ph.D. .............................................................. Professor
W. K. Taylor, Ph.D. ............................................................. Professor
H. O. Whitter, Ph.D. ............................................................. Professor
D. H. Vickers, Ph.D. ............................................................. Chair and Associate Professor
C. A. Bayer, Ph.D. .............................................................. Research Assistant Professor
G. A. Lindbeck, Ph.D. ............................................................ Assistant Professor
L. H. Vonkalm, Ph.D. ............................................................ Assistant Professor
L. J. Walters, Ph.D. ............................................................. Assistant Professor
J. E. Weishampel, Ph.D. ........................................................ Assistant Professor

Master of Science in Biology

Admission
The deadline for application material for fall semester is March 1st with notification in April. The application deadline for spring semester is November 1st.

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for consideration for graduate status in either of the M.S. options in Biology are a grade point average (GPA) of at least 3.0 for the last 60 attempted semester hours of undergraduate study and a score of at least 1000 on the combined quantitative-verbal sections of the GRE. In addition, the department requires three letters of recommendation and a written statement of past experience and research, area of interest, and immediate and long-range goals. Personal interviews are encouraged but not required. The department requires international students and students whose native language is not English to have a minimum TOEFL score of 550.

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 Subject (Advanced) Biology Test score at or above the 50th percentile. In no case will GRE scores (verbal, quantitative, or advanced) older than five years be accepted.
Applicants need not have an undergraduate degree in a biological science but are expected to have the equivalent of a minor in the biological sciences, which includes biology, biodiversity, ecology, genetics, and molecular-cell biology, plus organic chemistry with laboratory; and a course in calculus and statistics. After acceptance, minor deficiencies can be remedied by enrollment at the first opportunity in an appropriate course. Students receiving teaching or research assistantships are expected to maintain a minimum of 6 semester hours of approved graduate credit every term for departmental support.

Examinations
A comprehensive examination is required of all students in the program. The comprehensive exam must be taken no later than the semester preceding that of thesis defense. If a student fails the comprehensive examination, a minimum of four weeks must elapse before re-examination. The comprehensive exam may be taken a maximum of two times. In addition, an oral thesis defense is required in the thesis option. A minimum of four weeks must elapse between the comprehensive and thesis defense examinations.

Programs in Biology
The Master of Science degree in Biology is offered with the following areas of specialization: biology, botany, limnology, conservation biology, and zoology. There are two options available: (1) a thesis option which includes a minimum of 30 semester hours of courses; and (2) a non-thesis option which includes a minimum of 40 semester hours of courses.

Degree Requirements
Thesis Option
A student selecting the biology thesis option will take the following courses:

<table>
<thead>
<tr>
<th>Group A (one course in any three of the four areas)</th>
<th>12-14 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PCB 5046C Advanced Ecology</td>
<td>5 hours</td>
</tr>
<tr>
<td>2. PCB 6675C Evolutionary Biology</td>
<td>4 hours</td>
</tr>
<tr>
<td>3. PCB 6585C Advanced Genetics</td>
<td>5 hours</td>
</tr>
<tr>
<td>4. PCB 6721 Comparative Animal Physiology OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>PCB 6365 Environmental Physiology</td>
<td>3 hours</td>
</tr>
<tr>
<td>Group B (both courses)</td>
<td>8 Semester Hours</td>
</tr>
<tr>
<td>BSC 6938 Biology Seminar</td>
<td>2 hours</td>
</tr>
<tr>
<td>BSC 6971 Thesis</td>
<td>6 hours</td>
</tr>
<tr>
<td>Group C</td>
<td>8-10 Semester Hours</td>
</tr>
<tr>
<td>Restricted electives acceptable to the student's graduate committee.</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Hours Required for M.S. 30 Semester Hours

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

<table>
<thead>
<tr>
<th>Group A (one course in any three of the four areas)</th>
<th>12-14 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PCB 5046C Advanced Ecology</td>
<td>5 hours</td>
</tr>
<tr>
<td>2. PCB 6675C Evolutionary Biology</td>
<td>4 hours</td>
</tr>
<tr>
<td>3. PCB 6585C Advanced Genetics</td>
<td>5 hours</td>
</tr>
<tr>
<td>4. PCB 6721 Comparative Animal Physiology OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>PCB 6365 Environmental Physiology</td>
<td>3 hours</td>
</tr>
<tr>
<td>Group B (both courses)</td>
<td>4 Semester Hours</td>
</tr>
<tr>
<td>BSC 6909 Research Report</td>
<td>2 hours</td>
</tr>
<tr>
<td>BSC 6938 Biology Seminar</td>
<td>2 hours</td>
</tr>
<tr>
<td>Group C</td>
<td>22-24 Semester Hours</td>
</tr>
<tr>
<td>Restricted electives acceptable to the student's graduate advisor.</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Hours Required for Non-Thesis M.S. 40 Semester Hours
Chemistry Department

D. Howard Miles, Ph.D. .............................................. Program Coordinator
Office: CH 117, Phone: (407) 823-2246, e-mail: hmiles@pegasus.cc.ucf.edu

Chemistry Faculty
C. A. Clausen, Ph.D. .......................................................... Professor
G. N. Cunningham, Ph.D. ......................................................... Chair
F. E. Juge, Ph.D. ................................................................. Associate Vice President and Professor
B. C. Madsen, Ph.D. ................................................................. Professor
W. W. McGee, Ph.D. ................................................................. Professor
D. H. Miles, Ph.D. ................................................................. Professor
L. M. Trefonas, Ph.D. ............................................................. Professor
S. R. Elisheimer, Ph.D. ............................................................ Associate Professor
M. D. Hampton, Ph.D. ............................................................. Associate Professor
C. L. Geiger, Ph.D. ................................................................. Assistant Professor
O. Phanstiel, IV, Ph.D. .............................................................. Assistant Professor
H. L. Price, Ph.D. ................................................................. Assistant Professor
K. A. Cerqua-Richardson, Ph.D. ............................................... Assistant Professor
B. I. Schweitzer, Ph.D. ............................................................. Assistant Professor

Master of Science in Industrial Chemistry

Admission
The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission include a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study or a score of at least 1000 on the combined quantitative-verbal sections of the General (Aptitude) test of the GRE. In addition, the departmental evaluation requires two letters of recommendation. Proficiency examinations are given to all incoming graduate students. The results of these exams are used 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.

Degree Requirements
Required Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 6440</td>
<td>Kinetics and Catalysis</td>
<td>2</td>
</tr>
<tr>
<td>CHM 6710</td>
<td>Applied Analytical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>CHM 6938</td>
<td>Seminar</td>
<td>2</td>
</tr>
<tr>
<td>CHS 6240</td>
<td>Chemical Thermodynamics</td>
<td>2</td>
</tr>
<tr>
<td>CHS 6251</td>
<td>Applied Organic Synthesis</td>
<td>2</td>
</tr>
<tr>
<td>CHS 6260</td>
<td>Chemical Unit Operations and Separations</td>
<td>2</td>
</tr>
</tbody>
</table>

Electives
At least nine (9) of the total twelve (12) credits must be taken from the following list (All elective courses must be approved by the student’s advisory committee):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 5225</td>
<td>Advanced Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHM 5226</td>
<td>Advanced Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHM 5235</td>
<td>Applied Molecular Spectroscopy</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Semester Hours</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>CHM 5305</td>
<td>Applied Biological Chemistry</td>
<td>3 hours</td>
</tr>
<tr>
<td>CHM 5450</td>
<td>Polymer Chemistry</td>
<td>3 hours</td>
</tr>
<tr>
<td>CHM 5451</td>
<td>Polymer Chemistry Lab</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHM 5580</td>
<td>Advanced Physical Chemistry</td>
<td>3 hours</td>
</tr>
<tr>
<td>CHM 5711</td>
<td>The Chemistry of Materials</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 5262</td>
<td>Industrial Chemical Processes</td>
<td>2 hours</td>
</tr>
<tr>
<td>CHS 6261</td>
<td>Chemical Process and Product Development</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

Thesis (6971) 6 Semester Hours

Examination Requirements
Satisfactory completion of a final examination (oral defense of thesis) is required.

Minimum Hours Required for M.S. 30 Semester Hours
Nicholson School of Communication

B. Pryor ......................................................... Program Coordinator
Office: HFA 528A, Phone: (407) 623-5670 or 623-2681, e-mail: apryor@pegasus.cc.ucf.edu

Communication Faculty
R. H. Davis, Ph.D .................................................. Professor
F. E. Fedler, Ph.D .................................................. Professor
M. D. Maeske, Ph.D .................................................. Director and Professor
M. T. O'Keefe, Ph.D .................................................. Professor
B. Pryor, Ph.D .................................................. Professor
R. F. Smith .................................................. Professor
K. P. Taylor, Ph.D .................................................. Professor
J. W. Welke, Ph.D .................................................. Professor
J. F. Butler, Ph.D .................................................. Associate Professor
W. J. Hall, Ed.D .................................................. Associate Professor
M. C. Johnson, Ph.D .................................................. Associate Professor
J. Maunez-Cuadra, Ph.D .................................................. Associate Professor
J. B. O'Hara, Ph.D .................................................. Associate Professor
E. B. Wycoff, Ph.D .................................................. Associate Professor
D. E. DeLorme, Ph.D .................................................. Assistant Professor
P. M. Jablonski, Ph.D .................................................. Assistant Professor
M.C. Santana, Ph.D .................................................. Assistant Professor

Master of Arts in Communication

Admission
The Graduate Record Examination is required of all graduate students. Minimal requirements for admission are a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study and a score of at least 1000 on the verbal-quantitative sections of the General (Aptitude) test of the GRE. Students interested in applying for financial assistance must supply three letters of recommendation. Admission is restricted to fall semester only. Students must have graduate status to be eligible for 6000-level communication courses.

Programs in Communication
The following curriculum emphasizes communication research. The courses prepare students for research positions, some teaching positions, and entry to most Ph.D. programs in the field.

Degree Requirements
Students are required to complete 34 semester hours of work, including a thesis and a basic core of courses in theory and methodology. The curriculum for the master's degree includes the following courses:

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 4183</td>
<td>Statistical Methods II OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 5206</td>
<td>Statistical Analysis OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>SYA 4450</td>
<td>Data Analysis OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPC 6219</td>
<td>Modern Communication Theory</td>
<td>3 hours</td>
</tr>
<tr>
<td>COM 6121</td>
<td>Communication Management OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>COM 6488</td>
<td>Communication Conflict</td>
<td>3 hours</td>
</tr>
<tr>
<td>COM 6303</td>
<td>Communication Research I</td>
<td>3 hours</td>
</tr>
<tr>
<td>COM 6304</td>
<td>Communication Research II</td>
<td>3 hours</td>
</tr>
<tr>
<td>MMC 6803</td>
<td>Communication and Society</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPC 6442</td>
<td>Small Group Communication</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Electives

| Thesis      |                                                                 | 4 Semester Hours |

Minimum Hours Required for M.A.

| Minimum Hours Required for M.A. | 34 Semester Hours |

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Computer Science Department

Ronald D. Dutton .................................................. Program Coordinator
Office: CSB 263, Phone: (407) 823-2341, e-mail: dutton@cs.ucf.edu

Computer Science Faculty
M. A. Bassiouni, Ph.D. ........................................... Professor
R. C. Brigham, Ph.D. ............................................... Professor
N. Deo, Ph.D. ........................................................... Millican Endowed Chair in Computer Science and Professor
R. D. Dutton, Ph.D. ................................................. Associate Chair and Professor
T. J. Frederick, Ph.D. ............................................. Chair and Professor
F. Gomez, Ph.D. ....................................................... Professor
R. K. Guha, Ph.D. ................................................... Professor
C. E. Hughes, Ph.D. ............................................... Professor
J. M. Meshell, Ph.D. ............................................... Professor
A. Mukherjee, Ph.D. .............................................. Professor
M. A. Shah, Ph.D. ................................................... Professor
H. C. Gerber, Ph.D. .................................................. Associate Professor
K. Hua, Ph.D. ............................................................. Associate Professor
S. D. Lang, Ph.D. ..................................................... Associate Professor
J. Leeson, Ph.D. ........................................................ Associate Professor
A. Orooji, Ph.D. ....................................................... Associate Professor
D. A. Workman, Ph.D. ............................................ Associate Professor
N. da Vitara Lobo, Ph.D. .......................................... Assistant Professor
M. Goudreau, Ph.D. ................................................ Assistant Professor
R. Parsons, Ph.D. ..................................................... Assistant Professor
J. Rogers, Ph.D. ....................................................... Assistant Professor
U. Vemulaapati, Ph.D. ............................................. Lecturer

Programs in Computer Science
The Department of Computer Science offers a Master of Science and a Doctor of Philosophy degree in Computer Science. Students receive a broad background in the areas of programming systems and languages, computer architecture, and computer science theory before specializing in a research area.

Research interests of the faculty include computer architecture, VLSI systems, parallel processing, design and analysis of algorithms, graph theory, microprocessors, programming languages, operating systems, natural language processing, computer vision, machine learning, database management systems, computer graphics, interactive graphic systems of instruction, distributed processing/networking, and computational complexity.

The department houses the Center for Parallel Computation, directed by Dr. N. Deo, containing a BBN Butterfly 64 processor machine and a DECnpp 12000.
Master of Science in Computer Science

Admission
Admission is based on satisfying the regular university requirements. Additional department requirements are:

- Each student is required to submit a score on the Subject (Advanced) GRE in Computer Science that is not more than two years old at the time of admission to regular graduate status.
- 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 4150 Introduction to Computer Architecture
  - COP 4020 Programming Languages I
  - COP 4600 Programming Systems
  - COT 4210 Discrete Computational Structures

  The student may choose to demonstrate the knowledge of these courses by scoring well on the Subject (Advanced) GRE in Computer Science. It is estimated that more than 85 percent of this GRE deals directly with the material covered in these courses.
- International students must obtain a minimum score of 550 on the TOEFL exam.

Degree Requirements

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Students must receive an “A” or “B” grade in these courses.)</td>
<td></td>
</tr>
<tr>
<td>CDA 5106 Advanced Computer Architecture</td>
<td>3 hours</td>
</tr>
<tr>
<td>COT 5405 Design and Analysis of Algorithms</td>
<td>3 hours</td>
</tr>
<tr>
<td>Select One:</td>
<td></td>
</tr>
<tr>
<td>COP 5611 Operating Systems Design Principles</td>
<td>3 hours</td>
</tr>
<tr>
<td>COP 5021 Programming Languages II</td>
<td>3 hours</td>
</tr>
<tr>
<td>COT 5310 Formal Languages and Automata Theory</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Restricted Electives

Restricted electives must include two 6000-level Computer Science courses taught by the Department of Computer Science, exclusive of independent study, and may not include any courses for which the grade received is below a “B.” Additional credits will normally be taken from 5000- and 6000-level Computer Science courses. Approval may be granted for at most six credits to be taken from graduate courses outside Computer Science.

Two options are available. The Survey option is a 36-semester-hour program that allows at most 6 hours of independent study and requires the student write a comprehensive literature survey paper, while enrolled in 3 hours of research on a current topic of interest in Computer Science. The Thesis option is a 30-semester-hour program exclusive of independent study. The thesis is intended to span two semesters, and students are to enroll in 3 credit hours of thesis (XXX 6971) each semester. After appropriate research the student is required to prepare and defend a formal thesis in accordance with university requirements. The final thesis will be bound with two copies provided to the library and one copy provided to the Computer Science Department.

Regardless of the electives or option chosen, the plan of study for each student must satisfy the following:

- Contain 30-36 semester hours depending on the option selected.
- Grades “C” or better with no more than 6 hours of “C” work and a grade point average of 3.0 or better.
- No courses below the 5000 level.
- No more than 6 hours (or two courses) of independent study in the Survey option and none in the Thesis option.
- A research survey (3 credits) or a thesis (6 credits).

Minimum Hours Required for M.S. 30-36 Semester Hours
Doctor of Philosophy in Computer Science

Admission
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 and the minimal M.S. admission requirement, the applicant must pass Phase I of 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.

* Meeting minimum university admission standards for graduate status does not satisfy doctoral program admission requirements.

Ph.D. Qualifying Examination
Outstanding students are encouraged to apply directly into the doctoral program with a bachelor’s degree. The Phase I Qualifying Examination determines whether a student will be allowed to continue for the Ph.D.

The Qualifying Examination is taken after the student has obtained regular graduate status in Computer Science. The purpose of Phase I of this examination is to determine the student’s knowledge in important areas of computer science architecture, languages, theory—and, in Phase II, to assess the student’s potential to pursue an area of specialization and research.

Phase I is a stringent exam requiring synthesis of first-year core courses in computer science. Normally, this examination will take place in the second or third semester of course work for those with a master’s degree or by the second year for those with a bachelor’s degree.

Phase I (Written Exam)
Phase I of the Qualifying Examination consists of three written examinations over areas of algorithms, architecture, and theory. The coverage includes material prerequisite to and including some of the material taught in graduate-level courses in computer architecture, formal languages and automata theory, and design and analysis of algorithms.

This phase will be offered twice per year in September and January. Students are allowed at most two attempts, in two consecutive offerings, to pass this phase. Upon successful completion of Phase I, the student will be admitted to the Ph.D. program.
Phase II (Committee Exam)
Upon successful completion of Phase I, the student must identify an area of research and an advisory committee chaired by a Computer Science graduate faculty member. A tentative plan of study approved by the student's advisory committee should be filed. The advisory committee will then examine the student to ascertain the student's ability to conduct independent research. This examination will be a narrowly focused examination in and around the area of the student's specialty. The format and length of the examination will be determined by the student's committee (e.g., may be oral and/or written and may involve surveying literature and submitting critical reviews of selected research articles). Each student will be allowed at most two attempts to pass Phase II. However, the student is expected to pass the Phase II exam within one year of passing the Phase I exam.

The Phase II Qualifying Examination should be taken long before completion of the dissertation and certainly in time to take 15 hours of dissertation course work.

Plan of Study
The Ph.D. plan of study will consist of a minimum of fifteen (15) semester hours of Ph.D. dissertation (CAP, CDA, COP, or COT 7980) credits and at least fifty-seven (57) semester hours of non-dissertation graduate (5000-level or above) credits. The latter must include at least fifteen (15) semester hours of advanced (6000-level) computer science courses, exclusive of Special Topics courses, and six (6) graduate hours from outside computer science. The remaining credits are normally selected from computer science regularly scheduled courses, Special Topics courses, seminar courses, and Independent Study. No more than twelve (12) credits of Independent Study can be used.

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.

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 chair 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.

Residence Requirement
Students in the Ph.D. program are normally expected to be full-time students. Students must spend at least two consecutive semesters registered for a minimum of nine hours in each of the two terms.

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
Students are expected to demonstrate competency in an area relevant to their research. This must be carefully defined by each student's committee and approved by the Computer Science Graduate Committee and Office of the Dean.

Dissertation and Oral Defense
Students must write a dissertation on their 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 the dissertation advisor and committee, the department chair or designee, and the dean of the college or designee. Final approval is required from the Thesis and Publications Editor and Graduate Studies.
English Department

Gerald Schiffhorst ......................................................... Program Coordinator
Office: HFA 302D, Phone: (407) 823-5254, e-mail: gschiff@ucf1vm.cc.ucf.edu

English Faculty
R. R. Adicks, Ph.D ......................................................... Professor
S. E. Omans, Ph.D .......................................................... Professor
J. F. Schell, Ph.D ............................................................ Chair and Professor
G. J. Schiffhorst, Ph.D ....................................................... Professor
K. L. Seidel, Ph.D ............................................................. Dean and Professor
W. Wyatt ................................................................. Professor
B. Barnes, Ph.D ............................................................... Associate Professor
K. L. Bell, Ph.D ............................................................... Associate Professor
J. J. Donnelly, Ph.D ........................................................... Associate Professor
J. Hemschemeyer ............................................................... Associate Professor
D. R. Jones, Ph.D ............................................................... Associate Professor
A. Lillios, Ph.D ................................................................. Associate Professor
P. J. Rushin ................................................................. Associate Professor
M. E. Sommer, Ed.D ........................................................... Associate Professor
D. L. Steph, Ph.D .............................................................. Associate Professor
M. Flamma, Ph.D .............................................................. Associate Professor
E. Smith, Ph.D .............................................................. Associate Professor
J. Bartkevicius, Ph.D .......................................................... Assistant Professor
J. Campbell, Ph.D ............................................................ Assistant Professor
N. Greenberg, Ph.D ........................................................... Assistant Professor
D. Gillette, Ph.D ............................................................... Assistant Professor
S. Hubbard ................................................................. Assistant Professor
L. Logan, Ph.D ............................................................... Assistant Professor
K. Meehan, Ph.D ............................................................. Assistant Professor
P. Puccio, Ph.D ............................................................... Assistant Professor

Master of Arts in English

Admission
Minimum requirements for admission are a grade point average (GPA) of 3.0 for the last 60 attempted semester credit hours earned as an undergraduate and a total score of 1000 on the verbal-quantitative section of the Graduate Record Examination (GRE). International students must score at least 575 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. Literature students are expected to have read widely in British and American literature, to be highly competent in writing, and to be familiar with the vocabularies of literary criticism and grammar.

An applicant for the concentration in creative writing must submit a portfolio of poetry, drama, or fiction that is approved by the faculty. 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 or by completing survey courses in British and American literature.

Applicants are urged to apply for the program and take the GRE before April 1 for the subsequent fall term and before November 1 for the spring term.
### English/Literature Track
Each student must complete at least 33 hours, including one course in linguistics and five core courses. Near the end of the degree program, each candidate will write a comprehensive examination based on a prescribed reading list and (a) write a thesis or (b) take an oral examination on a specific area of literature.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>21 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 5009</td>
<td>Graduate Research in English</td>
</tr>
<tr>
<td>ENG 5018</td>
<td>Literary Criticism</td>
</tr>
<tr>
<td>LIN 5137</td>
<td>Linguistics (or an equivalent)*</td>
</tr>
<tr>
<td>LIT 6009</td>
<td>Literary Genres</td>
</tr>
<tr>
<td>LIT 6105</td>
<td>World Literature</td>
</tr>
<tr>
<td>LIT 6365</td>
<td>Movements in Literature</td>
</tr>
<tr>
<td>LIT 6506</td>
<td>Major Authors</td>
</tr>
</tbody>
</table>

* May be waived if student has completed a course in linguistics on the 4000 level or above with a grade of "A" or "B."

<table>
<thead>
<tr>
<th>Electives</th>
<th>6 Semester Hours</th>
</tr>
</thead>
</table>

### Comprehensive Examination

#### Specialization — Choose A or B

<table>
<thead>
<tr>
<th>6 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Thesis Option</td>
</tr>
<tr>
<td>B. Extended Research and Oral Examination Option</td>
</tr>
</tbody>
</table>

### Minimum Hours Required for M.A.

33 Semester Hours

### English/Creative Writing Track
Each student must complete at least 33 hours, including six hours of writing workshops. Near the end of the degree program, each candidate will write a creative thesis.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRW 5004</td>
<td>Graduate Writing Workshop</td>
</tr>
<tr>
<td>CRW 6009</td>
<td>Advanced Writing Workshop</td>
</tr>
<tr>
<td>LIT 5039</td>
<td>Studies in Contemporary Poetry</td>
</tr>
<tr>
<td>LIT 5097</td>
<td>Studies in Contemporary Fiction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Restricted Electives</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIT 6009</td>
<td>Literary Genres</td>
</tr>
<tr>
<td>LIT 6105</td>
<td>World Literature</td>
</tr>
<tr>
<td>LIT 6365</td>
<td>Movements in Literature</td>
</tr>
<tr>
<td>LIT 6506</td>
<td>Major Authors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Open Electives (selected with assistance of advisor)</th>
<th>6 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis CRW 6971</td>
<td>Thesis</td>
</tr>
</tbody>
</table>

The candidate will complete a book-length manuscript (fiction, poetry, or other genre) of publishable quality, written and revised in CRW 6971, Thesis. The manuscript will be submitted for review and approval by the graduate creative writing faculty. There is no non-thesis option in creative writing.

### Minimum Hours Required for M.A.

33 Semester Hours
English/Technical Writing Track
Each student must complete at least 33 hours, as outlined below. Near the end of the degree program, each candidate will write a comprehensive examination and enroll in ENC 6971 or ENC 6908 (3 hours), completing a formal thesis or project approved by the faculty.

Required Courses
- ENC 5214 Production and Publication Methods
- ENC 6217 Technical Editing
- ENC 6261 Technical Writing: Theory and Practice
- ENC 6337 Modern Rhetorical Theory
- ENG 5009 Research Methods

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 5214</td>
<td>Production and Publication Methods</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6217</td>
<td>Technical Editing</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6261</td>
<td>Technical Writing: Theory and Practice</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6337</td>
<td>Modern Rhetorical Theory</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENG 5009</td>
<td>Research Methods</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Restricted Electives
- ENC 5219 Graphics in Technical Writing
- ENC 5344 Proposal Writing
- ENC 6244 Teaching Technical Writing
- ENC 6292 Project Management
- ENC 6296 Computer Documentation
- ENC 6305 Persuasive Writing

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 5219</td>
<td>Graphics in Technical Writing</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 5344</td>
<td>Proposal Writing</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6244</td>
<td>Teaching Technical Writing</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6292</td>
<td>Project Management</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6296</td>
<td>Computer Documentation</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENC 6305</td>
<td>Persuasive Writing</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Advised Electives
Two courses from outside the Department of English or other graduate-level English courses.

Comprehensive Examination

Specialization—Choose A or B
A. Thesis Option
The candidate will complete a formal thesis selected in consultation with an advisory committee and will meet both departmental and university requirements for the thesis. The student will enroll in ENC 6971, Thesis for three hours of credit.

B. Special Project
The candidate will enroll in ENC 6908, Directed Independent Study, and complete a research project approved by an advisory committee. This project will be on a topic in technical communication and in a format other than that of a traditional thesis.

Minimum Hours Required for M.A.
33 Semester Hours
The Department of Foreign Languages and Literatures offers two master's degrees: a Master of Arts degree in Spanish and a Master of Arts degree in Teaching English to Speakers of Other Languages (TESOL). Research interests of the TESOL faculty include second language learning, cross cultural studies, and second language acquisition.

Master of Arts in Spanish

Admission
Minimum requirements for admission are a grade point average (GPA) of 3.0 for the last 60 attempted semester credit hours earned as an undergraduate or a total score of 1000 on the verbal-quantitative section of the Graduate Record Examination (GRE). International 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 Spanish or a related field and approval by the Graduate Committee of the Department of Foreign Languages and Literatures. Students are expected to have read widely in Hispanic literature and to be competent in understanding, reading, and writing Spanish. They should also be familiar with the vocabularies of literary criticism and grammar.

Applicants are urged to apply for the program before June 1 for the subsequent fall term and before December 1 for the spring term. Those enrolling for the summer session should apply before March 1. Applicants should have taken the GRE before these dates.

Degree Requirements
The master's degree program in Spanish has a thesis or non-thesis option. A total of thirty-six semester hours of course work for the non-thesis option or thirty semester hours of course work plus 6 hours for the thesis option is required of students seeking the Master's degree in Spanish. A minimum grade of "B" must be earned in each course. Students are allowed to transfer six semester hours of corresponding graduate courses with the grade of "A" or "B" from an accredited university. University policies and procedures will be followed for all degree requirements. Courses are to be chosen from the following categories in accordance with the number of hours designated in each.

Research Methods
Spanish Language Study
Hispanic Culture and Civilization
Hispanic Literature (at least one seminar)

Total 24 Semester Hours
The remaining elective credit hours of course work are six hours for the thesis option and twelve for the non-thesis. The students must choose electives from the additional, available courses listed below in conjunction with their faculty advisor. The aim of the selections should be to complement the acquisition of knowledge in the particular area of Hispanic studies chosen.

**Course Requirements**

<table>
<thead>
<tr>
<th>Part</th>
<th>Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I</strong></td>
<td>SPW 5XXX Research Methods</td>
<td>3 Semester Hours</td>
</tr>
<tr>
<td><strong>Part II - Spanish Language Study</strong></td>
<td>SPN 5705 Introduction to Spanish Linguistics</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPN 5825 Spanish Dialectology</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPN 5845 History of the Spanish Language</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPN 6805 Spanish Morphosyntax</td>
<td>3 hours</td>
</tr>
<tr>
<td><strong>Part III - Hispanic Culture and Civilization</strong></td>
<td>SPN 5502 Hispanic Culture of the United States</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPN 5536 Spanish Peninsular Culture and Civilization</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPN 5506 Spanish American Culture and Civilization</td>
<td>3 hours</td>
</tr>
<tr>
<td><strong>Part IV - Hispanic Literature</strong></td>
<td>*SPW 5825 Literary Theory Pro-Seminar (May be repeated for credit with different topics)</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6XXX Medieval Spanish Literature</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6217 Spanish American Prose I</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6218 Spanish American Prose II</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6209 Nineteenth Century Spanish Novel</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6306 Spanish American Drama I</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6307 Spanish American Drama II</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6315 Golden Age Drama</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6XXX Golden Age Prose</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6356 Spanish American Poetry</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6585 Contemporary Peninsular Literature</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6725 The Generation of 98</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>SPW 6971 Thesis</td>
<td>6 hours</td>
</tr>
</tbody>
</table>

* Examples of Seminar Series Topics: Don Quixote, Spanish American Literature Written by Women, Gabriel García Márquez.

| Part V - Methodology (Electives) | FLE 5870 Methods of Teaching Spanish | 3 hours |
| | FLE 5875 Computer Application in Teaching the Spanish Language | 3 hours |

**Comprehensive Examination and Reading List**

Students must pass a comprehensive examination in order to qualify for the master's degree in Spanish. This examination is based on a knowledge of the civilization and literature of Spain or Latin America, and basic concepts of linguistic theory and analysis.

Since this examination will be given toward the end of the course work, it is expected that the student will have developed an ability to analyze literature, culture, and linguistics at a very high level, and understand the forces that affected civilization. It is also expected that the responses, both written and oral, will show an excellent command of the Spanish language.

The department will allow the student to choose a reading list made up of either the major Peninsular or Latin American works with which the student must be very familiar. The comprehensive exam will be based on the reading list which the student chooses and the courses which the student has taken. The exam will be a two-part, written exam in Span-
ish consisting of a two-hour exam based on the reading list and a two-hour exam based on the courses which the student has taken. Both these exams will be given on the same day, one in the morning and one in the afternoon. A third exam, which will be a one-hour oral exam, will be given by a committee of three faculty members. This exam will allow the student to expand more readily on particular points of culture, literature, and linguistics, and also to show capability in the use of the spoken language.

Master of Arts in TESOL

The Master of Arts in TESOL is an interdisciplinary graduate program offered by the College of Arts and Sciences and the College of Education. It provides a strong foundation in language acquisition, use, and pedagogy. The curriculum incorporates the five required courses for the ESOL Endorsement and offers electives in applied linguistics and multicultural education. Graduate students also expand their knowledge by utilizing the multimedia language classroom equipped with the latest software programs for second language learners.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission are (1) a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study and a minimum score of at least 840 on the GRE or (2) a GPA of less than 3.0 combined with a GRE of 1000 or above. International students must score at least 550 on the Test of English as a Foreign Language (TOEFL). In addition, the department requires three letters of recommendation and a written statement of past experience, area of interest, and immediate and long-range goals.

Degree Requirements

Degree-seeking students in the TESOL program may elect to follow either a thesis (TSL 6971; 30 semester hours) or a non-thesis (36 semester hours) course of study. The thesis requirement is appropriate for those wishing to pursue a doctoral program in TESOL or for those wishing to research current issues in the discipline. The thesis requirement may be replaced by 9 semester hours of approved course work so that the non-thesis option requires a total of 36 hours.

All students must take a comprehensive written examination covering the core TSL courses. This examination is normally taken in the second year of graduate work and will be reviewed by members of the TESOL Graduate Committee in their areas of expertise.

Core Courses

The seven core courses provide a strong foundation in the content of the discipline. The electives provide for three distinct areas of interest: linguistics, multicultural education, and research. Students may opt to take their elective credit in one of these areas depending on their interests. A strong research base is available for those students wishing to pursue the thesis option and advanced graduate degrees.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 5345</td>
<td>Methods of ESOL Teaching</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 5525</td>
<td>ESOL Cultural Diversity</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 6142</td>
<td>Critical Approaches to ESOL</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 6240</td>
<td>Applied Linguistics in ESOL</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 6440</td>
<td>Problems in Evaluation in ESOL</td>
<td>3 hours</td>
</tr>
<tr>
<td>TSL 6540</td>
<td>Issues in Second Language Acquisition</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIN 5137</td>
<td>Linguistics</td>
<td>3 hours</td>
</tr>
<tr>
<td>LIN 6032</td>
<td>Problems in Linguistics</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

21 Semester Hours

6 Semester Hours
History Faculty

T. Colbourn, Ph.D. ........................................................................ Professor
R. C. Crepeau, Ph.D. .................................................................... Chair and Professor
J. B. Fernandez, Ph.D. ................................................................. Professor
E. B. Fetscher, Ph.D. .................................................................. Professor
E. F. Kallina, Jr., Ph.D. ................................................................. Professor
S. A. Leckie, Ph.D. ...................................................................... Professor
B. F. Pauley, Ph.D. ...................................................................... Professor
C. E. Adams, Ph.D. .................................................................... Associate Professor
J. L. Evans, Ph.D. ........................................................................ Associate Professor
C. Austin, Ph.D. ........................................................................... Assistant Professor
R. J. Beiler, Ph.D. ........................................................................ Assistant Professor
M. S. Doran, Ph.D. ...................................................................... Assistant Professor
K. Frederickson, Ph.D. ................................................................. Assistant Professor
T. D. Greenhaw, Ph.D. ................................................................. Assistant Professor
D. Velez, Ph.D. ........................................................................... Assistant Professor
H. Zhang, Ph.D. ........................................................................... Assistant Professor
M. Woelk, M.A. ........................................................................... Visiting Instructor

Master of Arts in History

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission to the program are an undergraduate degree in History (or an equivalent), a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study, and a score of 1000 on the verbal-quantitative sections of the Graduate Record Examination (GRE), with a score of 500 or higher on the verbal section of this test.
Applicants who meet all of the above requirements but do not have an undergraduate degree in history must complete 12 hours of history course work at the 3000 and 4000 level, with a GPA in these courses of at least 3.25 before entering the graduate program. These courses will not count toward the graduate degree. The History Department Graduate Committee can waive this requirement, in whole or in part, when applicants present evidence that they are capable of successfully completing graduate history courses, either by submitting a portfolio documenting relevant past work or volunteer experience or by providing a sample of their own written work, which indicates that they have the research and writing skills needed to do graduate-level work in history.

If, in addition, applicants do not meet one of the other requirements for entry, such as a GPA of 3.0 for the last 60 semester hours of attempted undergraduate course work or a score of 1000 on the combined verbal-quantitative sections of the GRE and a score of 500 on the verbal portion of the GRE, they must complete 12 hours of course work at the 3000 and 4000 level with a GPA of 3.5 before they can be admitted to the graduate program.

Applicants who hold an undergraduate degree in history but do not have a GPA of 3.0 in the last 60 attempted semester hours or do not score 1000 or more on the combined verbal-quantitative sections of the GRE with a score of 500 in the verbal portion may take up to 9 hours of graduate courses as post-baccalaureate students. To be admitted into the graduate program, however, they must earn a GPA of 3.3 or better in the history courses they have taken under this status.

All applicants to the program must submit a written statement describing their personal goals and objectives in seeking a graduate degree in history. In addition, transfer students from outside the History Department must submit two letters of recommendation.

Degree Requirements
The Master of Arts in History requires 36 semester hours with no graduate credit given for any grade lower than "B." Specific requirements are:

- HIS 6159 Historiography 3 hours
- HIS 6971 Thesis 6-9 hours

Area of Concentration (Eastern or Western Hemisphere) 18 Semester Hours
Outside Area of Concentration in History 6-9 Semester Hours
Electives 0-3 Semester Hours

Students will also be expected to demonstrate a reading competency in one foreign language or to display a proficiency in statistical methods. The foreign language competence must be completed one semester prior to the thesis defense.

The statistical option is open only to those in American history. Students selecting this option must meet with the Chair of the Statistics Department to determine a sequence of courses that will help them achieve their stated research objectives. Upon satisfactory completion of that sequence, they must pass a proficiency examination administered by the Statistics Department, no later than one semester prior to their thesis defense.

Examination Requirements
Each candidate for the Master of Arts in History must pass a written examination upon the conclusion of regular course work. Each candidate will also be expected to conduct a thesis defense.

Minimum Hours Required for M.A. 36 Semester Hours
Mathematics Department

David Rollins ............................................ Program Coordinator
Office: PH 403D, Phone: (407) 823-5239, e-mail: drollins@pegasus.cc.ucf.edu

Mathematics Faculty
L. C. Andrews, Ph.D. ...................................... Professor
L. H. Armstrong, Ph.D. ................................... Professor
R. C. Brigham, Ph.D. ....................................... Professor
J. R. Cannon, Ph.D. ...................................... Chair and Professor
L. Debnath, Ph.D. .......................................... Professor
P. Hilton, Ph.D. ............................................ Distinguished Professor
P. Mikusinski, Ph.D. ....................................... Professor
R. N. Mohapatra, Ph.D. .................................... Professor
G. D. Richardson, Ph.D. .................................. Professor
H. Shenwood, Ph.D. ....................................... Professor
B. K. Shivamoggi, Ph.D. .................................. Professor
M. D. Taylor, Ph.D. ....................................... Professor
K. Vajravelu, Ph.D. ....................................... Professor
A. I. Zayed, Ph.D. ....................................... Professor
J. M. Anthony, Ph.D. .................................... Associate Professor
R. M. Caron, Ph.D. ....................................... Associate Professor
S. R. Choudhury, Ph.D. .................................. Associate Professor
M. N. Heinzer, Ph.D. .................................... Associate Professor
X. Li, Ph.D. .................................................. Associate Professor
C. P. Rautenstrauch, Ph.D. .................................. Associate Professor
R. S. Rodriguez, Ph.D. .................................. Associate Professor
D. K. Rollins, Ph.D. ...................................... Associate Professor
R. C. Jones, Ph.D. ....................................... Assistant Professor
A. Katesvich, Ph.D. ...................................... Assistant Professor
H. M. Martin, Ph.D. ...................................... Assistant Professor
M. Y. Pensky, Ph.D. ...................................... Assistant Professor
F. L. Salzmann, Ph.D. ................................... Assistant Professor
A. Tovbis, Ph.D. ......................................... Assistant Professor

Joint Appointees
T. Clarke, Ph.D. ........................................ Associate Faculty
A. J. Kassab, Ph.D. ...................................... Assistant Professor of Engineering
D. W. Nicholson, Ph.D. .................................... Professor of Engineering
R. L. Phillips, Ph.D. ...................................... Professor of Engineering

Graduate Program in Mathematics
The Department of Mathematics offers a Master of Science degree in Mathematical Science and a Doctor of Philosophy degree in Mathematics. Both degrees are intended to provide a broad base in applied and industrial mathematics. Research interests of the faculty include applied analysis, differential equations, methods of mathematical physics, probability and mathematical statistics, functional analysis, numerical analysis, approximation theory, nonlinear dynamics, fluid mechanics, wave propagation, algebra, number theory, and combinatorics and graph theory.

Admission
The Graduate Record Examination (GRE) is required of all graduate students. Admission requirements are the standard university criteria of either: (1) at least the equivalent of a 3.0 (out of 4.0) grade point average (GPA) for the last 60 attempted semester hours of credit earned toward the baccalaureate; or, (2) a GRE score of at least 1000 for the combined verbal-quantitative sections of the General (Aptitude) Test; or (3) a prior graduate degree from an accredited institution. GRE results must be less than five years old. Transfer of credits from other programs will be considered on a course-by-course basis.
Additionally, students entering the graduate program with regular status are assumed to have a working knowledge of undergraduate calculus, differential equations, linear algebra (or matrix theory), boundary value problems, statistics, computer programming, and maturity in the language of advanced calculus (at the level of MAA 4226). 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. Such courses, unless specially approved, will not count toward the graduate degree. Applicants not qualified for regular status may be admitted initially to the university in a post-baccalaureate status, although only nine hours in this status can be transferred into a graduate program. Students whose native language is not English will be required to obtain a minimum score of 550 in TOEFL.

Admission to Ph.D. Program
Admission to the Ph.D. Program in Mathematics is formalized by the university upon the recommendation of the Department of Mathematics. To be eligible to take the Ph.D. Qualifying Examination, the student must have a minimum grade point average of 3.0 (out of 4.0) in all work beyond baccalaureate.

Master of Science in Mathematical Science

Degree Requirements
There are two options for the master’s degree, thesis and non-thesis. In either option, a student should find an advisor who participates in designing a program of study. A program of study is presented to the Graduate Curriculum Committee or the Program Coordinator for approval.

Electives
Electives should be chosen in consultation with the Program Coordinator or the student’s thesis advisor and may be chosen from the suggested options: discrete mathematics, general applied mathematics, image processing and computer graphics, mathematical optics, mathematical physics, pure mathematics, rational mechanics, signal analysis, and statistics. A list of courses for these elective options can be obtained from the Program Coordinator. Approved graduate courses outside the department may also be used. The student can take up to six credit hours of approved 4000-level mathematics courses.

Thesis Option
In this option, the Mathematical Science degree requires a total of at least 30 semester hours composed of at least 27 semester hours of course work and 3 semester hours of thesis.

A typical plan of study:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAA 5210</td>
<td>Topics in Advanced Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MAA 5405</td>
<td>Complex Variables</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5336</td>
<td>Ordinary Differential Equations and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5385</td>
<td>Applied Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5407</td>
<td>Applied Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>MAS 5145</td>
<td>Advanced Linear Algebra and Matrix Theory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td>MAP 6971</td>
<td>Thesis</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Hours Required for M.S. 30 Semester Hours

Thesis
Three semester hours of credit will be given for the writing of a thesis. An oral defense of the thesis will be required. It is strongly recommended that the student select a thesis advisor by the completion of 18 semester hours of course work.

Non-Thesis Option
In this option the student takes 36 semester hours of course work with at least 21 in the Department of Mathematics. The student must pass a comprehensive examination given in the final semester of the student’s program, based on the program of study. The exami-
nation will be supervised by a committee composed of the advisor and at least two other faculty members from the Department of Mathematics. A "P" or "NP" (or "S" or "U") grade is given on the examination. The examination may be repeated twice if necessary.

A typical plan of study:

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</thead>
<tbody>
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<tr>
<td>MAA 5405</td>
<td>Complex Variables</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5336</td>
<td>Ordinary Differential Equations and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5385</td>
<td>Applied Numerical Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5407</td>
<td>Applied Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>MAS 5145</td>
<td>Advanced Linear Algebra and Matrix Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Hours Required for M.S. 36 Semester Hours

Doctor of Philosophy in Mathematics

Degree Requirements

The Doctor of Philosophy (Ph.D.) program consists of at least 75 semester hours of course work of which a minimum of 15 hours are required for the dissertation. In addition to the dissertation hours, the program requirements include 18 hours of core courses, 6-12 hours of course work at the graduate level outside the department, and the remainder made up of electives and independent study courses. No more than 12 semester hours of independent study may be credited toward the degree.

Electives should be chosen in consultation with the student's advisory committee and may be chosen from the suggested options: Discrete Mathematics, General Applied Mathematics, Image Processing and Computer Graphics, Mathematical Physics, Pure Mathematics, Rational Mechanics, Signal Analysis, and Statistics. A list of courses for these elective options can be obtained from the Graduate Coordinator.

Courses taken outside the department are to be in a single area of application of mathematics that is related to the student's doctoral work. These courses are to be selected in consultation with the student's advisory committee. Students are encouraged to include in their plan of study a maximum of 12 semester hours of course work outside the department. Students can take up to 6 semester hours of approved 4000-level mathematics courses. In addition to the 75 semester hours of the program, a minimum of 6 hours of an approved foreign language and a minimum of 3 hours of an approved computer language are required. The language and computer courses may have been taken at any point in the student's post-secondary career.

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAA 5210</td>
<td>Topics in Advanced Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MAA 5404</td>
<td>Complex Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MAA 6306</td>
<td>Real Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5145</td>
<td>Advanced Linear Algebra and Matrix Theory</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5336</td>
<td>Ordinary Differential Equations and Applications</td>
<td>3</td>
</tr>
<tr>
<td>MAP 5407</td>
<td>Applied Mathematics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

Dissertation

Minimum Hours Required for Ph.D. 75 Semester Hours

Examinations

In accordance with university requirements, a prospective doctoral student has to successfully pass the following examinations:
- Qualifying Examination
- Candidacy Examination
- Dissertation Defense

Qualifying Examination

The qualifying examination is composed of six parts, with each part based on one of the six core courses. The student must pass all six parts. All six parts must be completed.
within three attempts with any number of parts being taken in each attempt. If a student cannot complete these examinations in the three attempts, the student must leave the doctoral program.

The qualifying examination is a written examination that will be administered twice a year. Students normally start taking this exam at the end of the first year and are expected to have completed the exams by the end of the second year unless a written request for a postponement has been approved by the Graduate Committee at least two months prior to the examination date.

After passing the qualifying exam, the student must select a dissertation advisor. Finding a dissertation advisor is the responsibility of the student and should be done as soon as possible. In consultation with the dissertation advisor, the student should form an advisory committee. The dissertation advisor will be the chair of the student's advisory committee. This committee will approve a plan of study for the doctoral student and will recommend which courses outside the department should be taken.

Candidacy Examination
The candidacy examination will be administered by the student's committee and will be tailored to the student's individual program. It can be attempted anytime after passing the qualifying examination, and after the student has begun research but prior to the end of the third year following the qualifying examination. The candidacy examination can be taken at most twice.

Dissertation Defense
Upon completion of a student's research, the student's committee will schedule an oral defense of the dissertation. The student has seven years from the date of admission to the doctoral program to complete the dissertation.

Music Department

Lyman Brodie ................................................................. Chair
Office: FA 105A, Phone (407) 823-2869

Currently the only master's program in music is in Music Education.

Music Education

Dr. Carol Scott-Kassner .................................................. Faculty Advisor
Office: COE 359, Phone: (407) 823-6493

There are two master's programs available in music education: a Master of Arts in Teaching (M.A.T.) and a Master of Education (M.Ed.). These degrees are offered through the College of Education in cooperation with the Department of Music. For specifics about courses, see the Music Education listing in the College of Education section.

The M.A.T. program is for people who have a Bachelor of Arts and wish to attain certification to teach music in the Florida public schools along with a master's degree. People entering this program without a B.A. in music will be expected to complete undergraduate requirements for a music major in addition to the requirements for the master's degree. Undergraduate courses in music education may also be required as corequisites for all students who are missing key courses necessary to meet a standard of excellence as a music educator.

The M.Ed. program is for people who are already certified teachers and wish to develop advanced skills and understandings in the field of music education. All students take a range of courses in education, music, and music education. A written examination and an action research study are required at the completion of the degree.
Joint Appointees
M. J. Solieau, Ph.D. Director of CREOL and Professor of Electrical Engineering
P. Deiftett, Ph.D. Associate Professor, Electrical Engineering
Aravinda Kar, Ph.D. Assistant Professor of Mechanical, Materials, and Aerospace Engineering

Graduate Programs in Physics
The Department of Physics offers a Master of Science degree and a Doctor of Philosophy degree. Research opportunities are available in optics and lasers, condensed matter physics, complex systems, biophysics, elementary particle theory, gravitation, and atomic and molecular physics. The graduate degree programs in physics have two tracks, a General Physics track and an Optical Physics track. Many of our faculty are also in the Center for Research and Education in Optics and Lasers (CREOL) and participate in the interdisciplinary programs in Optical Science and Engineering.

Admission
The Graduate Record Examination (GRE) is required of all applicants. Minimum requirements in order to be considered for admission to the graduate program in Physics are the standard university criteria of a 3.0 (A=4) grade point average (GPA) for the last 60 attempted semester hours of credit earned toward the baccalaureate, or a GRE score of at least 1000 on the combined verbal-quantitative sections of the General (Aptitude) Test.
The GRE subject test in physics is required for admission to the doctoral program. All admissions to graduate status are competitive and based on availability of faculty for sponsoring research. Students entering the graduate program with regular status are normally expected to have completed course work generally required for a bachelor's degree in physics, including mechanics, electricity and magnetism, thermodynamics, and quantum mechanics. The admission deadline for the fall semester of each academic year is usually February 15 of the preceding spring, although exceptions may be granted.

**Master of Science in Physics**

**Minimum Hours Required for M.S.**

The Master of Science in Physics degree requires a total of 33 semester hours. The student has the option of choosing either a general physics track or a track in optical physics. In either track, there are a thesis and a non-thesis option for the master's degree. All master's students must take 18 semester hours of core courses, identical to the Ph.D. core courses for either track. The thesis option requires 9 additional semester hours of electives, plus 6 semester hours of thesis. The non-thesis option instead requires 15 semester hours of electives and a written comprehensive exit examination. All electives must be approved by the student's advisory committee. Courses titled "for teachers" do not satisfy elective requirements for the Master of Science in Physics.

**Core Courses**

All students are required to take:

- PHY 5606 Quantum Mechanics I
- PHY 5346 Electrodynamics I
- PHY 6347 Electrodynamics II

The remaining core courses depend on which track the student chooses:

**General Physics**

- PHY 5524 Statistical Physics
- PHY 6246 Classical Mechanics
- PHY 6624 Quantum Mechanics II

**Optical Physics**

- EEL 5441 Introduction to Wave Optics
- PHY 5446 Laser Principles
- PHY 6447 Quantum Optics

**Electives**

9 to 15 Semester Hours

**Thesis**

The Master of Science in Physics candidate who has chosen the thesis option is required to conduct a program of original scientific research or some investigation involving a creative element and to submit a written thesis detailing these investigations. An oral defense and examination of the thesis is required.

**Doctor of Philosophy in Physics**

A student has the option of choosing either a general physics track or a track in optical physics. Both tracts require a total of 72 semester hours for completion and specify a set of six required core courses (18 hours), four electives (12 hours), and a minimum of 15 hours of dissertation. Twenty-seven hours may consist of appropriately selected research, dissertation, and elective courses. The electives are advanced courses in physics or other fields and are chosen by the student in consultation with the student's advisory committee. At least 3 hours of the electives must be outside the student's research specialty. In addition, each student is required to participate in the Physics Colloquium/Seminar program. No more than 12 semester hours of independent study may be credited toward the Doctor of Philosophy degree.

**Minimum Hours Required for Ph.D.**

72 Semester Hours
PHYSICS

Core Courses 18 Semester Hours
All students are required to take:
PHY 5606 Quantum Mechanics I
PHY 5346 Electrodynamics I
PHY 6347 Electrodynamics II

The remaining core courses depend on which track the student chooses:

General Physics
PHY 5524 Statistical Physics
PHY 6246 Classical Mechanics
PHY 6624 Quantum Mechanics II

Optical Physics
EEL 5441 Introduction to Wave Optics
PHY 5446 Laser Principles
PHY 6447 Quantum Optics

Elective Courses 12 Semester Hours
PHY 5431 Optical Properties of Materials I
PHY 6353 Accelerator Physics
PHY 6355 Physics of Free Electrons
PHY 6434 Nonlinear Optics
PHY 6435 Non-Linear Guided Wave Optics
PHY 6448 Specific Laser Systems
PHY 6667 Advanced Quantum Mechanics
PHY 6818 Directed Research
PHY 6938 Special Topics/Seminars
PHY 7019 Ph.D. Research
PHZ 5304 Nuclear Physics
PHZ 5405 Condensed Matter Physics
PHZ 5505 Plasma Physics
PHZ 6115 Theoretical Methods
PHZ 6156 Advanced Computational Physics
PHZ 6204 Atomic and Molecular Spectroscopy
PHZ 6234 Atomic Physics
PHZ 6424 Optical Properties of Solids
PHZ 6425 Advanced Condensed Matter Physics

The courses not taken in the core track may be used as electives.

Courses titled “for teachers” do not satisfy elective requirements for the M.S. or Ph.D. degree in physics.

Additional Electives 27 Semester Hours

Dissertation 15 Semester Hours

Qualifying Examination
Continuation in doctoral status is contingent upon passing a qualifying examination consisting of both written and oral portions that cover all material included in the core courses and undergraduate preparation in physics. The written examination is divided into two sections appropriate to each of the above tracks, and also covers statistical mechanics and classical mechanics at the advanced undergraduate level. Students are required to take the qualifying exam after three semesters (excluding summers). A second and final opportunity must follow at the next available exam. A student failing at the second attempt may continue toward a master's degree.

Candidacy Examination and Dissertation Proposal
The student writes a proposal of the research planned for the dissertation and then is orally examined on it and the general research area by the dissertation committee. This examination can be attempted anytime after passing the qualifying examination, and after the student has begun research. Typically it should be taken a semester or two after the qualifying examination. After passing the candidacy examination, the student can register for official dissertation hours (PHY 7980). Before passing the candidacy, research credit can be earned as PHY 6918.

Dissertation Defense
The final oral defense of the dissertation is administered by the student's dissertation committee following completion of a written dissertation describing the student's research.
Master of Arts in Political Science

The Master of Arts in Political Science degree program is designed to accommodate a range of professional and intellectual needs. These include: (1) preparing students to enter positions in government and the private sector in which the ability to comprehend, influence, and respond to government policy is critical; (2) preparing students, through the M.A., for pursuit of a Ph.D. degree in political science at other institutions; and (3) providing a well-rounded substantive curriculum for secondary school teachers seeking higher degrees and for teachers in community colleges.

Admission

In addition to the minimum requirements for admission to UCF, any student wishing to enroll in graduate courses in political science must meet the department's requirements for graduate status (either regular or conditional graduate status) or must hold regular graduate status in another program at UCF.

Requirements for regular status are:

- At least 12 semester hours of undergraduate course work in political science, including Scope and Methods of Political Science (POS 3703) or its equivalent. Students must have a grade of "B" or better in this course work.
  AND
- Three letters of recommendation from individuals who can attest to the applicant's potential for graduate work. These letters should address the applicant's ability to think analytically and to communicate clearly. These letters should be sent directly to the Program Coordinator.
  AND
- An undergraduate grade point average of at least 3.0 overall.
  OR
- A combined (quantitative and verbal) GRE score of at least 1000.

NOTE: All applicants are required to take the GRE. Admission generally will be denied to any applicant whose GRE score is below 850 (quantitative plus verbal), regardless of his or her undergraduate grade point average.

Conditional Graduate Status

Applicants who are not qualified for regular graduate status may petition by letter the department's Graduate Committee for admission to conditional graduate status. The applicant's petition must address the specific reasons behind the failure to qualify for regular
status. Students holding conditional graduate status must meet the following requirements before applying for regular status:

- Removal of any deficiencies in undergraduate preparation. Undergraduate preparation includes completion of Scope and Methods of Political Science (POS 3703) or its equivalent and at least one upper division course in each of the following areas: American politics, international or comparative politics, and political theory. Students must complete these courses with a grade of "B" or better.
- For persons otherwise not qualified for regular graduate status, completion of three graduate courses, with grades of "B" or better.
- Completion of any other requirements determined by the Graduate Committee and stated on the student's Program of Graduate Study form.

Degree Requirements
The Department of Political Science offers students two tracks toward the master's degree: the political analysis track and the public policy track. The political analysis track provides an in-depth understanding of political life in the American case and in comparative perspective: The nature of institutions, the role of political organizations, and the effect of mass political behavior. The political analysis track is recommended for students who want to enter community college teaching or who wish to seek a doctorate at another institution. The public policy track prepares students to handle complex questions arising from key areas of government activity: Issues in science and technology, health and environmental regulation, foreign and defense policy, and other important areas. The public policy track is recommended for students most interested in developing a professional expertise in a policy specialty or who would like to enhance their current sphere of knowledge.

After being admitted (either as regular or conditional), students must meet with one of the graduate advisors to discuss their plans for graduate study and to obtain permission to enroll in graduate courses in the department. After completing nine hours of course work, all students must determine a preliminary program of study, either in the political analysis track or the public policy track. Both tracks require 30 semester hours of credit (24 hours of course work plus 6 hours of thesis), and both share the same core requirements.

Core Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS 6746</td>
<td>Quantitative Methods in Political Research</td>
<td>3</td>
</tr>
<tr>
<td>POS 6045</td>
<td>Seminar in American Politics</td>
<td>3</td>
</tr>
<tr>
<td>POT 6007</td>
<td>Seminar in Political Theory AND INR 6007</td>
<td>3</td>
</tr>
<tr>
<td>INR 6091</td>
<td>Seminar in Comparative Politics OR POS 6938</td>
<td>3</td>
</tr>
</tbody>
</table>

Political Analysis Track

30 Semester Hours

A program of study in the political analysis track consists of:

Core Requirements AND

Three special topics courses from:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS 6938</td>
<td>American Politics</td>
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</tr>
<tr>
<td>POS 6938</td>
<td>Political Theory</td>
<td>3</td>
</tr>
<tr>
<td>POS 6938</td>
<td>International Relations</td>
<td>3</td>
</tr>
<tr>
<td>POS 6938</td>
<td>Comparative Politics</td>
<td>3</td>
</tr>
<tr>
<td>POS 6938</td>
<td>Political Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective

3 Semester Hours

Thesis

6 Semester Hours
Public Policy Track
30 Semester Hours
A program of study in the public policy track consists of:

Core Requirements AND  
PUP 6007 Public Policy Analysis  
15 Semester Hours

Two special topics courses from:  
PUP 6938 Science Policy  
PUP 6938 Social Policy  
PUP 6938 Foreign and Defense Policy
6 Semester Hours

Elective
3 Semester Hours

Thesis
6 Semester Hours

The political science seminars provide the common core of knowledge for students in both tracks. The specific subject matter of the topics courses will vary, depending on the specialization of the instructor or the interests of the students in each track. Upon approval of the Graduate Committee, topics courses may be repeated for credit.

Ordinarily, elective credits will be taken within political science. Students wishing to earn elective credits from another department must obtain the approval from the Graduate Committee.

After completion of the 24 hours of course work in the chosen track, the student will form a committee of three advisors and submit a written thesis prospectus which, upon acceptance by the committee, will become a part of the student’s permanent file. Guidelines for the prospectus are available from the Program Coordinator. The completed thesis must be submitted to the thesis committee at least eight weeks prior to the date on which the degree is to be awarded. The student will then orally defend the thesis.

Examination
All candidates for a master’s degree must take a comprehensive written examination. The examination will usually be administered after satisfactory completion of 24 hours. The examination will be based on the political science course work contained in the student’s program of study. In addition, all students will be tested in the area of quantitative methods. The examination will be offered two times each academic year, during the final examination period for the fall and spring semesters. Students must inform the Program Coordinator of their intention to take the examination at least six weeks prior to its scheduled date. A committee, consisting of all political science faculty from whom the student has taken courses, will develop questions for the comprehensive examination. Students not passing the examination may take it a second time within one calendar year, but no student will be allowed to take the examination more than twice.
Psychology Department

Burton I. Blau .............................................................. Program Coordinator
Office: PH 302C, Phone: (407) 823-2157  Clinical Psychology Program
Wayne A. Burroughs .......................................................... Program Coordinator
Office: PH 302K, Phone: (407) 823-5858  Industrial/Organizational Program
Richard D. Gilson ............................................................ Program Coordinator
Office: PH 302F, Phone: (407) 823-2755  Human Factors Program

Psychology Faculty
D. W. Abbott, Ph.D. .......................................................... Professor
W. A. Burroughs, Ph.D. ...................................................... Professor
R. D. Gilson, Ph.D. ............................................................ Professor
J. C. Hitt, Ph.D. ............................................................... President and Professor
J. M. Koonce, Ph.D. ............................................................ Interim Chair and Professor
J. M. McGuire, Ph.D. .......................................................... Director, CAHFA and Professor
B. B. Morgan, Jr., Ph.D. ..................................................... Professor
E. J. Rinalducci, Ph.D. ......................................................... Professor
J. B. Rollins, Ph.D. ............................................................. Professor
M. H. Thomas, Ph.D. ........................................................... Professor
R. D. Tucker, Ph.D. ............................................................ Professor
B. I. Blau, Ph.D. ............................................................... Associate Professor
J. C. Brophy, Ph.D. ............................................................. Associate Professor
R. D. Fisher, Ph.D. ............................................................. Associate Professor
C. L. Hanson, Ph.D. ............................................................ Associate Professor
B. J. Jensen, Ph.D. .............................................................. Associate Professor
E. C. Shirkey, Ph.D. ............................................................ Associate Professor
J. A. Smith, Ph.D. .............................................................. Associate Professor
P. M. Tell, Ph.D. ............................................................... Associate Professor
A. Y. Wang, Ph.D. .............................................................. Associate Professor
W. Wocton, Ph.D. .............................................................. Associate Professor
C. A. Bowers, Ph.D. ........................................................... Assistant Professor
S. T. Dunn, Ph.D. .............................................................. Assistant Professor
B. A. Fritzsche, Ph.D. .......................................................... Assistant Professor
M. Mouloua, Ph.D. .............................................................. Assistant Professor
J. L. Weaver, Ph.D. ............................................................. Instructor
M. H. Newlin ................................................................. Instructor
M. J. Levooy, Ph.D. ............................................................. Instructor
M. E. Dunn, Ph.D. .............................................................. Visiting Scholar

The Psychology Department offers three graduate programs. Master’s programs are offered in Clinical Psychology and in Industrial and Organizational Psychology. A doctoral program is available in Human Factors Psychology.

Master of Science in Clinical Psychology

Admission
The Graduate Record Examination (GRE) is required of all graduate students. In addition to the university minimum admission criterion of a quantitative-verbal score of 1000 on the GRE or a GPA of 3.0 for the last 60 semester hours of attempted work for the baccalaureate degree.

To be considered for admission, applicants must present in a single packet to Graduate Studies, University of Central Florida, P.O. Box 160112, Orlando, FL 32816-0112:

☐ A completed UCF graduate degree program application form
☐ Evidence of successful completion of undergraduate courses in statistics and in the general area of experimental psychology
☐ Official scores on the Graduate Record Examination (taken within the last five years)
Completed transcripts showing a baccalaureate degree (and master’s degree, if conferred) and grades for all undergraduate and graduate work

A resume and written statement outlining the student’s academic and professional goals

Three letters of reference, with at least two furnished by college or university professors who are acquainted with the applicant.

A file of all requested material must be submitted by February 1. Acceptance decisions are made only in the spring semester for admission in the fall of each year. A department admissions committee reviews the student's credentials and may invite a group of candidates for an interview. Final selection is based on both paper credentials and the interview, if held.

Competency/Prerequisite Requirements
Applicants must have either a baccalaureate degree with a major in psychology or a baccalaureate degree and completion of undergraduate psychology content course areas prior to matriculation: introduction to psychology; abnormal psychology; developmental psychology (lifespan preferred) or child psychology; personality theories; learning; physiological psychology; and a course in research methods or statistics.

The Master of Science degree program in Clinical Psychology is concerned with the application of psychological principles to individuals. Major areas of emphasis include 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 clinical services through community agencies. Graduates have been involved in mental health rehabilitation through individual, marital, family, and group psychotherapy, as well as crisis intervention and specialized therapeutic procedures. Graduates have met the education criteria for licensure as mental health counselors in Florida. Course work includes experiential clinical labs in which some degree of personal self-disclosure is expected in order to fulfill the goals of the training program. Admissions into the clinical master’s program is highly competitive with all information that might be available to the committee (e.g., GRE scores, GPA, letters of reference, personal statement, clinical experience, research experience, interview performance) considered in admissions decisions. Many applicants who meet minimum university requirements may not be admitted to the program.

Degree Requirements
The M.S. degree program in Clinical Psychology is a two-year, four-semester program for full-time students with no summer course work. The program consists of a minimum of 54 semester hours of work as follows:

<table>
<thead>
<tr>
<th>Academic Course Work</th>
<th>34 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLP 6441 Introduction to Individual Psychological Assessment*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6445 Individual Psychological Assessment II*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6456 Individual Counseling—Theory and Practice*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6457 Group Psychotherapy*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6459 Human Sexuality, Marriage, and Sex Therapies*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6460 Introduction to Child, Adolescent, and Family Therapies*</td>
<td>3 hours</td>
</tr>
<tr>
<td>CLP 6932 Ethical and Professional Issues in Mental Health Practice**</td>
<td>3 hours</td>
</tr>
<tr>
<td>DEP 5057 Developmental Psychology</td>
<td>3 hours</td>
</tr>
<tr>
<td>PPE 5055 Personality Theories</td>
<td>3 hours</td>
</tr>
<tr>
<td>PSB 6448 Advanced Abnormal and Clinical Psychopharmacology</td>
<td>3 hours</td>
</tr>
<tr>
<td>PSY 6216 Advanced Research Methodology I</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

* Must co-register for the appropriate section of lab.
** Must co-register with CYP 6948.
Labs

Must co-register for one hour with each course as shown above.

CLP 6441L Clinical Lab: Individual Assessment 1 hour
CLP 6445L Clinical Lab: Individual Assessment II 1 hour
CLP 6459L Clinical Lab: Counselling 1 hour
CLP 6457L Clinical Lab: Group Therapy 1 hour
CLP 6459L Clinical Lab: Marriage and Sex Counseling 1 hour
CLP 6460L Clinical Lab: Child, Adolescent, and Family Counseling 1 hour

Internship (See details of program) 6 Semester Hours
CYP 6948 Psychology Internship 6 hours

Treatise (Thesis) 8 Semester Hours
PSY 6938 Research Planning 1 hour
PSY 6939 Research Planning II 1 hour
PSY 6971 Thesis 6 hours

Minimum Hours Required for M.S. 54 Semester Hours

Clinical Internship Requirement
The purpose of the internship requirement is to provide the M.S. candidate in Clinical Psychology with a comprehensive, practical-based experience under direct supervision. A public agency or nonprofit institution offering services to individuals, with nondiscriminatory practices (including ability to assume financial responsibilities) is the prototype. The intern is assigned to an acceptable agency for two consecutive academic semesters (20 hours per semester). 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.

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 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. Interns are provided with a system for maintaining accurate accounts of their 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. Satisfactory completion (grades of "A" or "B") of all first-year clinical course work, and concurrent registration in all second-year clinical course work are the prerequisites for internship placement eligibility.

Treatise (Thesis - PSY 6971)
Each student will satisfactorily complete either a library review research paper or an empirical research project. An oral defense is required.

Master of Science in Industrial/Organizational Psychology

Admission
The Graduate Record Examination (GRE) is required of all graduate students. In addition to the university minimum admission criterion of a quantitative-verbal score of 1000 on the GRE or a GPA of 3.0 for the last 60 semester hours of attempted work for the baccalaureate degree.

To be considered for admission, applicants must present in a single packet to Graduate Studies, University of Central Florida, P.O. Box 160112, Orlando, FL 32816-0112:

- A completed UCF graduate degree program application form
- Evidence of successful completion of undergraduate courses in statistics and in the general area of experimental psychology
- Official scores on the Graduate Record Examination (taken within the last five years)
- Completed transcripts showing a baccalaureate degree (and master's degree, if conferred) and grades for all undergraduate and graduate work
- A resume and written statement outlining the student's academic and professional goals
- Three letters of reference, with at least two furnished by college or university professors who are acquainted with the applicant.

A file of all requested material must be submitted by February 1. Acceptance decisions are made only in the spring semester for admission in the fall of each year. A department admissions committee reviews the student's credentials and may invite a group of candidates for an interview. Final selection is based on both paper credentials and the interview, if held.

**Competency/Prerequisite Requirements**

Applicants must have either a baccalaureate degree with a major in psychology or a baccalaureate degree and completion of undergraduate psychology courses in statistics and research methods, and four additional upper division courses (12 semester hours) in the core content areas of psychology.

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, applied theories of organizational behavior including models of motivation, job satisfaction, and productivity; test theory and construction; assessment center technology; statistics and experimental design and a variety of current topics.

Industrial/Organizational graduates are involved in many issues of critical importance to society including fairness in the selection and treatment of employees, the creation of work environments that maximize the satisfaction and productivity of employees, and the study of technological influences on human performance.

**Degree Requirements**

The M.S. degree program in Industrial/Organizational Psychology is a four-semester program for full-time students with no summer course work; however, practicum placements and thesis research may be completed in the summer. The program consists of a minimum of 40 semester hours of work. The required courses, which are scheduled primarily in the evenings to accommodate working students, are as follows:

<table>
<thead>
<tr>
<th>Academic Course Work</th>
<th>29 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>INP 6215 Assessment Centers and Leadership</td>
<td>3 hours</td>
</tr>
<tr>
<td>INP 6317 Organizational Psychology and Motivation</td>
<td>3 hours</td>
</tr>
<tr>
<td>INP 6605 Training and Performance Appraisal</td>
<td>3 hours</td>
</tr>
<tr>
<td>INP 6937 Applied Problems in Industrial/Organizational Psychology</td>
<td>3 hours</td>
</tr>
<tr>
<td>INP 6938 Job/Task Analysis</td>
<td>3 hours</td>
</tr>
<tr>
<td>INP 6939 Current Topics in Industrial/Organizational Psychology</td>
<td>3 hours</td>
</tr>
<tr>
<td>PSY 6218 Advanced Research Methods</td>
<td>4 hours</td>
</tr>
<tr>
<td>PSY 6308 Psychological Testing I</td>
<td>4 hours</td>
</tr>
<tr>
<td>PSY 6318 Applied Testing and Selection</td>
<td>3 hours</td>
</tr>
<tr>
<td>Practicum</td>
<td></td>
</tr>
<tr>
<td>INP 6946 Industrial Psychology Practicum I</td>
<td>3 hours</td>
</tr>
<tr>
<td>Thesis</td>
<td></td>
</tr>
<tr>
<td>PSY 6971 Thesis</td>
<td>8 hours</td>
</tr>
</tbody>
</table>

**Minimum Hours Required for M.S.**

40 Semester Hours
Qualifying Examinations
All students in the Industrial/Organizational (I/O) program must pass a qualifying examination, which is administered in March of the second year and covers all course work to that point.

Practicum
Practicum 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. Practicum 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.

Practicum assignments involve one semester commitments ranging from 12 to 15 hours per week on the part of the student. Depending on the nature of the assignment, this time may be distributed in a variety of ways among the organization, library, field work, etc.

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; the student is also responsible to the “contact” person in the organization where the work is occurring. Full-time students are typically assigned practicum projects for the fall or spring terms of their second year.

Treatise (Thesis - PSY 5971)
The I/O program requires that the student complete an empirical research thesis with an oral defense.

Doctor of Philosophy in Human Factors Psychology

A Ph.D. professional’s degree program in Human Factors Psychology is offered to those with a baccalaureate or master’s degree in psychology or an allied area. The program seeks to develop the capacity to design, conduct, and apply human factors research in a variety of professional settings. It is patterned on the scientist-practitioner model of the American Psychological Association (APA) and adheres to guidelines established by the committee for Education and Training of APA’s Division 21 (Applied Experimental and Engineering Psychology). The program is designed to meet the accreditation requirements of the Education Committee of the Human Factors and Ergonomics Society and has received provisional accreditation. A variety of research, consulting, and internship arrangements are included in the program.

Students receive training in the content and techniques of human factors psychology—including statistical and quantitative procedures, experimental design, survey methods, computer techniques, and other research methodologies. Students must also select a concentration area, which may be in human-computer interaction, human-machine-environment interface, human performance, human factors in simulation and training, or other areas of interest with the advisor’s authorization. A dissertation representing a significant research contribution to the field is required.

Admissions Policy
The Graduate Record Examination (GRE) is required of all applicants. To be considered for acceptance as a regular graduate student, successful applicants are expected to have a minimum cumulative GRE score of about 1100 on the combined verbal-quantitative sections and an undergraduate GPA of about 3.20 in the last two years of study. However, the final admission criteria will normally be more stringent because of the competitiveness of the application process. Students whose native language is not English will be required to submit scores of at least 550 on the Test of English as a Foreign Language (TOEFL).
In addition, students will not normally be admitted to the program without having completed a minimum amount of basic preparation in content related to experimental psychology. This preparation will be judged on an individual basis but would typically consist of at least 18 semester hours including the following:

- Courses in research methods, computer applications, and statistical methods
- General experimental psychology courses, e.g., learning, physiological, perception, human learning, cognition, motivation, and measurement. Applicants will be evaluated for program prerequisites and advised of any needs for additional preparation. Previous graduate work will be evaluated for credit on a case-by-case basis.

Admission Requirements
To be considered for admission, applicants must present in a single packet to Graduate Studies, University of Central Florida, P.O. Box 160112, Orlando, FL 32816-0112:
- A completed UCF graduate degree program application form
- Evidence of successful completion of undergraduate courses in statistics and in the general area of experimental psychology
- Official scores on the Graduate Record Examination (taken within the last five years)
- Completed transcripts showing a baccalaureate degree (and master's degree, if conferred) and grades for all undergraduate and graduate work
- A resume and written statement outlining the student's academic and professional goals
- Three letters of reference, with at least two furnished by college or university professors who are acquainted with the applicant.

A file of all requested material must be submitted by February 1. Acceptance decisions are made only in the spring semester for admission in the fall of each year.

Residency Requirements
A minimum of one year full-time student status is required. (Full-time is defined by UCF as a minimum of 6 hours per semester for two contiguous semesters.) Students are advised that the program is designed to be completed in 3-4 years of full-time study from the baccalaureate level and in 2-3 years from the master's level.

Required Courses
The Doctor of Philosophy degree in Human Factors Psychology requires a total of 90 semester hours of graduate study. All students must complete both the Psychology core and the Allied areas core.

<table>
<thead>
<tr>
<th>Fall (Year 1)</th>
<th>13 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP 5256</td>
<td>Human Factors I</td>
</tr>
<tr>
<td>PSY 6216</td>
<td>Advanced Research Methodology I</td>
</tr>
<tr>
<td>EXP 6506</td>
<td>Human Cognition and Learning</td>
</tr>
<tr>
<td>PSB 5005</td>
<td>Physiological Psychology</td>
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</table>

<table>
<thead>
<tr>
<th>Spring (Year 1)</th>
<th>11 Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>EXP 6257</td>
<td>Human Factors II</td>
</tr>
<tr>
<td>PSY 6217</td>
<td>Advanced Research Methodology II</td>
</tr>
<tr>
<td>EXP 5208</td>
<td>Sensation and Perception</td>
</tr>
<tr>
<td>PSY 5938</td>
<td>Research Planning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer (Year 1)</th>
<th>6 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 5248C</td>
<td>Ergonomics</td>
</tr>
<tr>
<td>PSY 6918</td>
<td>Directed Research</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall (Year 2)</th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP 5255</td>
<td>Human Performance</td>
</tr>
<tr>
<td>INP 6917</td>
<td>Organizational Psychology and Motivation</td>
</tr>
<tr>
<td>PSY 6918</td>
<td>Directed Research</td>
</tr>
<tr>
<td>Elective*</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring (Year 2)</th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP 6946</td>
<td>Internship</td>
</tr>
<tr>
<td>PSY 6909</td>
<td>Research Report</td>
</tr>
<tr>
<td>Elective*</td>
<td></td>
</tr>
</tbody>
</table>
PSYCHOLOGY □ SOCIOLOGY AND ANTHROPOLOGY

Fall (Year 3)

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY</td>
<td>6509</td>
<td>Research Report</td>
<td>3</td>
</tr>
<tr>
<td>EIN</td>
<td>6258C</td>
<td>Ergonomics in High Tech. Environments</td>
<td>3</td>
</tr>
<tr>
<td>EXP</td>
<td>6258</td>
<td>Human Factors III</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective*

Spring (Year 3)

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP</td>
<td>6538</td>
<td>Teaching Seminar</td>
<td>3</td>
</tr>
<tr>
<td>PSY</td>
<td>6508</td>
<td>Directed Independent Studies</td>
<td>6</td>
</tr>
</tbody>
</table>

Electives*

Fall (Year 4)

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY</td>
<td>7980</td>
<td>Doctoral Dissertation</td>
<td>6</td>
</tr>
</tbody>
</table>

Spring (Year 4)

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY</td>
<td>7980</td>
<td>Doctoral Dissertation</td>
<td>6</td>
</tr>
</tbody>
</table>

Minimum Hours Required for Ph.D.

90 Semester Hours

* Elective Course Groupings for Selected Concentration Areas:
Students should choose electives in concentrated course groupings: for example, human-machine systems, performance measurement and evaluation, or simulation and training. Other elective course groupings may be developed for the specific interests of the student.

Mathematics and Computer Skills
Students must demonstrate for graduation proficiency in both mathematics and computer skills; equivalent to first-level calculus and to a programming language beyond basic, respectively.

Candidacy Examinations
A candidacy examination will be required prior to registering for dissertation courses.

Sociology and Anthropology Department

Ida Cook .......................... Program Coordinator
Office: FA 405, Phone: (407) 623-2227, e-mail: cook@pegasus.cc.ucf.edu

J. Corzine, Ph.D. .................................. Chair and Professor
J. J. Cook, Ph.D. .................................. Associate Professor
D. R. Dees, Ph.D. .................................. Associate Professor
D. A. Gay, Ph.D. .................................. Associate Professor
J. P. Lynxwiler, Ph.D. ........................... Associate Professor
L. Huff-Corzine, Ph.D. .......................... Associate Professor
A. D. Carey, Ph.D. .................................. Assistant Professor
T. Dietz, Ph.D. .................................. Assistant Professor
J. Morris, Ph.D. .................................. Assistant Professor
E. Mustaine, Ph.D. .................................. Assistant Professor
M. Winton, Ph.D. .................................. Assistant Professor

Program Description
The Graduate Record Examination (GRE) is required of all applicants. To be considered for acceptance as a regular graduate student, applicants must have a minimum GRE score of 1000 (quantitative and verbal sections only) and an undergraduate GPA of 3.0 or better in the last 60 attempted semester hours of their undergraduate degree. In addition, the department requires three letters of reference including at least one from an academic source familiar with the applicant’s abilities. The Graduate Record Examination scores should be no more than seven years old.

The applicant’s 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 post-baccalaureate student and acceptance into this degree-granting program. Consult the Program Coordinator whenever questions arise.
Master of Arts in Applied Sociology

The Department of Sociology and Anthropology offers a graduate program leading to the Master of Arts degree in Applied Sociology with an opportunity for concentrated studies in deviant behavior and community policy. A primary focus of the graduate program is to enhance the abilities of the students to apply a sociological perspective and specific analytical skills to research topics in the Central Florida area. Toward this objective, the program promotes the application of sociological and social psychological knowledge, principles, and research skills in a variety of organizational, community, and institutional settings. Beyond a curriculum appropriate for general applied sociology, the program offers instruction and opportunity pertaining to deviant behavior, social disorganization, and social problems.

Examples of competencies in applied sociology include effective skills in conceptualization of human and organizational problems, communication skills, program design and evaluation, planning, feasibility and needs assessment studies, data management, analysis and presentation, the application of general systems theory and the social conflict perspective to organizational problems, community development and planned change.

Degree Requirements

Degree-seeking students in the Applied Sociology Program may elect to follow either a thesis or a non-thesis course of study. The degree of Master of Arts is conferred when students have fulfilled the requirements of either the thesis or non-thesis option. Both options require 30 hours of course work.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYA 5625</td>
<td>Proseminar</td>
<td>3</td>
</tr>
<tr>
<td>SYA 6128</td>
<td>Social Theory</td>
<td>3</td>
</tr>
<tr>
<td>SYA 6305</td>
<td>Social Research</td>
<td>3</td>
</tr>
<tr>
<td>SYA 6455</td>
<td>Research Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

Students will select a minimum of 12 semester hours of (nonrestricted) electives in consultation with their faculty advisor. No more than 6 hours may be taken in UCF graduate programs outside the department.

Thesis Option

A minimum of six semester hours of thesis credit and a successful defense of a thesis is required. The thesis option is highly recommended for students interested in community college teaching and/or graduate work beyond the Master of Arts degree.

Non-Thesis Option

All of the department's graduate courses are research-oriented seminars; however, in lieu of the thesis, students must take two additional courses (6 hours) in a chosen area of specialization. Non-thesis students may substitute up to 6 hours of their elective course work by completing a graduate practicum/internship (SYA 6946). The practicum must be approved by the student's advisory committee.

Examination Requirements

Thesis Option

Mandatory requirements include the successful completion of a two-part written comprehensive examination and a final oral defense of thesis.

Non-Thesis Option

Mandatory requirements include the successful completion of a two-part comprehensive written examination and an additional specialty examination in the selected area of specialization.

Minimum Hours Required for M.A.

30 Semester Hours
Master of Science in Statistical Computing

Admission
The Graduate Record Examination (GRE) is required of all graduate students. Minimum requirements in order to be considered for admission to the graduate program in Statistical Computing are the standard university criteria of a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of credit earned toward the baccalaureate or a GRE score of at least 1000 on the combined verbal-quantitative sections of the General (Aptitude) Test. The GRE score must be less than five years old. Students entering the graduate program should have a good working knowledge of at least one programming language, and should have taken undergraduate courses in calculus, matrices (or linear algebra), and statistical methods. Those students who are not adequately prepared in these areas may need to complete some undergraduate course work before beginning their graduate program. Applicants not qualified for regular graduate status may be initially admitted to the university in post-baccalaureate status and later admitted to regular status once all deficiencies have been eliminated, although only nine hours as a post-baccalaureate will count toward a graduate degree.

Program in Statistical Computing
The program provides a sound foundation in statistical theory, statistical methods, numerical methods in statistical computing, and the application of computer methodology to statistical analyses. The program is particularly well-suited for those individuals who have completed an undergraduate program in mathematics, statistics, or computer science, but is also available to persons in other disciplines who wish to develop an expertise in data analysis and statistical computing. Most graduate courses are offered during the late afternoon or evening hours in order to accommodate part-time and working students.

Degree Requirements
The Statistical Computing degree requires a total of 36 semester hours, with a minimum of 30 hours of course work.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>21 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 6236</td>
<td>Regression Analysis</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 5205</td>
<td>Experimental Design</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 6328</td>
<td>Theoretical Statistics I</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 6327</td>
<td>Theoretical Statistics II</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 6329</td>
<td>Statistical Applications of Matrix Algebra</td>
<td>3 hours</td>
</tr>
<tr>
<td>STA 6103</td>
<td>Statistical Computing I</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Select One:

- STA 6246 Linear Models 3 hours
- STA 6707 Multivariate Statistical Methods 3 hours
Restricted Electives  
15 Semester Hours
Other statistics courses will be selected by the student in consultation with the advisor. Certain graduate courses in computer science, mathematics, and engineering may be selected if approved by the Department of Statistics.

Examination
All students must take a comprehensive written examination covering the courses STA 6236, STA 5205, STA 6326, and STA 6327. For full-time students, this examination normally will be taken just prior to the start of the second year of graduate work.

Minimum Hours Required for M.S.
36 Semester Hours
Course Offerings

NOTE: All AMH 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 AS 3(3,0)
Colloquium in U.S. Colonial History

AMH 5137 AS 3(3,0)
Colloquium in U.S. Revolutionary Period

AMH 5149 AS 3(3,0)
Colloquium in Early U.S. History, 1789-1815

AMH 5169 AS 3(3,0)
Colloquium in the Age of Jackson

AMH 5175 AS 3(3,0)
Colloquium in Civil War and Reconstruction

AMH 5219 AS 3(3,0)
Colloquium in Late 19th Century U.S.

AMH 5268 AS 3(3,0)
Colloquium in 20th Century U.S.

AMH 5391 AS 3(3,0)
Colloquium in U.S. Cultural History

AMH 5407 AS 3(3,0)
Colloquium in the American South

AMH 5446 AS 3(3,0)
Colloquium in U.S. Frontier

AMH 5503 AS 3(3,0)
Colloquium in Woman in American History

AMH 5515 AS 3(3,0)
Colloquium in U.S. Diplomatic History. May be repeated for credit when content is different.

AMH 5839 AS 3(3,0)
Seminar in U.S. History. May be repeated for credit when content is different.

AML 5156 AS 3(3,0)
Modern American Poetry. Study of trends, modes, and major figures (Eliot, Pound, H.D., Stevens, Hart Crane, Moore, W.C. Williams, etc.) within the Modernist movement in American poetry.

ANT 5479 AS 3(3,0)
Comparative Cultural Analysis. The dynamics of cultural processes in a multi-ethnic setting.

ARE 5251 ED 3(2,1)
Art for Exceptionalities. Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.

ARE 5356 ED 3(3,0)
Found Arts. 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 5648 ED 3(3,0)
Contemporary Visual Arts Education. PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school visual arts programs.

ARE 6195 ED 3(2,1)
Teaching Art Appreciation with Interdisciplinary Strategies. PR: Graduate status and public school teaching experience. This course will focus on the examination of art appreciation examples and concepts toward planning curriculum (interdisciplinary for the study of art history, criticism, and aesthetics).

ARE 6666 ED 3(2,1)
Arts Advocacy. The study and development of plans to produce arts advocacy programs for the public school system.

ARH 5451 AS 3(3,0)
Artistic Worldviews. PR: Post-bac status, nine hours of art courses, or C.I. Art from individual and cultural perspectives of varying ethnic, religious, occupational, regional, and generational groups.

ARH 5454 AS 3(3,0)
Found Arts. PR: C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

ARH 5478 AS 3(3,0)
Contemporary Women Artists. PR: Six credits of art courses or C.I. An in-depth study of contemporary women artists from a feminist perspective.

ARH 5893 AS 3(3,0)
Critical Perspectives on Women Artists. The cultural forces influencing women artists, and how those artists have been constrained or misrepresented by the language of art or by art history.

ARH 5933 AS 3(3,0)
Seminar in African and African American Arts. PR: ARH 3520. Research on questions regarding continuities between African and African American (including Latin American) arts. Themes include signs and scripts, charms, and textiles.

ART 5109C ED 3(2,1)
Crafts Design. Crafts design and production, including the use of rigid, flexible, and linear materials.

ART 5109C AS 3(3,0)
Multi-Cultural Crafts Design. Includes an appreciation for and the production of Western and non-Western art forms.

BOT 5495C AS 3(2,3)
Bryology. PR: BOT 4303C 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 5623C AS 4(3,3)
Plant Geography and Ecology. PR: PCB 3043 or C.I. The study of the abiotic and biotic processes that control the distribution of terrestrial floral at local, landscape, and global scales.

BOT 5705C AS 4(3,2)
Plant Biosystematics. PR: Graduate standing or C.I. Evolutionary processes among plant taxa and populations utilizing
cytology, morphology, biochemistry, breeding systems, and coevolution.

BOT 6146C  AS 4(2.6)
Terrestrial Vegetation. 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.

BSC 6937  AS 1.4
Trends in Marine Biology. PR: C.I. This course is presented at Sea World and, each term will focus on a single topic relating to marine biology. The course requires weekend trips. May be repeated for credit.

BSC 6950  AS 3.0
Biological Research Resources. PR: Graduate status. Research methodology including literature resources, problem conceptualization, research proposals, data collection, and analysis and presentation of findings.

CAP 4515  AS 3.0
Computer Vision. PR: COP 3530. Image formation, binary vision, region growing and edge detection, shape representation, dynamic scene analysis, texture, stereo and range images, and knowledge representation.

CAP 4510  AS 3.0
Machine Learning. PR: CAP 4630 or C.I. Origin/evaluation of machine intelligence; machine learning concepts and their applications in problem solving, planning and expert systems; role of humans and computers.

CAP 4526  AS 3.0
Advanced Artificial Intelligence. PR: CAP 4630. AI theory of knowledge representation, expert systems, memory organization, problem solving, learning, planning, vision, and natural language.

CAP 4525  AS 3.0
Computer Graphics Systems I. PR: COP 3530. Architecture of graphics processors; display hardware, principles of programming and display software; problems and applications of graphic systems.

CAP 4541  AS 3.0
Computer Vision Systems. PR: CAP 4510. Recent systems contributing toward recognition, reasoning, knowledge representation, navigation, and dynamic scene analysis. Comparisons, enhancements, and integrations of such systems.

CAP 4542  AS 3.0
Advanced Computer Vision. PR: CAP 4510. Computational theories of perception, shape from X techniques, multi-resolution image analysis, 3-D model based vision, perceptual organization, spatiotemporal model, knowledge based vision systems.

CAP 4513  ED 3.0
Utilizing Microcomputers in Education. Instruction in microcomputers emphasizing applications of software in the classroom and for school recordkeeping.

CAP 6671  AS 3.0
Intelligent Systems. PR: CAP 5610. 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 6676  AS 3.0
Knowledge Representation. PR: CAP 6636. Topics covered include terminological languages, logicist approaches, ontologies, ontological and conceptual relativity, processes, intangibles, time, building large knowledge bases, and complexity analysis.

CAP 6701  AS 3.0
Computer Graphics Systems II. PR: CAP 5725. Modeling design and analysis of graphics systems; data structures, numerical techniques, algorithms, and optimum seeking methods for various problems in computer graphics.

CDA 5106  AS 3.0
Advanced Computer Architecture I. PR: CDA 4150. Instruction set architectures, processor implementation, memory hierarchy, pipelining, computer arithmetic, vector processing, and I/Q.

CDA 5110  AS 3.0
Parallel Architecture and Algorithms. PR: COT 4210, CDA 5106. General-purpose vs. special-purpose parallel computers; arrays; message passing; shared-memory; taxonomy; parallelization techniques; communication, synchronization, and granularity; parallel data structures; and automatic program restructuring.

CDA 5215  AS 3.0
Architecture and Design of VLSI. PR: CDA 4150 or equivalent. Overview of VLSI technology. Logical design of basic subsystems; integrated system design tools; design of a VLSI computer system.

CDA 5501  AS 3.0

CDA 5107  AS 3.0
Advanced Computer Architecture II. PR: CDA 5106. Multiprocessor systems; interconnection network; stack architectures; high-level language architecture; design languages; performance evaluation.

CDA 5108  AS 3.0
Selected Topics in Computer Architecture. PR: CDA 5106. Selected research papers on multiprocessors, database machines, virtual machines, ultra-computer, connection machine, MPP, Butterfly flow architectures, object-based architectures, fault tolerant architectures.

CDA 5211  AS 3.0
VLSI Algorithms and Architecture. PR: CDA 5210. 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.

CDA 6520  AS 3.0
Computer Networks Design and Distributive Processing. PR: CDA 6501 and COP 5611. Computer communications networks
design considerations, network operating system, distributive processing.

CEN 5016 Software Engineering. PR: COP 4020 and knowledge of ADA. Study of design techniques for large software systems, modularization, task assignment, management techniques, implementation techniques, testing, quality control, documentation, and maintenance.


CHM 5305 Applied Biological Chemistry. PR: CHM 3211. The identification from plants, synthesis, assessment of bioactivity, and design of pharmaceuticals and agrochemicals, as well as the impact of biotechnology in the chemical industry.

CHM 5450 Polymer Chemistry. PR: CHM 3211. An introduction to the chemistry of synthetic polymers. Synthetic methods, polymerization mechanisms, characterization techniques, and polymer properties will be considered.

CHM 5451 Polymer Chemistry Laboratory. PR: CHM 3211 and CHM 3410. A laboratory course designed to introduce students to the major polymerization mechanisms. Polymers synthesized in the laboratory will be characterized using modern instrumental methods.


CHM 5711 The Chemistry of Materials. PR: CHM 3211, CHM 4130C, CHM 3411. Structure and properties of chemical products with an emphasis on the correlation between molecular form and the functional properties deemed desirable for the product.

CHM 6938 Graduate Chemistry Seminar. A topic of current chemical interest will be presented by students at a regularly scheduled departmental seminar.

CHS 5262 Industrial Chemical Processes. PR: CHM 3211 and 3411. Familiarization with basic considerations of large-scale inorganic and organic chemical manufacturing techniques, raw materials, and the petrochemical industry.

CHS 6240 Chemical Thermodynamics. PR: CHM 3411 or equivalent. Classical and statistical thermodynamics with emphasis on industrial applications and estimation methods.

CHS 6251 Applied Organic Synthesis. PR: CHM 3211 and CHM 3411. A survey of chemical syntheses from both a product-oriented standpoint and a process-oriented standpoint. Relevant examples from the pharmaceutical and agricultural chemical industries.

CHS 6280 Chemical Unit Operations and Separations. PR: C.I. A study of the elements and dynamics that are fundamental to industrial separation methods and transport processes.

CLP 5004 Psychology of Adult Adjustment. PR: C.I. A survey of situations encountered during adulthood, including marriage, birth, parenthood, trauma, illness, death, etc. Effective adjustment.


CLP 6441 Introduction to Individual Psychological Assessment. PR: Graduate admission and C.I. Theory and techniques of psychological assessment with emphasis on intake interviewing, cognitive and personality assessment, and report writing. To be taken concurrently with CLP 6441L.

CLP 6441L Clinical Lab - Individual Assessment. PR: C.I. Practice in specific techniques in individual assessment. To be taken concurrently with CLP 6441.

CLP 6445 Psychological Theory and Assessment. PR: CLP 6441. Graduate admission and C.I. Theories of personality and techniques of personality assessment with primary emphasis on interviewing skills, objective and projective techniques, and report writing. To be taken concurrently with CLP 6445L.
ARTS AND SCIENCES

CLP 6445L  AS 1(0,2)
Clinical Lab - Personality Assessment. PR: C.I. Practice in specific techniques in personality assessment. To be taken concurrently with CLP 6445.

CLP 6446  AS 3(2,2)
Individual Counseling - Theory and Practice. PR: Graduate admission and C.I. Introduction to counseling theory. Experiential laboratory. To be taken concurrently with CLP 6456L.

CLP 6456L  AS 1(0,2)
Clinical Lab - Counseling. PR: C.I. Practice in specific techniques in counseling. To be taken concurrently with CLP 6456.

CLP 6457  AS 3(2,2)
Group Psychotherapy. PR: CLP 6456, Graduate admission and C.I. Group counseling: theory and process. Experiential group laboratory. To be taken concurrently with CLP 6457L.

CLP 6457L  AS 1(0,2)
Clinical Lab - Group Therapy. PR: C.I. Practice in specific techniques in group therapy. To be taken concurrently with CLP 6457.

CLP 6458  AS 3(2,2)
Behavior Therapy. PR: CLP 6456, Graduate admission, and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique. To be taken concurrently with CLP 6458L.

CLP 6458L  AS 1(0,2)
Clinical Lab: Behavior Therapy. PR: C.I. Practice in specific techniques in behavior therapy. To be taken concurrently with CLP 6458.

CLP 6459  AS 3(3,0)
Human Sexuality, Marriage, and Sex Therapies. PR: CLP 6456, Graduate admission, and C.I. A survey of human sexuality, theory and practice of marriage and sex therapy. To be taken concurrently with CLP 6459L.

CLP 6459L  AS 1(0,2)
Clinical Lab - Marriage and Sex Therapy: CLP 6456, CLP 6456L, Graduate admission, and C.I. Practice in specific techniques in marriage and sex therapy. To be taken concurrently with CLP 6459.

CLP 6460  AS 3(3,0)
Introduction to Child, Adolescent, and Family Therapies. PR: CLP 6456; CLP 6456L, Graduate admission, and C.I. A survey of theories and practices of child, adolescent and family therapies. To be taken concurrently with CLP 6460L.

CLP 6460L  AS 1(0,2)
Clinical Lab, Child, Adolescent, and Family Therapies. PR: CLP 6456; CLP 6456L, Graduate admission, C.I. Practice in specific techniques in child, adolescent and family therapies. To be taken concurrently with CLP 6460.

CLP 6532  AS 3(3,0)
Ethical and Professional Issues in Mental Health Practises. PR: Graduate admission, C.I. Examination of codes of ethics, laws, and professional standards in the mental health field.

COM 6XXX  AS 3(3,0)
International Communication. Case studies on global communication, coping with cultures, communicating across cultures, global media, global news flow, and persuasive communication.

COM 6121  AS 3(3,0)

COM 6303  AS 3(3,0)
Communication Research I. Analysis of theory and methodology in communication research, with emphasis on persuasion, nonverbal communication, and interpersonal communication.

COM 6304  AS 3(3,0)
Communication Research II. PR: Statistics and COM 6303. Planning and implementation of research in persuasion, nonverbal communication, and interpersonal communication.

COM 6458  AS 3(3,0)
Communication and Conflict: Research seminar in the study of communication and conflict.

COP 5021  AS 3(3,0)
Program Analysis. PR: COP 4020 and COP 4120. Syntactic and semantic analysis of programs. Theoretical and practical limitations, attribute evaluation, data flow analysis, program optimization, intermediate representations, code generation. Tools to automate analysis.

COP 5520  AS 3(3,0)
Computational Geometry. CR: COP 5405: Geometric searching, point location, convex hulls, proximity problems, Voronoi diagrams, spanning trees, triangulation, intersection arrangement applications.

COP 5570  AS 3(3,0)
Software Tools. PR: COP 4600 and COP 5021. Systems programming languages, concurrent programming, design and implementation of software development/maintenance tools. A large programming project is required.

COP 5611  AS 3(3,0)
Operating Systems Design Principles. PR: COP 4600. Structure and functions of operating systems, process communication techniques, high-level concurrent programming, virtual memory systems, elementary queuing theory, security, distributed systems, case studies.

COP 5711  AS 3(3,0)
Parallel and Distributed Database Systems. PR: COP 4710. Storage manager, implementation techniques for parallel DBMSs, distributed DBMS architectures, distributed database design, query processing, multi-database systems.

COP 6614  AS 3(3,0)
Operating Systems Techniques. PR: COP 6611. Techniques in the design and implementation of operating systems. Case studies of several experimental and commercial operating systems.

COP 6615  AS 3(3,0)

COP 6621  AS 3(3,0)
Compiler Construction. PR: COP 5021, COP 5310. Techniques in the design and implementation of compilers. Optimization, code generation, error recovery, attributed grammars. A project is required.
### Course Offerings

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP 6730</td>
<td>Transaction Processing. PR: COP 4710. Transaction models, transaction monitors, isolation concepts and lock manager implementation, log manager, transaction manager, file and buffer management, client-server computing.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COP 6731</td>
<td>Advanced Database Systems. PR: COP 5711. Selected topics concerning object-oriented databases, multimedia databases, active databases, temporal databases, spatial databases, and information systems.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 5310</td>
<td>Formal Languages and Automata Theory. PR: COP 4020 and COT 4210. Classes of formal grammars and their relation to automata, normal forms, closure properties, decisions problems, LR(k) grammars.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 5405</td>
<td>Design and Analysis of Algorithms. PR: COT 4210 and COT 4110. Classifications of algorithms, e.g., recursive, divide-and-conquer, greedy, etc. Data structures and algorithm design and performance. Time and space complexity analysis.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 5507</td>
<td>Computational Methods/Applications. PR: COT 4500. Computational solution techniques for algebraic equations, ODE and PDE models of applications selected from science, engineering, applied mathematics and computer science.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 5510</td>
<td>Computational Methods/Linear Systems. PR: COT 4600 and MAS 3113. Mathematical models for linear systems, linear programming, the simplex method, integer and mixed-integer programming, introduction to nonlinear optimization and linearization.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 5520</td>
<td>Computational Geometry. PR: COT 5405. Geometric searching, point location, convex hulls, proximity problems, Voronoi diagrams, spanning trees, triangulation, intersections arrangements applications.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 6300</td>
<td>The Theory of Parsing and Translation. PR: COT 5310. 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.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 6410</td>
<td>Computational Complexity. PR: COT 5405. Properties of algorithms, computational equivalence of machines; time-space complexity measures, examples of algorithms of different complexity, classification of algorithms, classes P and NP.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 6415</td>
<td>Complexity of Parallel Computation. PR: CDA 5110. COT 6410. Theoretical models - justification and buildability inherent parallelism and communication costs. Lower and upper complexity bounds. Parallel computation thesis. NC, SC, classes; paradigms of parallel algorithms.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>COT 6505</td>
<td>Computational Methods/Analysis I. PR: COT 5515. Analysis of direct and iterative solutions of systems of linear equations, eigenvalues and vectors and roots of nonlinear equations, error analysis.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>CPO 6091</td>
<td>Seminar in Comparative Politics. Introduction to the theory and methodology of comparative politics, institutions, and contextual factors of selected political systems such as Canada, European, and third world nations.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>CRW 5004</td>
<td>Graduate Writers' Workshop. Student writers present their own work, receiving detailed analysis of its strengths and weaknesses from their fellow writers and from the teacher.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>CRW 5932</td>
<td>Teaching Creative Writing. Creative writing practicum. May be repeated for credit.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>CRW 6009</td>
<td>Graduate Writing Workshop. PR: Admission to the Creative Writing Specialization of the English M.A. program. Writing and revising in one established form. Graduate Writing Workshop must be taken three times (for a total of 9 hours) in order to produce a book-length manuscript (fiction, poetry, or other genre). May be repeated for credit.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>CYP 6948</td>
<td>Psychology Internship. PR: Graduate admission, second-year status, and C.I. Supervised placement in community setting for 3-20 hours per week. (May be repeated for credit.)</td>
<td>AS 3(2,20)</td>
</tr>
<tr>
<td>DEP 5057</td>
<td>Developmental Psychology. PR: Graduate admission or C.I. Psychological aspects of development including intellectual, social, and personality factors.</td>
<td>AS 3(2,2)</td>
</tr>
<tr>
<td>EAB 5765</td>
<td>Applied Behavior Analysis with Children and Youth: PR: DEP 5057 and EXP 5445 or C.I. Advanced survey of principles, procedures, and techniques of applied behavior analysis, with special attention to applications with children and youth.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>ELD 6944</td>
<td>Diagnostic Learning-Disabilities Laboratory. A laboratory designed for individual competence measurement of testing-evaluation skills. Must be scheduled concurrently with ELD 5112, Foundations and Diagnosis of LD.</td>
<td>AS 1(0,1)</td>
</tr>
<tr>
<td>ENC 5214</td>
<td>Production and Publication Methods. Theory and practice of production and publication methods for technical writers.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>ENC 5219</td>
<td>Graphics in Technical Writing. A study of the creation and editing of graphics in technical documents.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>ENC 5267</td>
<td>Styles in Technical Writing. This course focuses on all of the strategies necessary to write effective technical prose.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>ENC 5306</td>
<td>Persuasive Writing. Theory and practice of writing persuasively.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>ENC 5337</td>
<td>Modern Rhetorical Theory. With special attention to the rhetoric-audience relationship, the course studies history and practice of modern rhetorical theory.</td>
<td>AS 3(3,0)</td>
</tr>
</tbody>
</table>
ENC 5344  AS 3(3,0)

ENC 5372  AS 3(2,1)
Theory and Practice in Composition. PR: Senior standing or C.I. Intensive study of theories of composition, with practical experience in the writing laboratory and in composition classes.

ENC 6217  AS 3(3,0)
Technical Writing. Study of language, style, mechanics, graphics, and management necessary for technical editing.

ENC 6244  AS 3(3,0)
Teaching Technical Writing. The techniques and theories of teaching technical writing.

ENC 6261  AS 3(3,0)
Technical Writing, Theory and Practice. Study of major trends in technical communication theory and the practices this theory generates.

ENC 6292  AS 3(3,0)
Project Management for Technical Writers. Managing a writing project from inception to production: planning, budgeting, personnel, writing, and editing.

ENC 6296  AS 3(3,0)
Computer Documentation. The theory and practice of producing software documentation from planning through production.

ENG 5009  AS 3
Graduate Research in English. A study of the aims and methods of literary scholarship and research.

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

ENL 5237  AS 3(3,0)

ENL 5250  AS 3(3,0)
The Victorian Age: Poetry. PR: Graduate standing or C.I. Poets of the Victorian period, including Tennyson, the Brownings, Arnold, Hopkins, the Rossettis, Emily Bronte, and others.

ENL 5269  AS 3(3,0)
Nineteenth-century Essays. PR: Graduate standing or C.I. English nonfiction prose of the nineteenth century.

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

ENL 5347  AS 3(3,0)

NOTE: All EUH graduate colloquia listed below require intensive reading in the literature of a given field, class discussions, and the preparation of papers. The prerequisite 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.

EUH 5237  AS 3(3,0)
Colloquium in European from 1815-1848

EUH 5238  AS 3(3,0)
Colloquium in European from 1848-1914

EUH 5247  AS 3(3,0)
Colloquium in European from 1919-1939

EUH 5285  AS 3(3,0)
Colloquium in European Since World War II

EUH 5371  AS 3(3,0)
Colloquium in Spanish History

EUH 5546  AS 3(3,0)
Colloquium: British History. PR: Open to graduate students only. Selected topics in British history. May be repeated for credit when content is different.

EUH 5579  AS 3(3,0)
Colloquium in Soviet Russia

EUH 5595  AS 3(3,0)
Colloquium in Czarist Russia

EUH 5608  AS 3(3,0)
Colloquium in European Intellectual History

EUH 6939  AS 3(3,0)
Seminar in European History. May be repeated for credit when content is different.

EXP 5208  AS 3(3,0)
Sensation and Perception. PR: C.I. A study of the human information processing with regard to physical and psychological variables in sensory and perceptual phenomena.

EXP 5256  AS 3(3,0)
Human Factors I. PR: None. Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems.

EXP 5257  AS 3(3,0)
Human Factors II. PR: EXP 5256. The second in the series of basic human factors courses involving an in-depth examination of issues.

EXP 5258  AS 3(3,0)

EXP 6125  AS 3(3,0)
Psychoncoustics. PR: Graduate standing. The psychology, physics, and physiology of hearing and the auditory system.

EXP 6255  AS 3(3,0)
Human Performance. PR: C.I. Human performance dimensions and concepts of assessment of human capabilities; performance acquisition, information processing and decision making; applications of principles to understanding of stress and performance effectiveness.

EXP 6506  AS 3(3,0)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit Hours</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP 6938</td>
<td>AS 3(3,0)</td>
<td>Teaching Seminar. PR: C.I. Orientation to and supervision in teaching assigned courses.</td>
<td></td>
</tr>
<tr>
<td>EXP 6945</td>
<td>AS 8(0,12)</td>
<td>Human Factors Internship. PR: EXP 5256, EXP 6257, PSY 6216, PSY 6217, EXP 6255. INP 6330. Supervised placement in an industrial, governmental, or consulting setting. Student completes a specific project under the supervision of an organizational sponsor and a faculty member.</td>
<td></td>
</tr>
<tr>
<td>FLE 5870</td>
<td>AS 3(3,0)</td>
<td>Methods of Teaching Spanish. PR: Graduate standing or C.I. Examines language proficiency and achievement, theoretical perspectives in methodology, and test design/evaluation as applicable for teaching Spanish language and culture.</td>
<td></td>
</tr>
<tr>
<td>FLE 5875</td>
<td>AS 3(3,0)</td>
<td>Computer Application in Teaching the Spanish Language. PR: Graduate standing or C.I. Survey, analysis, and evaluation of computer software and Internet materials for graduate students of Spanish.</td>
<td></td>
</tr>
<tr>
<td>HIS 5158</td>
<td>AS 3(3,0)</td>
<td>Classic and Contemporary Historical Thought. Explores work of important historians influenced by social theory to gain an understanding of their main concepts.</td>
<td></td>
</tr>
<tr>
<td>HIS 6159</td>
<td>AS 3(3,0)</td>
<td>Historiography. Selected topics in the study of history. May be repeated for credit with consent of instructor.</td>
<td></td>
</tr>
<tr>
<td>INP 6215</td>
<td>AS 3(3,0)</td>
<td>Assessment Centers and Leadership. PR: Graduate admission and C.I. Survey of assessment center technology and application with emphasis on leadership theory and practice.</td>
<td></td>
</tr>
<tr>
<td>INP 6317</td>
<td>AS 3(3,0)</td>
<td>Organizational Psychology and Motivation. PR: Graduate admission and C.I. Review of theories, research and application of psychological principles to organizational settings and human motivation.</td>
<td></td>
</tr>
<tr>
<td>INP 6505</td>
<td>AS 3(3,0)</td>
<td>Training and Performance Appraisal. PR: Graduate admission and C.I. Survey of theories, research and practice in the areas of industrial/organizational training and performance appraisal.</td>
<td></td>
</tr>
<tr>
<td>INP 6539</td>
<td>AS 3(3,0)</td>
<td>Current Topics and Applied Problems in Industrial/Organizational Psychology. PR: Graduate admission and C.I. Survey of current topics in industrial/organizational psychology with emphasis on applied problems.</td>
<td></td>
</tr>
<tr>
<td>INP 6546</td>
<td>AS 3(1,6)</td>
<td>Industrial Psychology Practicum I. PR: Graduate admission and C.I. Supervised placement in an applied setting.</td>
<td></td>
</tr>
<tr>
<td>INP 6547</td>
<td>AS 3(3,0)</td>
<td>Industrial Psychology Practicum II. PR: Graduate admission and C.I. Supervised research in industry. (May be repeated for credit.)</td>
<td></td>
</tr>
<tr>
<td>INR 6007</td>
<td>AS 3(3,0)</td>
<td>Seminar in International Politics. Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods.</td>
<td></td>
</tr>
<tr>
<td>INR 6086</td>
<td>AS 3(3,0)</td>
<td>International Public Policy. PR: Graduate standing. Examines endogenous and exogenous variables involved in selected issues in the arena of international public policy.</td>
<td></td>
</tr>
<tr>
<td>LAE 5387</td>
<td>AS 3(3,0)</td>
<td>English Composition and Literature for Teachers of Advanced Placement. PR: Graduate standing and C.I. A two-week summer institute for secondary school teachers preparing to teach Advanced Placement courses.</td>
<td></td>
</tr>
<tr>
<td>LAH 5713</td>
<td>AS 3(3,0)</td>
<td>Colloquium in U.S.-Latin American Relations.</td>
<td></td>
</tr>
<tr>
<td>LAH 6938</td>
<td>AS 3(3,0)</td>
<td>Seminar in Latin American History. May be repeated for credit when content is different.</td>
<td></td>
</tr>
<tr>
<td>LIN 5137</td>
<td>AS 3(3,0)</td>
<td>Linguistics. Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.</td>
<td></td>
</tr>
<tr>
<td>LIN 6932</td>
<td>AS 3(3,0)</td>
<td>Problems in Linguistics. PR: LIN 5137. Study of the application of linguistics to various aspects of teaching and communication.</td>
<td></td>
</tr>
<tr>
<td>LIT 5039</td>
<td>AS 3(3,0)</td>
<td>Studies in Contemporary Poetry. English language poetry from 1945 to the present. Emphasis will be on American poets, but others such as English or Australian will be included.</td>
<td></td>
</tr>
<tr>
<td>LIT 5097</td>
<td>AS 3(3,0)</td>
<td>Studies in Contemporary Fiction. Fiction in the last twenty years in the United States and Britain. May be repeated for credit when content is different.</td>
<td></td>
</tr>
<tr>
<td>LIT 5509</td>
<td>AS 3(3,0)</td>
<td>Media and Popular Literature. PR: Senior standing or C.I. Study of the literary content of contemporary media and of popular fiction. Application to classroom teaching.</td>
<td></td>
</tr>
<tr>
<td>LIT 5566</td>
<td>AS 3(3,0)</td>
<td>The Romantic Revolt (Nineteenth-century Literature). The romantic revolt in poetry and prose; English, American, and Continental literature, 1798-1832.</td>
<td></td>
</tr>
<tr>
<td>LIT 6009</td>
<td>AS 3(3,0)</td>
<td>Literary Genres. PR: Graduate standing. Provenance, structure, and critical problems in a specific genre such as tragedy, the epic, the novel, or the lyric. May be repeated for credit when content is different.</td>
<td></td>
</tr>
<tr>
<td>LIT 6105</td>
<td>AS 3(3,0)</td>
<td>World Literature. PR: Graduate standing. Study of the influence on British and American literature of selected foreign works read in translation. May be repeated for credit when content is different.</td>
<td></td>
</tr>
<tr>
<td>LIT 6365</td>
<td>AS 3(3,0)</td>
<td>Movements in Literature. PR: Graduate standing. Study of a movement such as naturalism, romanticism, or classicism,</td>
<td></td>
</tr>
</tbody>
</table>
or of a literary period such as the Baroque or the Southern Renaissance. May be repeated for credit when content is different.

LIT 6506 AS 3(3,0)
Major Authors. PR: Graduate standing. Study of a single author or of two or three associated authors, with emphasis on topics in different.

MAA 5210 AS 4(4,0)
Topics in Advanced Calculus. PR: MAC 3313 or C.I. Selected topics in multivariable calculus including limits, continuity, Euler's theorem, the Jacobian, and double series; extension of single variable concepts including uniform convergence and improper integrals.

MAA 5404 AS 3(3,0)
Complex Analysis. PR: MAA 4226 or C.I. Analytic and harmonic functions, Cauchy's integral theorem, Cauchy's integral formula, Taylor and Laurent series, singularities and residue theory, conformal mapping.

MAA 5405 AS 3(3,0)
Complex Variables. PR: MAC 3313 or C.I. 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.

MAA 5416 AS 3(3,0)
Foundations of Analysis. PR: MAA 4226. Topological spaces, compactness results, connectedness, analytical and differentiable manifolds, topological groups, Lie groups, representation theory for classical groups, Green, Stokes and Gauss' theorems.

MAA 6306 AS 3(3,0)

MAA 5508 AS 3(3,0)
Hilbert Spaces with Applications. PR: MAA 3302, MAS 3106, or C.I. Normed and inner product spaces; Hilbert spaces; orthonormal systems; linear operators and spectral decomposition; applications to differential and integral equations.

MAP 5205 AS 3(3,0)
Combinatorics and Graph Theory II. PR: MAA 4203 or C.I. Polya's theory of counting; Latin squares and rectangles; block designs; coding theory; probabilistic methods; hypergraphs; applications.

MAP 6309 AS 3(3,0)
Advanced Graph Theory I. A seminar devoted mainly to reading papers and presenting their content. Advanced areas of graph theory will be covered. Primarily for Ph.D. students in Mathematics and Computer Science.

MAP 6508 AS 3(3,0)
Finite Fields and Coding Theory. PR: MAA 5311 or C.I. General theory of fields, existence, construction and implementation of finite fields, polynomials over GF(p^n), solving equations; emphasizing fields of characteristic 2.

MAE 5935 AS 3(3,0)
Post-Secondary Mathematics. The course will focus on issues which are faced by teachers of collegiate mathematics. Topics will be selected from teaching issues, program issues, and other issues.

MAP 5336 AS 3(3,0)

MAP 5385 AS 3(3,0)
Applied Numerical Mathematics. PR: MAP 3302 or C.I. Classical topics or numerical analysis and their applications, Romberg integration, Richardson extrapolation, Gaussian quadrature schemes.

MAP 5396 AS 3(3,0)
Splines and Data Fitting. PR: MAP 3302, MAS 3105 or 3108, or C.I. Topics on univariate splines and data fitting; applications to regression analysis, differential and integral equations; algorithms for different types of splines.

MAP 5404 AS 3(3,0)
Mathematical Foundations for Industrial Engineering and Operations. PR: MAP 3302, STA 5156 or equivalent, ESI 4312, or C.I. Methods of proof, set theory; basic elements of topology, real analysis, graph theory, and matrix analysis.

MAP 5407 AS 3(3,0)

MAP 5426 AS 3(3,0)
Special Functions. 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, and hypergeometric functions.

MAP 5435 AS 3(3,0)
Advanced Mathematics for Engineers. PR: MAP 3302 or C.I. Linear algebra and matrix methods, ordinary differential equations, Fourier series, partial differential equations, numerical methods for differential equations, and applications to engineering.

MAP 5514 AS 3(3,0)
Linear and Nonlinear Waves I. PR: MAP 3302, MAP 4363, or C.I. Equations of motion in incompressible and viscous fluids; energy equation and energy flux, linear theory of gravity and capillary-gravity waves, variational principles for water waves.

MAP 5931 AS 1(1,0)
Research Seminar. Four instructors will introduce the students to a research area by presenting necessary background and current investigations. Different branches of mathematics will be presented for a sense of diversity.

MAP 6110 AS 3(3,0)
Measure and Probability. PR: MAA 5210 or C.I. Measure and integration, probability measures, random variables, distribution and characteristic functions. Convergence in LP, probability, distribution and with probability one.
### COURSE OFFERINGS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP 6111</td>
<td>Mathematical Statistics</td>
<td>MAS 6110 (Measure and Probability) or C.I. Strong laws of large numbers, consistency and asymptotic normality, complete and sufficient statistics, maximum likelihood and least squares, optimal estimators, hypothesis testing.</td>
</tr>
<tr>
<td>MAP 6112</td>
<td>Asymptotic Methods in Mathematical Statistics</td>
<td>MAS 6111 (Mathematical Statistics) or C.I. Large sample theory, martingale sequences, probability measures on metric spaces, absolute continuity and singularity, Hellinger distance, functions of statistics, asymptotic theory of estimation.</td>
</tr>
<tr>
<td>MAP 6118</td>
<td>Introduction to Nonlinear Dynamics</td>
<td>MAP 3302, PHY 3048 or equivalent, or C.I. Nonlinear differential equations; bifurcation theory; Hamiltonian dynamics; integrable systems and breakdown of integrability; chaos in conservative and dissipative systems.</td>
</tr>
<tr>
<td>MAP 6207</td>
<td>Optimization Theory</td>
<td>MAA 4226 or C.I. Lagrangian function and duality, Kuhn-Tucker theorem, quadratic programming and Wolfe's theorem, Griffith and Stewart's method, search methods for unconstrained optimization.</td>
</tr>
<tr>
<td>MAP 6356</td>
<td>Partial Differential Equations</td>
<td>MAP 3302 or C.I. First and second order linear equations; classification and analytical methods of solution; Green's functions and integral representations; applications in engineering and physical sciences.</td>
</tr>
<tr>
<td>MAP 6385</td>
<td>Numerical Solutions of PDE</td>
<td>MAP 5450, MAP 5385, or C.I. Numerical solution of linear and nonlinear partial differential equations of parabolic, elliptic and hyperbolic type using finite difference and spectral methods.</td>
</tr>
<tr>
<td>MAP 6408</td>
<td>Applied Mathematics II</td>
<td>MAP 3302, MAA 5405 or equivalent. Asymptotic series, asymptotic expansion of integrals, regular and singular perturbation expansions, boundary layer, multiple scales, WKBJ theory.</td>
</tr>
<tr>
<td>MAP 6419</td>
<td>Advanced Transform Methods</td>
<td>MAP 6424 or C.I. Fourier analysis and sliding-window Fourier transform, sampling theory and its applications in signal analysis and optics, Radon transforms, the technique of back projection.</td>
</tr>
<tr>
<td>MAP 6420</td>
<td>Generalized Functions</td>
<td>MAP 6506; C.I. Spaces of test functions and their duals, calculus of distributions, convolution and tempered distributions, Fourier transforms of distributions, and applications to PDEs.</td>
</tr>
<tr>
<td>MAP 6424</td>
<td>Transform Methods</td>
<td>MAA 5405 or C.I. Laplace, Fourier, Hankel, and other integral transforms, inversion theorems; the Z transform; applications to physical problems.</td>
</tr>
<tr>
<td>MAP 6425</td>
<td>Advanced Complex Analysis and Applications</td>
<td>MAA 5404 or C.I. Schwarz-Christoffel and Jaukowsky transformations, entire functions, Weierstrass factorization theorem and Blaschke's product, meromorphic functions and Mittag-Leffler theorem.</td>
</tr>
<tr>
<td>MAP 6445</td>
<td>Approximation Techniques</td>
<td>MAA 4227 or MAA 5210 or C.I. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.</td>
</tr>
<tr>
<td>MAP 6455</td>
<td>Orthogonal Polynomials and Digital Signal Processing</td>
<td>MAA 6110 Real Analysis, MAA 5404, or C.I. Orthogonal polynomials, Szego's orthogonal polynomials, Szego's orthogonal polynomials, Toeplitz matrix, Caratheodory functions and Schur functions, Levinson algorithm, associated Szego polynomials.</td>
</tr>
<tr>
<td>MAP 6465</td>
<td>Wavelets and Their Applications</td>
<td>MAP 4364, MAA 6508, or C.I. Continuous wavelet transforms, discrete wavelet transforms, frames, Zak transform, multi-resolution analysis, orthonormal bases of compactly supported wavelets, spline wavelets.</td>
</tr>
<tr>
<td>MAP 6506</td>
<td>Functional Analysis</td>
<td>MAA 4226 or C.I. Normed vector spaces, linear operators, Baire Category theorem, Banach fixed point theorem, Hahn-Banach theorem and applications, open mapping and closed graph theorem with applications, Hilbert space, Gâteaux and Fréchet.</td>
</tr>
<tr>
<td>MAP 6515</td>
<td>Linear and Nonlinear Waves II</td>
<td>MAP 5514 or C.I. Nonlinear shallow water waves and solitons, inverse scattering transform, Lie group methods, nonlinear dispersive waves, solitary waves and the nonlinear Schrodinger equations.</td>
</tr>
<tr>
<td>MAP 6520</td>
<td>Fractal Image Compression</td>
<td>MTG 4302, MAA 5416, or MAA 6110 Real Analysis, or C.I. Hausdorff metric H, Hutchinson maps, contraction maps on H, the collage theorem, measures and IFS with probabilities, fractal image compression, Huffman codes, addresses on fractals.</td>
</tr>
<tr>
<td>MAP 6538</td>
<td>Multivariate Splines and Surface Fitting</td>
<td>MAA 5396 or C.I. Approximation of functions of several variables, tensor product splines, theory of multivariate splines, box splines, surface fitting, applications to statistics, computer graphics.</td>
</tr>
<tr>
<td>MAP 7119</td>
<td>Advanced Nonlinear Dynamics</td>
<td>MAA 6118 or C.I. Solitons, inverse scattering transform, breakdown or integrability, analytic structure of dynamical systems, fractal aspects of turbulence.</td>
</tr>
<tr>
<td>MAP 7357</td>
<td>Advanced Topics in Partial Differential Equations</td>
<td>MAA 6356 or C.I. Variational techniques, perturbation and asymptotic methods, hyperbolic systems, Lie group methods, parabolic, elliptic, or free boundary value problems, spectral analysis.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Title</td>
<td>Credits</td>
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<tr>
<td>MAS 5145</td>
<td>Advanced Linear Algebra and Matrix Theory</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td></td>
<td>PR: MAS 3105, LU and LU decompositions, linear spaces, inner product spaces, systems of linear equations, eigenvalues and canonical forms, variational principles and applications.</td>
<td></td>
</tr>
<tr>
<td>MAS 5311</td>
<td>Abstract Algebra with Applications. PR: MAS 4301 or undergraduate abstract algebra. Group actions, the class equation, Sylow Theorems, polynomial rings, Euclidean domains, principal ideal domains, field extensions, modules and semi-simple rings.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MAS 6463</td>
<td>Doubly Stochastic Measures. PR: MAP 6506, MAP 5416, MAP 6111, MAP 6110, or CI. Doubly stochastic matrices, Birkhoff's theorem, double stochastic measures, Douglas-Lindenstrauss theorem, copulas, Frechet bounds, dependence of random variables, Markov operators.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MMC 5903</td>
<td>Communication and Society. The importance of the mass media, their structure, role, and problems.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MMC 5912</td>
<td>Communication and Government. A study of the relationship between the media and government.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MUS 5526</td>
<td>Music and Technology. PR: Graduate status. The emergence of technology in music including MIDI, CDROM, and the high-tech music classroom.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MUT 5325</td>
<td>Arranging and Composing Music. PR: Satisfactory placement tests in theory, sight-singing, and ear training. Arranging and composing music for instrumental and vocal ensembles. Some emphasis on compositional techniques of the twentieth century.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>MVB 5451</td>
<td>Trumpet V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVB 5452</td>
<td>French Horn V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVB 5453</td>
<td>Trombone V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVB 5454</td>
<td>Baritone V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVB 5455</td>
<td>Tuba V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVK 5451</td>
<td>Piano V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVK 5453</td>
<td>Organ V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVP 5250</td>
<td>Advanced Secondary Instruction. PR: Graduate standing and CI. Advanced instructional techniques on a secondary instrument or in voice. May be repeated for credit.</td>
<td>AS 1(1,0)</td>
</tr>
<tr>
<td>MVP 5451</td>
<td>Percussion V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5451</td>
<td>Violin V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5452</td>
<td>Viola V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5453</td>
<td>Cello V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5454</td>
<td>Bass V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5455</td>
<td>Harp V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5456</td>
<td>Guitar V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVS 5457</td>
<td>Voice V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVW 5451</td>
<td>Flute V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVW 5452</td>
<td>Oboe V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVW 5453</td>
<td>Clarinet V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVW 5454</td>
<td>Bassoon V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>MVW 5455</td>
<td>Saxophone V</td>
<td>AS 2(1,0)</td>
</tr>
<tr>
<td>PCB 5045C</td>
<td>Conservation Biology. PR: PCB 3043 and PCB 3063. Scientific basis of conservation; conservation of ecosystems, populations, exploited species, and endangered species. Weekend field trips are required.</td>
<td>AS 4(3,2)</td>
</tr>
<tr>
<td>PCB 5046C</td>
<td>Advanced Ecology. PR: Ecology, statistics, and 2 years of biological science. Population and community ecology with emphasis on growth, regulation, species interactions, succession, and community classification.</td>
<td>AS 5(3,4)</td>
</tr>
<tr>
<td>PCB 5326C</td>
<td>Ecosystems of Florida. PR: PCB 3043, PCB 3043L or equivalent. Ecosystems of Florida will be discussed to include geography, geology, climate, energetics, nutrient cycling, community structure, and conservation. Weekend field trips are required.</td>
<td>AS 5(3,2)</td>
</tr>
<tr>
<td>PCB 5465</td>
<td>Models in Ecology. PR: PCB 3043, MAC 3311 (or equivalent). A survey of how simulation models are applied to ecological questions of both a theoretical and managerial nature.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PCB 6009</td>
<td>Contemporary Studies in Biology. 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.</td>
<td>AS 2(0)</td>
</tr>
<tr>
<td>PCB 6565</td>
<td>Environmental Physiology. PR: Physiology and ecology or CI. The effects of major environmental factors on the physiology of plants and animals.</td>
<td>AS 3(3,0)</td>
</tr>
</tbody>
</table>
**COURSE OFFERINGS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>PR/AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB 5585C</td>
<td>Advanced Genetics. PR: PCB 3063 or C.I. Recent advances in genetics, stressing molecular and developmental trends.</td>
<td>AS 5(3,6)</td>
</tr>
<tr>
<td>PCB 6575C</td>
<td>Evolutionary Biology. PR: PCB 3043 and PCB 3063 or C.I. Review of modern concepts and theories in evolutionary biology with emphasis on readings in the primary literature.</td>
<td>AS 4(3,2)</td>
</tr>
<tr>
<td>PCB 5721</td>
<td>Comparative Animal Physiology. PR: An undergraduate course in animal physiology or equivalent. Comparison of structural and functional adaptations of animal organism systems. Emphasis upon maximization of fitness under given environmental conditions.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5015C</td>
<td>Physics For Teachers. PR: C.I. Hands-on lecture-lab course. Dynamics, electricity, magnetism, optics, nuclear radiation.</td>
<td>AS 3(2,2)</td>
</tr>
<tr>
<td>PHY 5091C</td>
<td>Physics of Astronomy for Teachers. PR: C.I. Laws of Motion, Law of Gravity, Kepler's Laws, two body orbits, light and spectroscopy, the doppler shift, blackbody radiation, Gas Laws, and stellar evolution.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5100</td>
<td>Topics in Contemporary Physics for Teachers. PR: C.I. The study of recent findings in a selected area such as particle physics, surface physics, planetary atmospheres, lasers, geophysics.</td>
<td>AS 1(1.0)</td>
</tr>
<tr>
<td>PHY 5200C</td>
<td>Newtonian Mechanics for Teachers. PR: C.I. A lab, lecture, demonstration course studying selected topics in classical mechanics.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5300C</td>
<td>Electricity for Teachers. PR: C.I. Circuits, multimeters, oscilloscopes, circuit elements.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5302C</td>
<td>Electromagnetism for Teachers. PR: C.I. Gauss' Law, Biot-Savat Law, Ampere's Law, Faraday's Law, Lenz's Law; motors, generators, AC circuits, and Maxwell's equations.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5348</td>
<td>Electrodynamics I. PR: PHY 4324 or C.I. Boundary value problems in electrostatics and magnetostatics. Maxwell's equations; EM fields in matter, wave generation and propagation; wave guides, and resonant cavities.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5401C</td>
<td>Optics for Teachers. PR: C.I. Geometrical and physical optics, spectrometers and lasers.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5431</td>
<td>Optical Properties of Materials. PR: PHY 4324, PHZ 3113, and PHY 4424. Normal modes (dipole and Raman active); microscopic theory of absorption, dispersion, and refraction; wave propagation, crystal optics; scattering mechanisms, optical activity.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5446</td>
<td>Laser Principles. PR: PHY 3101, PHZ 3113, PHY 4424. Classical introduction to the basic principles of laser gain media, properties of laser resonators and modes, description of specific laser systems.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5455</td>
<td>Modern X-Ray Science. PR: PHY 3101. An introduction to the science and applications of modern x-ray optics, x-ray lasers etc., with a review of basic properties of x-rays.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5455C</td>
<td>Wave Motion for Teachers. PR: C.I. Water waves, waves on strings, sound and vibrations.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHY 5500C</td>
<td>Thermal Physics for Teachers. PR: C.I. Engines, heat pumps, kinetic theory, phase changes, radiation, weather.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5524</td>
<td>Statistical Physics. PR: PHY 3503 or C.I. A study of physical concepts and methods appropriate for the description of systems involving many particles and at finite temperature. Ensemble theory, partition functions. Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics.</td>
<td>AS 1(1,0)</td>
</tr>
<tr>
<td>PHY 5601</td>
<td>Quantum Physics for Teachers. PR: C.I. Hydrogen atom, diatomic molecules, heat capacity transition rates.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5615</td>
<td>Quantum Mechanics I. PR: PHY 4604 or C.I. Basic postulates of quantum mechanics, operators, eigenvalues, parity, potential wells, harmonic oscillator, time dependent and time independent Schrodinger equation, matrix formulation, and time independent perturbation theory.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 5633</td>
<td>Selected Topics in Biophysics of Macromolecules. PR: PHY 3101, CHM 2046, or C.I. Physical concepts and techniques used in the spectroscopic study of dynamic structure and function of biological macromolecules such as proteins; connections with other complex systems. May be repeated for credit when content is different.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 6347</td>
<td>Electrodynamics II. PR: PHY 5345 or C.I. Dynamics of charged particles in electromagnetic fields. Antennas; radiation by moving charges; magnetohydrodynamics; multipole radiation and electrodynamics of materials.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 6353</td>
<td>Accelerator Physics. PR: PHY 6347. Dynamics of charged particles in electromagnetic fields, electron optics, details of the electrostatic accelerator, the linear accelerator, and cyclic accelerators; properties of cavities and orbiting electrons; new accelerator schemes, including the free electron laser.</td>
<td>AS 3(3,0)</td>
</tr>
<tr>
<td>PHY 6355</td>
<td>Physics of Free Electrons. PR: PHY 6347. Interaction between electrons and fields, transmission lines, microwave tubes and waveguides, synchrotron radiation and undulators, the free electron laser in both the Compton and Raman regimes.</td>
<td>AS 3(3,0)</td>
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<tr>
<td>Course Code</td>
<td>Title</td>
<td>Notes</td>
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<tr>
<td>PHY 6434</td>
<td>Nonlinear Optics. PR: PHY 5346. Maxwell's equations in nonlinear media; frequency conversion techniques (SHG, SFG, OPO), stimulated scattering, phase conjugation, wave-guided optics, nonlinear crystals.</td>
<td>AS 3(2.5, 0.5)</td>
</tr>
<tr>
<td>PHY 6435</td>
<td>Nonlinear Guided Wave Optics. PR: PHY 5346, 6347, 6434. The physics and applications of nonlinear optical interactions in fibers and planar waveguides is discussed, including parametric processes, all-optical effects.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHY 6447</td>
<td>Quantum Optics. PR: PHY 5606, PHY 5346, PHY 5446. Semi-classical treatment of light/matter interactions (quantized atomic states plus Maxwell's equations). Density matrix theory, coherent optical transients, pulse propagation.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHY 6448</td>
<td>Specific Laser Systems. PR: PHY 5446 or C.I. Review of laser principles, specifics of gas, ion, solid state, dye, metal vapor, free electron, and semiconductor lasers and power supplies.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHY 6624</td>
<td>Quantum Mechanics II. PR: PHY 5600 or C.I. Time dependent perturbation theory, exchange symmetry, Dirac Equation, second quantization, and scattering theory.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHY 6667</td>
<td>Advanced Quantum Mechanics. PR: PHY 6624 or PHY 6447. Introduces advanced graduate students to the methods of Quantum field theory, essential for the understanding of many branches of physics.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PSY 6939</td>
<td>Research Planning Seminar II. PR: PSY 6938. Clinical graduate student continued progress on thesis proposal formulation under faculty supervision.</td>
<td>AS 1(0.1)</td>
</tr>
<tr>
<td>PHZ 5150C</td>
<td>Computer Methods in Physics for Teachers. PR: C.I. Trajectories with air resistance, trajectories in rotating space colonies, refraction of waves in continuous media, luminosity patterns, temperature profiles.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHZ 5301C</td>
<td>Nuclear Physics for Teachers. PR: C.I. The interaction of ionizing radiation with matter, alpha, beta, gamma decay, fission, fusion, neutron activation, half lives, and equilibrium.</td>
<td>AS 1(0.5,1.5)</td>
</tr>
<tr>
<td>PHZ 5304</td>
<td>Nuclear and Particle Physics. PR: PHY 4804 or C.I. Particles and nuclei, symmetries and conservation laws, interactions, models.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHZ 5405</td>
<td>Condensed Matter Physics. PR: PHY 4604, PHY 3101, or C.I. Crystal lattice cell structure, phonons, free electron model, band theory of solids, Fermi surface, transport property of solid, superconductivity, magnetism.</td>
<td>AS 3(3.0)</td>
</tr>
<tr>
<td>PHZ 5505</td>
<td>Plasma Physics. PR: PHY 4324 or C.I. Introduction to theory and experimental basis of both weakly and highly ionized plasmas. Instabilities, plasma waves, nonlinear effects, controlled thermonuclear fusion.</td>
<td>AS 3(3.0)</td>
</tr>
</tbody>
</table>
COURSE OFFERINGS

PSB 5005 AS 3(3,0)
Physiological Psychology. PR: PSB 3002 or C.I. An advanced survey of the physiological basis of behavior emphasizing the relationship between the nervous system and behavior.

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

PSY 6216 AS 4(3,2)
Advanced Research Methodology I. 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 AS 4(3,2)
Advanced Research Methodology II. 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 AS 3(3,0)
Psychological Testing I. PR: Graduate admission. C.I. Theory of test construction including test reliability and validity.

PSY 6318 AS 3(3,0)
Applied Testing and Selection. PR: PSY 6308, graduate admission, and C.I. Issues in selecting employees and an examination of currently used tests in industry.

PSY 6908 AS 3(3,0)
Directed Independent Studies. PR: C.I. Conduction of a selected research study under the supervision of a faculty member in the field of Human Factors Psychology.

PSY 6918 AS 3(3,0)
Directed Research. PR: PSY 6217, EXP 6257, PSY 6938, ten additional graduate hours in PSY, and C.I. Directed Research involves supervised research activity in an agency setting. The student will devote 15 hours per week in the assigned setting to work on an applied research problem with joint supervision by faculty and agency staff.

PSY 6919 AS 3(3,0)
Research Report. PR: PSY 6918. Preparation of a written report of the project completed in PSY 6918. This report will be in the form of a research publication of technical report.

PSY 6938 AS 1(1,0)

PSY 6939 AS 1(1,0)
Research Planning Seminar II. PR: PSY 6938. Clinical graduate student continued progress on thesis proposal formulation under faculty supervision.

PUP 6938 AS 3(3,0)
Public Policy Analysis. Examination of the role of the state and the policy process (agenda-setting, formulation, implementation), and case studies in environmental, economic, education, or welfare or other policy.

PSY 5005 AS 3(3,0)
PSB 5005 AS 3(3,0)
Special Topics/Public Policy. This course title covers all public policy special topics courses which are not listed in the catalog with a course number. May be repeated for credit when content is different.

SPC 5200 AS 3(3,0)
Evolution of Communication Theory. 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 AS 3(3,0)
Modern Communication Theory. Comparative analysis of theories and models of human communication, behavior systems, encoding and decoding processes, interaction variables, and social context.

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

SPN 5502 AS 3(3,0)
Hispanic Culture of the United States. PR: Graduate standing or C.I. An analysis of the Hispanic culture of the United States, past and present.

SPN 5505 AS 3(3,0)
Spanish Peninsular Culture and Civilization. PR: Graduate standing or C.I. An analysis of the salient characteristics of Spanish culture and civilization.

SPN 6217 AS 3(3,0)
Spanish American Culture and Civilization. PR: Graduate standing or C.I. An analysis of the salient characteristics of Spanish American culture and civilization.

SPN 5705 AS 3(3,0)
Introduction to Spanish Linguistics. PR: Graduate standing. An introduction to main concepts and methods of analyses focusing on Spanish morphology, syntax, semantics, and phonology as well as dialectology and sociolinguistics.

SPN 5825 AS 3(3,0)
Spanish Dialectology. PR: Graduate standing or C.I. A survey of the diversity found within the Spanish language with respect to phonological constraints, morphosyntax, second language influences, and historical development.

SPN 5845 AS 3(3,0)
History of the Spanish Language. PR: Graduate standing or C.I. An overview of linguistic characteristics of Latin and its evolution into Spanish with historical development of phonetic, morphological, and syntactic properties.

SPN 6805 AS 3(3,0)
Spanish Morphosyntax. A study of Spanish morphology and syntax from different perspectives.

SPS 6125 AS 2(2,1)
Infant Development Assessment. PR: Graduate admission and C.I. Analysis of test theory and practice in administration, scoring, and interpretation of instruments assessing cognitive, visual-motor ability and adaptive behavior to pre- and primary school children.
Multicultural Issues and Assessment. PR: Graduate admission and C.I. An investigation of some of the major multicultural issues with emphasis on administration, scoring and interpretation of instruments related to this population.

Literary Theory Pro-Seminar. PR: Graduate standing or C.I. A study of the concepts and methods of literary criticism as they apply to Spanish and Spanish American literature.

Medieval Spanish Literature. An intensive study of the major genres of the period. Emphasis on selected works by major writers.

Golden Age Prose. A study of the major prose works of the Spanish Golden Age.

Spanish American Prose I. A study of the principal characteristics of Spanish American prose from Colonial times to post-independence.

Spanish American Prose II. A study of the principal characteristics of Spanish American prose from modernism to the present.

Nineteenth-century Spanish Novel. A study of the major writers and literary movements of the nineteenth century with emphasis on the novels of Valera, Perez Galdos, Clarín, and Pardo Bazán.

Spanish American Drama I. An analysis of dramatic texts from Pre-Columbian times to the end of the nineteenth century.

Spanish American Drama II. An analysis of Spanish American drama from modernism to the present.

Golden Age Drama. An analysis of the meaning and artistic values of selected theatrical works of the Spanish Golden Age.


Contemporary Peninsular Literature. A study of the major writers and literary movements from the Generation of 1927 to the present.

The Generation of 98. An analysis of the major works of writers of the Generation of 98 such as Carrión, Unamuno, Baroja, Azorín, and Machado.

Experimental Design. PR: STA 4164, STA 5206 or STA 5156. Construction and analysis of designs for experimental investigations. Blocking, randomization, replication, incomplete block designs, factorial and fractional designs, design resolution.

Statistical Analysis. PR: STA 3023; not open to students who have completed STA 4164. Data analysis; statistical models; estimation; tests of hypotheses; analysis of variance, covariance and multiple comparisons; regression and nonparametric methods.

Categorical Data Methods. PR: STA 4163 or STA 5206. Consider discrete probability distributions, contingency tables, measures of association and advanced methods including loglinear modeling, logistic regression, McNemar’s Test, Mantel-Haenszel tests.


Statistical Computing I. Computer systems, approximating probabilities/percentiles, random number generation, linear model computations, density estimation.


Response Surface and Mixture Experiments. PR: STA 5205. Approximating response functions; first-order and second-order response surfaces; ridge systems; mixture problems, component proportions, and the analysis of mixture data.

Sampling Theory and Applications. PR: STA 4321. Different techniques of sampling, sampling for proportions, choosing sample size, ratio estimates, effects of sampling and non-sampling errors.

Regression Analysis. PR: MAS 3105 and STA 4164. General linear model, model aptness and remedial measures, regression through the origin, independent and dependent indicator variables, multicollinearity, outliers, biased regression.

Linear Models. PR: STA 6329, STA 4164, and STA 4322. Theoretical development of full rank linear statistical models, least squares and maximum likelihood estimation, interval estimation, hypothesis testing, and introduction to less than full rank models.


Statistical Applications of Matrix Algebra. PR: MAC 3313 and STA 4164 or STA 5206. Basic theory of determinants, inverses, generalized inverses, eigenvalues and eigenvectors, partitioned matrices. Diagonalization and decomposition theorems, least squares and statistical applications.

Nonparametric Statistics. PR: STA 4321. Theory and methods for one and two sample problems; one and two way layouts; independence problems; regression problems.

Statistical Methods for Industrial Practice. Variance components, PCRs, autocorrelation structures, charting, EVOP, design strategies, calibration, standards, and associated awards.


ProSeminar. Survey of conceptual issues, methodological concerns, and findings in substantive sociological areas that currently dominate scholarly inquiry, including such topics as crime, deviance, community, alcoholism, education.

Advanced Population. PR: C.I. This course examines the theories, methods, and information utilized by demographers, and focuses on techniques of application of those skills.

Social Theory. PR: Regular graduate standing or C.I. The study of selected sociological theories in terms of relevance, usefulness, and adequacy for applied sociology.

Social Research. PR: Regular graduate standing or C.I. Research methodology including problem conceptualization, sampling designs, research proposals, data collection, and evaluation techniques for applied settings.

Research Analysis. PR: SYA 6305, undergraduate statistics, regular graduate standing, or C.I. Data management, selection of statistics, data analysis, evaluation, data presentation, and computer skills.

Social Organization and Human Resources. PR: C.I. Complex organization theory, social systems analysis, competence in group dynamic skills, and use of human resources in agencies, businesses, and industries.


Issues in Social Disorganization. PR: C.I. Sociological study and analysis of the manner in which American society is organized and the consequences of the way in which its cultural premises are arranged.

Sociological Criminology. PR: Graduate standing or C.I. Examines current sociological knowledge and research on various issues in Criminology, and expands students' skills in developing/conducting research projects.

Deviant Behavior Issues. PR: C.I. An examination and evaluation of the forms of social deviance, and the organizations designed to respond to them.

Crime, Law, Inequality. PR: Graduate standing. Among the consequences of social stratification are criminality and treatment/protection by the legal system. This course examines literature concerning inequality and the sociology of law.

Methods of ESOL Teaching. Designed to develop understanding, knowledge, and skills of the current methods used in the teaching of ESOL.

ESOL Cultural Diversity. Identifies major cultural groups represented by the LEP population in Florida schools and an understanding of their special needs.

Critical Approaches to ESOL. Emphasis on current research in second language acquisition as it relates to the development of ESOL curriculum and materials.

Applied Linguistics in ESOL. Applies linguistics, psycholinguistics, and sociolinguistics to teaching English as a second language with emphasis on pronunciation, intonation, structural analysis, morphophonemics, and decoding from print to sound.

Problems in Evaluation in ESOL. Provides for the development of sound assessment knowledge necessary to prepare students to apply second language assessment theories, principles, and current research.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSL 6540</td>
<td>AS 3(3.0)</td>
<td>Issues in Second Language Acquisition. Focuses on second language acquisition theories, principles, and current research as they relate to language-minority students acquiring English as a second foreign language.</td>
</tr>
<tr>
<td>TSL 6640</td>
<td>AS 3(3.0)</td>
<td>Research in Second Language. Focuses on research into language learning processes which serves as a knowledge base for effective teaching of language-minority students.</td>
</tr>
<tr>
<td>ZOO 5456C</td>
<td>AS 4(2,6)</td>
<td>Ichthyology. PR: ZOO 3303C or C.I. Introduction to the biology of the fishes, their classification, evolution, and life histories.</td>
</tr>
<tr>
<td>ZOO 5463C</td>
<td>AS 4(2,6)</td>
<td>Herpetology. PR: 6 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution, and life histories.</td>
</tr>
<tr>
<td>ZOO 5475C</td>
<td>AS 4(2,6)</td>
<td>Ornithology. PR: 6 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution, and life histories.</td>
</tr>
<tr>
<td>ZOO 5486C</td>
<td>AS 4(2,6)</td>
<td>Mammalogy. PR: 6 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution, and life histories.</td>
</tr>
<tr>
<td>ZOO 5815</td>
<td>AS 3(3,0)</td>
<td>Zoogeography. PR: 8 hours of zoology or C.I. Principles and concepts concerning regional patterns of animal distributions of the world, both past and present.</td>
</tr>
</tbody>
</table>
College of Business Administration

The College of Business Administration offers four professional programs leading to the master's degree: Master of Business Administration, Master of Science in Accounting, Master of Science in Taxation, and Master of Arts in Applied Economics. Also offered is a Doctor of Philosophy (Ph.D.) in Business Administration with majors in Accounting and Finance. The doctoral program is not currently accepting new students. The Master of Business Administration program is conveniently available to Brevard County and Daytona residents. Some foundation courses are offered at UCF's Brevard Campus in Cocoa, while other foundation and all the professional core courses are taught by UCF College of Business Administration faculty on the Melbourne Campus of Brevard Community College. Classes in Daytona are taught at the UCF Building on the campus of Daytona Beach Community College. All graduate programs in business administration are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

The mission of the College of Business Administration at the University of Central Florida is to provide quality business education programs, at the undergraduate, graduate, and executive levels, to the citizens of the state of Florida and to selected clientele nationally and internationally. In delivering these programs, the college places primary emphasis on excellent teaching and research with a strong commitment to developing mutually supportive relationships with the business community of Central Florida.

In pursuit of its mission, the College of Business Administration affirms its commitment to the university’s focus on excellence and accent on the individual. Furthermore, the college pledges to deliver innovative and progressive programs to its clientele. As the college approaches the twenty-first century, it has adopted “Driven by Excellence” as a motto and guiding force in achieving its goals and objectives.

College Administration

T. L. Keon .......................................................... Dean
R. E. Michaels ........................................... Interim Associate Dean
R. L. Pennington ........................................... Assistant Dean
B. L. Abramowitz ........................................... Brevard Campus Coordinator
J. H. Potts ................................................... Daytona Campus Coordinator

Faculty

School of Accounting
H. R. Anderson, Ph.D. ........................................ KPMG Peat Marwick Professor
C. D. Bailey, Ph.D. ........................................ Professor
D. D. Bandy, Ph.D. ......................................... C. G. Avery Professor
T. G. Evans, Ph.D. ........................................ Professor
J. H. Potts, Ph.D. ........................................ Professor
J. H. Saltier III, Ph.D. .................................... Ernst & Young Professor
P. M. Goldwater, Ph.D. ................................ Associate Professor
W. L. Johnson, Ph.D. .................................. Associate Professor
A. J. Judd, Ph.D. ........................................ Director and Associate Professor
C. F. Kellifer, Ph.D. .................................. Associate Professor
T. E. Phillips, Ph.D. .................................. Associate Professor
P. B. Roush, Ph.D. .................................. Associate Professor
L. J. Savage, Ph.D. .................................. Associate Professor
J. K. Welch, Ph.D. .................................. Associate Professor
D. Bobek, M.B.A. ................................... Assistant Professor
M. K. Zarzaski, Ph.D. ................................ Assistant Professor

Economics
R. A. Hofier, Ph.D. ........................................ Chair and Professor
W. W. McHone, Ph.D. ................................ Professor
F. A. Raffe, Ph.D. ........................................ Professor
B. Rungeling, Ph.D. ........................................ Professor
B. M. Braun, Ph.D. ..................................... Associate Professor
### Finance
- D. F. Scott, Jr., Ph.D.  Chair in American Private Enterprise and Professor
- S. D. Smith, Ph.D.  SunTrust Banking Chair and Professor
- R. Ajayi, Ph.D.  Associate Professor
- S. M. Atkinson, D.B.A.  Associate Professor
- J. M. Cheney, D.B.A.  Chair and Associate Professor
- N. K. Moden, Ph.D.  Associate Professor
- H. Park, Ph.D.  Associate Professor
- W. C. Weaver, Ph.D.  Associate Professor
- S. F. Borde, Ph.D.  Assistant Professor
- A. K. Byrd, Ph.D.  Assistant Professor
- J. H. Gilkerson, Ph.D.  Assistant Professor
- G. E. Porter, Ph.D.  Assistant Professor

### Hospitality Management
- R. C. Ford, Ph.D.  Chair and Professor
- A. Pizam, Ph.D.  Professor
- W. J. Quain, Ph.D.  Professor
- E. T. Ellis, Ph.D.  Associate Professor
- S. M. LeBruto, Ed.D.  Associate Professor
- A. Milman, Ph.D.  Associate Professor

### Management
- L. W. Fernald, Jr., D.B.A.  Professor
- R. C. Huseman, Ph.D.  Professor
- H. R. Jones, Ph.D.  Interim Chair and Professor
- W. Leigh, Jr., Ph.D.  Professor
- W. A. Bogumil, Jr., Ph.D.  Associate Professor
- W. G. Callarman, O.B.A.  Associate Professor
- C. M. Ford, Ph.D.  Associate Professor
- S. Goodman, Ph.D.  Associate Professor
- J. S. Harrison, Ph.D.  Associate Professor
- R. L. Martin, Ph.D.  Associate Professor
- B. Barringer, Ph.D.  Assistant Professor
- F. F. Jones, Ph.D.  Assistant Professor
- R. Purvis, Ph.D.  Assistant Professor
- M. Uhl-Bien, Ph.D.  Assistant Professor

### Marketing
- D. L. Davis, D.B.A.  Professor
- P. L. Gillett, Ph.D.  Professor
- R. E. Michaels, Ph.D.  Chair and Professor
- G. W. Paul, Ph.D.  Professor
- R. S. Rubin, Ph.D.  Professor
- E. E. Teeple, Ph.D.  Professor
- J. Allen, Ph.D.  Associate Professor
- D. A. Fuller, Ph.D.  Associate Professor
Before candidates will be considered for admission, all required application documents—application, official transcripts, GMAT test score (or GRE test score for the program in Applied Economics only) and for M.B.A. and M.A.E. only, two essays and three recommendations—must be received in the College of Business Graduate Office by:

- **Fall semester admission**: June 15
- **Spring semester admission**: November 1
- **Summer semester admission**: March 15

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. Thus, all graduate programs are open to graduates in education, engineering, arts, sciences, and other fields as well as business.

Admissions are restricted each semester to an allotted number of individuals showing high promise of success in postgraduate studies. Admission criteria include academic achievement as an upper-division undergraduate student and satisfactory performance on the GMAT. For the M.A. in Applied Economics degree only, scores on either the GRE or GMAT may be submitted. Both GMAT and GRE scores have a limit of 5 years. Other indicators of promise include the applicant's extracurricular activities, work experience and job responsibilities, and leadership experience.

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).

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 Accounting, M.S. in Taxation, or M.A. in Applied Economics, and to other students with regular graduate status elsewhere in the university. Graduate-level courses may not be taken unless a student is accepted into a graduate program, i.e., graduate courses may not be taken in a post-baccalaureate status.

An applicant will not be considered for admission to any graduate course until an official 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.

Graduate students in the College of Business Administration must maintain an overall 3.0 GPA in both their program of study and any graduate or undergraduate foundation core courses. In the event this is not maintained, a graduate student shall be placed in an academic provisional status. If a 3.0 GPA (grades of "B" or better) is then not obtained in the subsequent 9 semester hours of course work, the graduate student will be disqualified from the program. Students in all graduate programs must achieve a minimum grade of "C" in all foundation and professional core courses. Further, if graduate students accumulate grades of "C" or lower or unresolved "I" grades in more than three (3) foundation core courses, they will be disqualified from the program. If graduate students accumulate more than six (6) hours of "C" or lower and/or unresolved "I" grades on course work in the professional core, then they will be disqualified from the graduate program. Grade forgiveness policy does not apply to any courses (graduate or undergraduate) taken by graduate students in the College of Business Administration.
Master of Business Administration

Program Coordinator: R. L. Pennington, BA 241, Phone: (407) UCF-2187
Brevard Campus Program Coordinator: B. L. Abramowitz, Phone: (407) 632-0098
Daytona Campus Program Coordinator: J. H. Potts, Phone: (904) 255-7423, ext.4071

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 on the Orlando Campus. For Brevard County residents, the program is available on a part-time basis in the evening with some foundation course work offered on UCF's Brevard Campus in Cocoa, with the remaining foundation and all professional core course work taught by College of Business Administration faculty at Brevard Community College's Melbourne Campus. The program is also offered on a part-time basis, evenings, at the UCF Building on the Daytona Beach Community College campus.

Degree Requirements

Normally, the M.B.A. 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. 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 core 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 at a regionally accredited college or university, preferably one accredited by the AACSB.

**Foundation Core**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 5005</td>
<td>Financial and Managerial 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 5005</td>
<td>Economic Concepts</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5415</td>
<td>Statistics for Business and Economics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 5405</td>
<td>Financial Concepts</td>
<td>3</td>
</tr>
<tr>
<td>ISM 5021</td>
<td>Introduction to Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MAC 3233</td>
<td>Concepts of Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MAN 5050</td>
<td>Management Concepts</td>
<td>2</td>
</tr>
<tr>
<td>MAR 5051</td>
<td>Introduction to Production/Operations Management</td>
<td>2</td>
</tr>
<tr>
<td>MAR 5055</td>
<td>Marketing Concepts</td>
<td>3</td>
</tr>
</tbody>
</table>

The professional core consists of 24 credit hours of advanced course work that substantially extends and applies knowledge developed in the foundation core. In addition, through the selection of nine credit hours of approved electives, the student has the opportunity to develop some degree of specialization in one of the following: accounting, economics, finance, hospitality management, management, marketing, information systems, or entrepreneurship.

**Professional Core**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 6425</td>
<td>Managerial Accounting Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECO 6115</td>
<td>Economic Analysis of the Firm</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5416</td>
<td>Statistical Methods for Business Decisions</td>
<td>3</td>
</tr>
</tbody>
</table>

33 Semester Hours

24 Semester Hours
Accounting undergraduate majors may not take ACG 6425, but must take an elective in any other business area. Marketing undergraduate majors are not allowed to take MAR 6816. Instead, they must replace the course with one of the marketing electives outlined below.

Electives
Electives may be taken in accounting, economics, finance, hospitality management, marketing, management, or information systems management. One elective course may be taken outside the College of Business Administration with permission of the program coordinator. The M.B.A. program does not require a thesis. Students may not take more than 9 total semester hours in Accounting or Tax courses in the M.B.A. degree.

M.B.A. Specializations
Entrepreneurship
The entrepreneurship specialization requires nine hours of restricted electives within the M.B.A. degree. Students should take three of the four classes listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN</td>
<td>Business Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>GEB</td>
<td>Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>MAN</td>
<td>Creative and Innovative Management</td>
<td>3</td>
</tr>
<tr>
<td>MAR</td>
<td>Small Business Consulting</td>
<td>3</td>
</tr>
</tbody>
</table>

In addition, students may apply to take GEB 6946, the graduate Internship in Entrepreneurship, as a substitute for one of the three required courses in the specialization.

Finance
An M.B.A. specialization in finance requires a minimum of nine hours of restricted graduate electives chosen from the list below. Undergraduate finance majors must choose an additional restricted elective instead of taking FIN 6406.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN</td>
<td>Asset Management</td>
<td>3</td>
</tr>
<tr>
<td>FIN</td>
<td>Business Valuation</td>
<td>3</td>
</tr>
<tr>
<td>FIN</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>FIN</td>
<td>Seminar in Investments</td>
<td>3</td>
</tr>
<tr>
<td>FIN</td>
<td>International Financial Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Hospitality Management
An M.B.A. specialization in hospitality management requires a minimum of nine hours of graduate electives chosen from the list below.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSS</td>
<td>Management of Food Service Operations</td>
<td>3</td>
</tr>
<tr>
<td>HFT</td>
<td>Managing Hospitality and Guest Services Organizations</td>
<td>3</td>
</tr>
<tr>
<td>HFT</td>
<td>The Management of Lodging Operations</td>
<td>3</td>
</tr>
<tr>
<td>HFT</td>
<td>International Tourism Management</td>
<td>3</td>
</tr>
</tbody>
</table>

International Business
An M.B.A. specialization in international business requires six hours of restricted graduate electives in addition to GEB 6365. Students may take their six hours from the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG</td>
<td>International and Multinational Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECO</td>
<td>Seminar in International Economics</td>
<td>3</td>
</tr>
<tr>
<td>FIN</td>
<td>International Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>INR</td>
<td>Seminar in International Politics</td>
<td>3</td>
</tr>
</tbody>
</table>
Marketing

Students seeking a specialization in marketing must be enrolled in the M.B.A. program. A specialization in marketing requires a minimum of nine hours of graduate electives in addition to MAR 6816. Students may take their nine hours of elective courses in marketing from the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR 6077</td>
<td>Contemporary Marketing Problems</td>
</tr>
<tr>
<td>MAR 6406</td>
<td>Sales Management and Control</td>
</tr>
<tr>
<td>MAR 6456</td>
<td>Advanced Industrial Marketing Management</td>
</tr>
<tr>
<td>MAR 6616</td>
<td>Marketing Research Methods</td>
</tr>
<tr>
<td>MAR 6845</td>
<td>Services Marketing</td>
</tr>
</tbody>
</table>

Real Estate

The real estate M.B.A. specialization requires REE 6306 and REE 6308 plus three hours of restricted electives chosen from those listed below. Undergraduate finance majors must substitute an additional three hours of the restricted electives in place of FIN 6406.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECP 6605</td>
<td>Economics of Urban and Regional Problems</td>
</tr>
<tr>
<td>FIN 6314</td>
<td>Management of Financial Institutions</td>
</tr>
<tr>
<td>FIN 6425</td>
<td>Asset Management</td>
</tr>
<tr>
<td>FIN 6475</td>
<td>Business Valuation</td>
</tr>
<tr>
<td>FIN 6506</td>
<td>Investments</td>
</tr>
</tbody>
</table>

Examination

The end-of-program requirement for the Master of Business Administration degree will include the following:

- Students completing the program in three (3) consecutive years (no interruptions) or less will complete the capstone, integrative course MAN 6721, Business Policy and Responsibility, with a grade of "B" or better.
- Students requiring more than three (3) years to complete the professional core and those who do not complete MAN 6721 with a "B" or better must pass a comprehensive, integrative examination consisting of four (4) equal parts covering the areas of economics, finance, management, and marketing. Each part of the test must be passed. If any part of the examination is failed on the initial attempt, the student will prepare a plan of study in cooperation with the Department Chair and the Director of the M.B.A. program in order to be eligible to retake that part of the exam the following term. Each section may be taken a maximum of two times.

Minimum Hours Required for M.B.A. 33-63 Semester Hours

Master of Science in Accounting

Program Coordinator: L. J. Savage
BA 433, Phone: (407) UCF-5661 or UCF-2871

The Master of Science in Accounting degree 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 public practice, financial institutions, governments, industry, and nonprofit organizations. (This program satisfies the requirements of the State Board of Accounting Rule 21-A-27.02.)

The Master of Science in Accounting degree is awarded upon satisfactory completion of a graduate program of 30 semester hours. At least 15 of the 30 hours must be made up of courses at the 6000 level. Students, with the assistance and approval of the program advisor, may select an area of specialization in Management, Public, Tax, General, or Not-for-Profit Accounting. Following is a list of required courses and restricted electives.
### Degree Requirements

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 5346</td>
<td>Cost Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACG 5636</td>
<td>Advanced Auditing Topics</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6405</td>
<td>Accounting Information Systems II</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6805</td>
<td>Seminar in Accounting Theory</td>
<td>3</td>
</tr>
<tr>
<td>TAX 5015</td>
<td>Federal Income Tax II</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Restricted Electives

Electives from the categories below must be selected with advisor approval.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 5206</td>
<td>Seminar in Financial Reporting</td>
<td>3</td>
</tr>
<tr>
<td>ACG 5625</td>
<td>Auditing and EDP</td>
<td>3</td>
</tr>
<tr>
<td>ACG 5675</td>
<td>Operational Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6255</td>
<td>International and Multinational Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6356</td>
<td>Seminar in Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6519</td>
<td>Seminar in Governmental and Nonbusiness Organizations</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6696</td>
<td>Seminar in Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACG 6806</td>
<td>Seminar in Professional Accounting Issues</td>
<td>3</td>
</tr>
<tr>
<td>TAX 6065</td>
<td>Seminar in Tax Research</td>
<td>3</td>
</tr>
<tr>
<td>TAX 6135</td>
<td>Seminar in the Taxation of Corporations and Shareholders</td>
<td>3</td>
</tr>
<tr>
<td>TAX 6205</td>
<td>Seminar in Taxation of Partnership Income</td>
<td>3</td>
</tr>
<tr>
<td>TAX 6405</td>
<td>Seminar in the Taxation of Estates, Gifts, and Trusts</td>
<td>3</td>
</tr>
<tr>
<td>TAX 6845</td>
<td>Seminar in Tax Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Two courses from the following:

- ACG 5206 Seminar in Financial Reporting: 3 hours
- ACG 5625 Auditing and EDP: 3 hours
- ACG 5675 Operational Auditing: 3 hours
- ACG 6255 International and Multinational Accounting: 3 hours
- ACG 6356 Seminar in Cost Accounting: 3 hours
- ACG 6519 Seminar in Governmental and Nonbusiness Organizations: 3 hours
- ACG 6696 Seminar in Auditing: 3 hours
- ACG 6806 Seminar in Professional Accounting Issues: 3 hours
- TAX 6065 Seminar in Tax Research: 3 hours
- TAX 6135 Seminar in the Taxation of Corporations and Shareholders: 3 hours
- TAX 6205 Seminar in Taxation of Partnership Income: 3 hours
- TAX 6405 Seminar in the Taxation of Estates, Gifts, and Trusts: 3 hours
- TAX 6845 Seminar in Tax Planning: 3 hours

#### Three courses from the following:

- ECO 6115 Economic Analysis of the Firm: 3 hours
- ECO 6416 Statistical Methods for Business Decisions: 3 hours
- FIN 6406 Financial Analysis and Management: 3 hours
- MAN 6245 Organizational Behavior and Development: 3 hours
- MAN 6546 Quantitative Models for Business Decisions: 3 hours
- MAR 6816 Marketing Policy: 3 hours

Substitutes for the above listed electives may be made only with advisor approval.

#### Foundation Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 3101</td>
<td>Intermediate Financial Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACG 3111</td>
<td>Intermediate Financial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACG 3361</td>
<td>Cost Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACG 3501</td>
<td>Financial Accounting for Governmental and Nonprofit Organizations</td>
<td>3</td>
</tr>
<tr>
<td>ACG 4203</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACG 4401</td>
<td>Accounting Systems</td>
<td>3</td>
</tr>
<tr>
<td>ACG 4651</td>
<td>Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACG 5005*</td>
<td>Financial and Managerial Accounting Concepts</td>
<td>3</td>
</tr>
<tr>
<td>BUL 3320</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>BUL 3321</td>
<td>Business Law II</td>
<td>3</td>
</tr>
<tr>
<td>CGS 3000</td>
<td>Computer Fundamentals for Business Applications</td>
<td>3</td>
</tr>
<tr>
<td>ECO 3401</td>
<td>Mathematical Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECO 3411</td>
<td>Quantitative Methods and Business Decision Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5005*</td>
<td>Economic Concepts</td>
<td>3</td>
</tr>
<tr>
<td>ECO 5415*</td>
<td>Statistics for Business and Economics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 5405*</td>
<td>Financial Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MAN 4720</td>
<td>Business Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

*These courses are prerequisites for other courses and may be satisfied through credit by examination if approved by the school.

The courses in the foundation core for this program are usually satisfied if a person enters the M.S.A. program with a recent undergraduate degree in accounting from an institution whose business program is accredited by the AACSB. Otherwise, equivalent specific courses, as identified by the program advisor, are required. If deficiencies exist, they usually must be satisfied before advanced course work can be taken. Some of the prerequisite course work may be satisfied through credit by examination if approved by the school.
MAN 5050*  Management Concepts  2 hours
MAN 5501*  Introduction to Production/Operations Management  2 hours
MAR 5055*  Marketing Concepts  3 hours
TAX 4001  Federal Income Tax I  3 hours

* Or undergraduate course equivalent taken as an undergraduate student.

Student must show clear evidence of proficiency in oral and written communication and computer usage.

Examination
Satisfactory completion of an end-of-program comprehensive examination is required. The M.S. in Accounting program does not require a thesis.

Master of Science in Taxation

Program Coordinator: Dale Bandy
BA 435, Phone: (407) UCF-2564 or UCF-2871

The Master of Science in Taxation degree program provides candidates with an opportunity to specialize in taxation. The program emphasis is on the preparation of individuals for careers as professional accountants in public practice, government, and industry. (This program satisfies the requirements of the State Board of Accounting to qualify for the CPA examination if a candidate holding the appropriate undergraduate degree in accounting takes an auditing elective in the M.S.T. program.) The Master of Science in Taxation degree is awarded upon completion of a graduate program with a minimum of 30 semester hours. The program consists of 18 hours of required graduate tax courses and 12 hours of restricted electives. Electives are selected with the assistance and approval of the advisor. Required courses and available electives are described below.

Degree Requirements

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>18 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAX 5015  Federal Income Tax II</td>
<td>3 hours</td>
</tr>
<tr>
<td>TAX 6085  Seminar in Tax Research</td>
<td>3 hours</td>
</tr>
<tr>
<td>TAX 6135  Seminar in the Taxation of Corporations and Shareholders</td>
<td>3 hours</td>
</tr>
<tr>
<td>TAX 6205  Seminar in the Taxation of Partnership Income</td>
<td>3 hours</td>
</tr>
<tr>
<td>TAX 6405  Seminar in Taxation of Estates, Gifts, and Trusts</td>
<td>3 hours</td>
</tr>
<tr>
<td>TAX 6945  Seminar in Tax Planning</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Restricted Elective Courses

A total of 12 semester hours of electives must be selected with advisor approval. Master of Science in Taxation electives may be selected from either the required courses or any category of elective courses available in the Master of Science in Accounting degree program (other than the 18 semester hours of tax courses listed above).

Foundation Core

The courses in the foundation core for this program are satisfied if a person enters the M.S.T. program with a recent undergraduate degree in accounting from an AACSB accredited college or university. The accounting undergraduate program at UCF meets this requirement. Students with non-accounting undergraduate degrees or degrees from unaccredited institutions must complete the 58 semester hour foundation core for the M.S.A. Credit is given for previously completed work. The courses included in the foundation core are listed in the Master of Science in Accounting degree requirements.

Examination
Satisfactory completion of the end-of-program comprehensive examination is required.

Minimum Hours Required for M.S.

30 Semester Hours
Master of Arts in Applied Economics

Program Coordinator: T. L. Martin
BA 325, Phone: (407) UCF-2870

The Master of Arts in Applied Economics degree is a one-year (full-time) or 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.

Degree Requirements

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

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

- ECO 3401 Mathematical Economics 3 hours
- ECO 5005 Economic Concepts 3 hours
- ECO 5415 Statistics for Business and Economics 3 hours
- MAC 1104 College Algebra 3 hours

Prerequisite work may be entirely or partially satisfied through prior equivalent course work. Normally, such course work must have been satisfactorily completed at a regionally accredited college or university, preferably one accredited by the AACSB. 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

- ECO 6115 Economic Analysis of the Firm 3 hours
- ECO 6206 Aggregate Economic Conditions and Analysis 3 hours
- ECO 6416 Statistical Methods for Business Decisions 3 hours

Economics Electives

A minimum of twelve additional hours of economics electives is required.

Non-Economics Electives

A maximum of nine hours of approved non-economics electives may be completed in disciplines such as accounting, finance, management, marketing, mathematics, statistics, public administration, and computer science. Career-oriented elective specializations are presented below; however, no more than 6 hours outside the College of Business Administration may be used.

Thesis or Internship

Six credit hours of thesis or internship may be used to complete the M.A. in Applied Economics degree. The candidate may fulfill this requirement by completing: (1) a formal thesis on a topic selected in consultation with the candidate's advisory committee and meeting both departmental and university requirements or (2) an internship consisting of work in a business or governmental agency and an end-of-project, thesis-quality report.

Final Examination

Candidates must satisfactorily complete a comprehensive final examination. If the thesis or internship option is chosen to complete the degree, the examination will normally consist of an oral examination over the thesis or internship project. The candidate's supervi-
sory committee will have discretion to determine the extent of this requirement. Candidates choosing the non-thesis option will be required to pass a written or oral examination covering economic theory and six hours of elective course work.

Minimum Hours Required for M.A. 30 Semester Hours

Career-Oriented Elective Specializations
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 suggested career-oriented elective specializations that follow are representative of some of the possibilities for packaging electives.

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 6226 Seminar in Money, Banking, and Monetary Policy
- ECO 6266 Business Cycles and Forecasting
- ECP 6705 Managerial Economics
- FIN 6406 Financial Analysis and Management
- FIN 6425 Asset Management and Financial Decisions
- FIN 6506 Analysis of Investment Opportunities
- FIN 6627 International Financial Management
- RMI 6008 Risk Management

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

- ECO 6226 Seminar in Money, Banking, and Monetary Policy
- ECO 6505 Public Finance and Fiscal Policy
- ECP 6205 Labor Economics
- ECP 6405 Industrial Organization and Performance
- ECP 6426 Economics of Regulated Industries
- ECP 6605 Economics of Urban and Regional Problems
- ECP 6705 Managerial Economics
- REE 6306 Corporate Real Estate Investment Decision-Making

Approved electives in Public Administration
Approved electives in Political Science
Approved electives in Political Theory

Quantitative Economics
For candidates seeking careers as analysts, consultants, or researchers in business, government, or nonprofit institutions, selection among the following quantitative electives is recommended:

- ECO 6266 Business Cycles and Forecasting
- ECO 6424 Econometrics
- ECP 6705 Managerial Economics
- MAN 6546 Quantitative Models for Business Decisions
- MAR 6616 Marketing Research Methods

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
- FIN 6627 International Financial Management
Human Resource 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
- EIN 5117 Management Information Systems
- EIN 6258 Man-Computer Interaction
- EVT 6267 Vocational Program Planning, Development, and Evaluation
- ISM 6121 Systems Analysis and Development
- MAN 6156 Personnel Resources Administration
- MAN 6245 Organizational Behavior and Development
- PAD 5417 Human Resource Management

Doctor of Philosophy in Business Administration

Contact: Assistant Dean's Office
BA 240, Phone: (407) UCF-2887

This program is not currently accepting new students.

The objective of the doctoral program in Business Administration is to prepare students for academic careers in higher education and management careers in profit and nonprofit organizations. Success in the program is judged by the student's understanding of the issues and methodologies essential to the advancement of knowledge. Doctoral work is based on the achievement of academic and research competencies, rather than a specific number of courses. A student who participates in a doctoral program of study is expected to strive for the knowledge and skills necessary to develop excellence in teaching and to conduct quality research, and should at all times maintain the highest ideals of academic integrity and scholarship.

The doctoral program in business administration is currently undergoing extensive revisions. Students applying to the program should contact the Assistant Dean's Office for information about possible admission and the revised program. The program described below is the program followed by currently enrolled students. No new students have been accepted since 1994.

Admission
Students applying for admission to the doctoral program in Business Administration will be required to submit scores on the Graduate Management Admission Test (GMAT). International students must submit the Test of English as a Foreign Language (TOEFL) score if they are not a graduate from an accredited college or university in the United States. International students must also submit a minimum score of 240 on the Test of Spoken English (TSE). Admission decisions are made on the recommendation of the faculty of the appropriate department or school.

Before candidates will be considered for admission, all required application documents including application, official transcripts, and GMAT test scores must be received in the College of Business Administration Office of Student Support by March 1.

Degree Requirements
Upon admission to the doctoral program, the student will be assigned an advisory committee. The student, with the approval of the student's advisory committee, will complete a program of study, which, at a minimum, will consist of the following:
Foundation Body of Knowledge

In Finance the foundation body of knowledge includes (a) the Common Body of Knowledge of the master's degree in Business Administration, or its equivalent, and (b) graduate credit hours (6 semester hours--total) in macro- and microeconomic theory.

For Accounting this requirement may be satisfied in any of the four following ways: (1) M.S.A., (2) M.S.T., (3) master's degree from an accredited program plus CPA, or (4) a Florida 150 hour CPA that includes certain accounting courses deemed essential by the Accounting Ph.D. Coordinator or the student's advisory committee.

Any selected alternative must include a graduate-level microeconomics course and a graduate-level macroeconomics course.

Major Concentration

Students must select a major concentration from Accounting with a 16-hour minimum or Finance with a 15-hour minimum.

Accounting Major

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG 7157</td>
<td>Seminar in Financial Accounting Research</td>
<td>3</td>
</tr>
<tr>
<td>ACG 7887</td>
<td>Accounting Research Forum</td>
<td>4</td>
</tr>
<tr>
<td>ACG 7915</td>
<td>Directed Research in Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Two other seminars from the following (3 hours each):</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ACG 7390</td>
<td>Seminar in Management Accounting Research</td>
<td></td>
</tr>
<tr>
<td>ACG 7699</td>
<td>Seminar in Auditing Research</td>
<td></td>
</tr>
<tr>
<td>TAX 7056</td>
<td>Seminar in Doctoral Tax Research</td>
<td></td>
</tr>
</tbody>
</table>

Finance Major

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 7811</td>
<td>Corporate Finance Theory</td>
<td>3</td>
</tr>
<tr>
<td>FIN 7813</td>
<td>Seminar in Financial Institutions and Markets</td>
<td>3</td>
</tr>
<tr>
<td>FIN 7816</td>
<td>Investment Theory</td>
<td>3</td>
</tr>
<tr>
<td>FIN 7915</td>
<td>Directed Research in Finance</td>
<td>3</td>
</tr>
<tr>
<td>FIN 7930</td>
<td>Seminar in Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

Minor Concentration

Students must select a minimum of nine hours in a unified area approved by the student's doctoral study advisory committee. Each student's program of study is individually tailored to accommodate student interests whenever possible, and this course work may be developed from offerings in the following disciplines with the advice and consent of the respective departments and advisory committee:

Accounting Marketing
Computer Science Mathematics
Economics Political Science
Engineering Psychology
Finance Sociology
Management Statistics

Research Tools

The research tools requirement is intended to ensure a thorough exposure to research methods. All candidates are expected to demonstrate knowledge of mainframe and personal computers. Knowledge and use of available databases and software are also expected. The required course work must include two of the following (a total of 6 semester credit hours):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 7807</td>
<td>Corporate Finance Theory</td>
</tr>
<tr>
<td>GEB 7910</td>
<td>Research Methods in Business</td>
</tr>
<tr>
<td>QMB 7565</td>
<td>Applied Business Statistics</td>
</tr>
</tbody>
</table>
The remaining nine semester hours (in addition to the minor concentration) typically are selected from offerings in the following disciplines:

- Accounting
- Computer Science
- Economics
- Engineering
- Management Science
- Mathematics
- Psychology
- Sociology
- Statistics

Candidacy Examination
The student must successfully complete a comprehensive Candidacy Examination. This examination has written and oral parts, and covers the candidate's program of study. Students are admitted to candidacy after satisfying all general degree requirements, passing the comprehensive examination, fulfilling the residency requirement, and successfully defending a written dissertation proposal in an oral examination conducted by the student's advisory/dissertation committee.

Dissertation Minimum Hours Required for Ph.D.

<table>
<thead>
<tr>
<th>Hours</th>
<th>6-24 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-94 Semester Hours</td>
<td></td>
</tr>
</tbody>
</table>

Final Defense
The successful completion of a final oral examination is required. This examination concentrates on, but is not limited to, the student's dissertation defense.
Course Offerings

ACG 5005 BA 3(3,0)
Financial and Managerial Accounting Concepts. PR: Acceptance into the graduate program. The conceptual background for understanding financial statements and managerial accounting reports. (Not open to accounting majors.)

ACG 5206 BA 3(3,0)
Seminar in Financial Reporting. PR: Acceptance for graduate study and all accounting foundation courses. An in-depth study of advanced financial reporting topics.

ACG 5346 BA 3(3,0)
Cost Accounting II. PR: Acceptance for graduate study, ACG 3361, ACG 3111, FIN 3403, ECO 3411. Continuation of ACG 3361. Overhead and joint cost allocation, capital budgeting and analysis, EOG analysis, decentralization, and quantitative decision analysis.

ACG 5505 BA 3(3,0)
Accounting for Governmental and Nonbusiness Organizations. PR: Acceptance for graduate study and ACG 3501, ACG 3111. Study of problems and methods of applying managerial accounting concepts in a nonprofit environment.

ACG 5625 BA 3(3,0)
Auditing and EDP. PR: Acceptance for graduate study, ACG 3111, ACG 4401, and ACG 4651. An examination of auditing procedures followed when a company uses a computer to process financial records.

ACG 5636 BA 3(3,0)
Advanced Auditing Topics. PR: Acceptance for graduate study, ACG 4401, ACG 4651, and ECO 3401. Special topics relative to the standards, practices, and procedures followed in the audit function. Includes statistical sampling, advanced computer systems, advanced applications, and reporting problems.

ACG 5675 BA 3(3,0)
Operational Auditing. PR: Acceptance for graduate study, ACG 3111, and ACG 4651. The standards, principles, practices, and procedures followed in the internal audit function.

ACG 6255 BA 3(3,0)
International and Multinational Accounting. PR: Graduate standing and ACG 3111. An examination of the environmental factors affecting international accounting concepts and standards. Cross-country differences in accounting treatments are compared.

ACG 6356 BA 3(3,0)
Seminar in Cost Accounting. PR: ACG 5345, graduate standing, and all foundation courses for the accounting program or equivalents. A study of current selected topics in cost and management accounting.

ACG 6405 BA 3(3,0)
Accounting Information Systems II. PR: Graduate standing and all foundation courses for the accounting program or equivalents. Design and analysis of information systems and special auditing topics.

ACG 6425 BA 3(3,0)
Managerial Accounting Analysis. PR: Graduate standing and ACG 5005, or one year of accounting, and ECO 5415. (Not open to accounting majors.) Accounting as an information measurement system for internal planning and control.

ACG 6519 BA 3(3,0)
Seminar in Governmental and Nonbusiness Accounting and Auditing. PR: Graduate standing and all foundation courses for the accounting program or equivalents. Examination of current issues and topics with emphasis on current and future developments.

ACG 6696 BA 3(3,0)
Seminar in Auditing. PR: ACG 5636, graduate standing, and all foundation courses for the accounting program or equivalents. A study of current auditing topics.

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

ACG 6806 BA 3(3,0)
Seminar in Professional Accounting Issues. PR: Graduate standing and all foundation courses for the accounting program or equivalents. An examination of current issues confronting the accounting profession.

ACG 7157 BA 3(3,0)
Seminar in Financial Accounting Research. PR: Admission to doctoral program, equivalent of master's degree in accounting or taxation, QMB 7565, and GEB 7910; and C.I. Extensive coverage of empirical literature dealing with bankruptcy prediction, earnings forecasting, income smoothing, information content, analytical review, and related financial accounting research.

ACG 7399 BA 3(3,0)

ACG 7698 BA 3(3,0)
Directed Research Project in Auditing. PR: Admission to doctoral program and ACG 7699, or C.I. Highly individualized research project on a specific auditing research issue. Includes proposals development, methodology, data gathering, analysis, and reporting results.

ACG 7699 BA 3(3,0)
Seminar in Auditing Research. PR: Admission to doctoral program, ACG 7157, and C.I. A thorough review and critical analysis of auditing research literature, with emphasis on emerging research issues and methods.

ACG 7887 AS 1(1,0)
Research Forum. PR: Admission to doctoral program. Research and pedagogical issues in accounting, including research presentations by faculty, doctoral students, and invited scholars. May be taken for 4 hours credit.
ACG 7915  BA 3(3,0)  Directed Research in Accounting. PR: GEB 7910 and C.I. Advanced study in specialized areas of accounting research. Study designed to lead toward publishable research or student's dissertation. By definition, topical areas will vary.

ACG 7917  BA 3(3,0)  Seminar in Research Methods in Accounting. PR: Admission to doctoral program or C.I. Extensive coverage and critical analysis of accounting theory literature and research methods in accounting.

BUL 5125  BA 3(3,0)  Legal and Social Environment of Business. 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 5005  BA 3(3,0)  Economic Concepts. PR: Acceptance into the graduate program. Introduction to micro- and macro-economic analysis.

ECO 5415  BA 3(3,0)  Statistics for Business and Economics. PR: Acceptance into the graduate program and MAC 3233 or equivalent. Statistical theory and problems relating to business and economics including time series and correlation theory, index number theory, and statistical inference.

ECO 6115  BA 3(3,0)  Economic Analysis of the Firm. PR: Graduate standing and ECO 5005 or equivalent. Commodity price and output determination; factor price determination and functional income distribution; analysis of different types of markets.

ECO 6205  BA 3(3,0)  Aggregate Economic Conditions and Analysis. PR: Graduate standing and ECO 5005 or equivalent. An analysis of aggregate economic conditions including the determination of output, employment, and income levels.

ECO 6226  BA 3(3,0)  Seminar in Money, Banking, and Monetary Policy. PR: Graduate standing and ECO 5005 or equivalent. Study of the structural foundation and policy-making activities of the monetary authorities.

ECO 6265  BA 3(3,0)  Business Cycles and Forecasting. PR: ECO 5005 and ECO 6416 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 6305  BA 3(3,0)  History of Economic Thought. PR: Graduate standing and ECO 5005 or equivalent. A study of the leading ideas of the major contributors to the development of economic thought.

ECO 6416  BA 3(3,0)  Statistical Methods for Business Decisions. PR: Graduate standing and ECO 5415 or equivalent; Multivariate methods and related tools applied to analyze business and economic data as an aid in decision making.

ECO 6424  BA 3(3,0)  Econometrics. PR: ECO 6416 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  BA 3(3,0)  Public Finance and Fiscal Policy. PR: Graduate standing and ECO 6115 or equivalent. Analysis of the role of government and the effects of spending, taxing, and borrowing on the economy.

ECO 6705  BA 3(3,0)  Seminar in International Economics. PR: Graduate standing and ECO 6115 or equivalent. An inquiry into the theory of international trade and finance, commercial policy, and economic integration.

ECP 6205  BA 3(3,0)  Labor Economics. PR: Graduate standing and ECO 6115 or equivalent. An investigation into the nature and function of the labor market, with specific concern for both institutional and noninstitutional imbalance.

ECP 6405  BA 3(3,0)  Industrial Organization and Performance. PR: Graduate standing and ECO 6115. A study of the performance of various types of market structure and practice relative to price and efficiency.

ECP 6505  BA 3(3,0)  Economics of Urban and Regional Problems. PR: Graduate standing and ECO 6115. Economic analysis of the problems arising from and associated with the growth and development of cities and regions.

ECP 6705  BA 3(3,0)  Managerial Economics. PR: Graduate standing and ECO 6115 or equivalent. The use of economic tools and methods of reasoning applied to a wide range of business and economic problems.

ECS 6005  BA 3(3,0)  Seminar in Comparative Economic Systems. PR: Graduate standing and ECO 5005 or equivalent. An examination of factors that influence economic systems, patterns of resource allocation, and income distribution in differing economic environments.

ECS 6015  BA 3(3,0)  Economic Development. PR: Graduate standing and ECO 5005 or equivalent. 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  BA 3(3,0)  Financial Concepts. PR: Acceptance into the graduate program, ACG 5005 and ECO 5005 and ECO 5415 or equivalents. Effects of financial decisions on the firm, interrelationships of these effects, and alternatives available to financial managers in making these financial decisions.
FIN 6314 Management of Financial Institutions. PR: Graduate standing and FIN 6406. Analysis of management policies of financial institutions including asset, liability, and capital management. Study of the legal, economic, and regulatory environment faced by banks.

FIN 6406 Financial Analysis and Management. PR: Graduate standing and FIN 5405 or equivalent; Conceptual and practical problems associated with financial management of the nonfinancial corporation.

FIN 6425 Asset Management and Financial Decisions. PR: Graduate standing and FIN 6406. Considers the interrelated decision-making process of asset allocation, corporate fundraising, dividend policies, and market maximization.

FIN 6475 Business Valuation. PR: Graduate standing and FIN 6408. Theory and practice of estimating the value of small, closely held businesses.

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

FIN 6507 Seminar in Investments. PR: Graduate standing, FIN 6406, and FIN 6506. Analysis of options, futures, and other derivative securities and their use in hedging strategies. Other topics include institutional equity and bond portfolio management techniques.

FIN 6527 International Financial Management. PR: ECO 6416, FIN 6406. The theory of finance as applied to the operations of multinational firms and international capital markets.

FIN 7807 Corporate Finance Theory. PR: Admission to the Business doctoral program and FIN 6406 or equivalent; ECO 6416 or equivalent; or C.I. Elaborate coverage of significant theoretical/classical literature and review of empirical literature to provide a sound framework of conceptual knowledge for doctoral students.

FIN 7813 Seminar in Financial Markets and Institutions. PR: Admission to Business doctoral program and FIN 6406 or equivalent, ECO 6416 or equivalent, and C.I. Extensive study of the theoretical and empirical literature dealing with current theory of the operation of financial markets and financial intermediaries.

FIN 7816 Investment Theory. PR: Admission to business doctoral program, FIN 7811, QMB 7565, and C.I. Extensive coverage of theoretical and empirical literature dealing with modern investment thought, portfolio theory, capital market equilibrium, and related topics.

FIN 7915 Directed Research in Finance. PR: FIN 7813, FIN 7816, and C.I. Advanced study of theory and evidence in specialized areas of finance. Study designed to lead toward student's dissertation. By definition, topical areas will vary.

FIN 7930 Seminar in Finance. PR: FIN 7813, FIN 7816, and C.I. Study of private sector financial theory, policy, empires, and decision making.

FSS 6365 Management of Food Service Operations. PR: Graduate standing. The examination of techniques and mechanisms employed in the management of food service operations. Comparisons, case studies, and selected topics focus on private and public operations.

GEB 6115 Entrepreneurship. PR: Graduate standing. Seminar on topics concerning the entrepreneurial process in small and large organizations, including needs assessment, sources and methods of innovation, financing, and barriers to entrepreneurship.

GEB 6355 International Business Environment. PR: Graduate standing, MAN 5050, MAR 5055, ACG 5005, FIN 5405, and ECO 6005. Extensive coverage of international business environment with emphasis on the functional operation of multinational firms.

GEB 7910 Research Methods in Business. PR: Admission to Business doctoral program and ECO 6416 or equivalent; or C.I. A foundation research course in business, exposing students to a full range of research experiences.


HFT 6240 Managing Hospitality and Guest Services Organizations. PR: Graduate standing. Analysis of the unique problems of managing organizations in hospitality and guest services industry.

HFT 6251 The Management of Lodging Operations. PR: Acceptance into the graduate program. Presentation and analysis of the unique management techniques applicable in the diverse segments of the lodging industry.
<table>
<thead>
<tr>
<th>COURSE OFFERINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HFT 6710</strong></td>
</tr>
<tr>
<td>International Tourism Management. PR: Graduate standing. A review and critical analysis of the issues and techniques of international tourism management with specific attention to the economic, sociocultural, and environmental impacts.</td>
</tr>
<tr>
<td><strong>ISM 5021</strong></td>
</tr>
<tr>
<td>Introduction to Management Information Systems. PR: Acceptance into the graduate program. Designed to provide the student with the fundamentals of business data processing and management information systems used by organizations in a modern society.</td>
</tr>
<tr>
<td><strong>ISM 6121</strong></td>
</tr>
<tr>
<td>Systems Analysis and Development. PR: MAN 5050 and graduate standing. Study and application of systems concepts for the improvement of organizational work and information systems.</td>
</tr>
<tr>
<td><strong>ISM 6305</strong></td>
</tr>
<tr>
<td>Information Resources Management. PR: ISM 5021, MAN 5050, MAN 5501, and graduate standing. An advanced study of information system management including system planning, project selection and management, and organizational information management policies.</td>
</tr>
<tr>
<td><strong>ISM 6395</strong></td>
</tr>
<tr>
<td>Seminar - Management Information System. PR: ISM 6305, ISM 6121, and graduate standing. This seminar covers theoretical foundations and current research directions in management information systems. Topics include organizational and managerial processing, systems design, development and implementation.</td>
</tr>
<tr>
<td><strong>MAN 5050</strong></td>
</tr>
<tr>
<td>Management Concepts. PR: Acceptance into the graduate program. Theory and practice of managing organizations to include planning, organizational theory, human behavior, and control.</td>
</tr>
<tr>
<td><strong>MAN 5501</strong></td>
</tr>
<tr>
<td>Introduction to Production/Operations Management. PR: Acceptance into the graduate program and ECO 5415 or equivalent. Introduction to the fundamental concepts, processes, and institutions involved in the production of goods and services required by modern society.</td>
</tr>
<tr>
<td><strong>MAN 5055</strong></td>
</tr>
<tr>
<td>Planning and Control Analysis. PR: Graduate standing and MAN 5050 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.</td>
</tr>
<tr>
<td><strong>MAN 6075</strong></td>
</tr>
<tr>
<td>History of Management Thought. PR: Graduate standing and MAN 5050. The historical development of management in modern society with emphasis on the interrelationship between the management processes and the economic, social, and political environments.</td>
</tr>
<tr>
<td><strong>MAN 6121</strong></td>
</tr>
<tr>
<td>Group Decisions and Analysis. PR: Graduate standing and MAN 5050 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><strong>MAN 6156</strong></td>
</tr>
<tr>
<td>Personnel Resources Administration. PR: Graduate standing. A seminar in integrating the personnel, manpower planning, and labor relations fields through the study of concepts and problems in these areas.</td>
</tr>
<tr>
<td><strong>MAN 6158</strong></td>
</tr>
<tr>
<td>Human Resources Management Issues. PR: MAN 5156 or C.I. A course providing advanced study in selected topics of current interest in human resource management.</td>
</tr>
<tr>
<td><strong>MAN 6245</strong></td>
</tr>
<tr>
<td>Organizational Behavior and Development. PR: Graduate standing and MAN 5050 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><strong>MAN 6296</strong></td>
</tr>
<tr>
<td>Executive Leadership. PR: Admission to the Executive MBA Program. A review of the theory, research, and practice of leadership in organizations. Special attention to contemporary leadership issues, including transactional and transformational leadership.</td>
</tr>
<tr>
<td><strong>MAN 6299</strong></td>
</tr>
<tr>
<td>Creative and Innovative Management. This course examines the emerging theories and practices related to creative and innovative management. It combines the creativity of new concepts, new ideas, new directions, and the like with their innovative implementation in a management context.</td>
</tr>
<tr>
<td><strong>MAN 6305</strong></td>
</tr>
<tr>
<td>Personnel Resources Administration. PR: Graduate standing. A seminar in integrating the personnel, manpower planning, and labor relations fields through the study of concepts and problems in these areas.</td>
</tr>
<tr>
<td><strong>MAN 6515</strong></td>
</tr>
<tr>
<td>Research and Development Management. PR: Graduate standing and MAN 5050. 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><strong>MAN 6546</strong></td>
</tr>
<tr>
<td>Quantitative Models for Business Decisions. PR: Graduate standing and ECO 5415 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><strong>MAN 6547</strong></td>
</tr>
<tr>
<td>Expert Systems for Business Application. PR: Graduate standing and C.I. if non-Business student. An introduction and application of the fundamentals of artificial intelligence (AI) knowledge-based expert systems technology to problem solution needs of business and other disciplines.</td>
</tr>
<tr>
<td><strong>MAN 6655</strong></td>
</tr>
<tr>
<td>Production/Operations Analysis. PR: MAN 5050, MAN 5501 or equivalents and MAN 6546. Study of the production/operations environment and the development of the organization's operations strategy and plan.</td>
</tr>
<tr>
<td><strong>MAN 6721</strong></td>
</tr>
<tr>
<td>Business Policy and Responsibility. PR: Graduate standing and completion of all MBA professional core courses or their equivalent. MBA program capstone course providing the student experience in formulating policy and strategy for the di-</td>
</tr>
</tbody>
</table>
recreation of a business firm from the integrated viewpoint of a CEO.

MAN 7776
Business-level Strategic Management. PR: Ph.D. Foundation Course. In-depth review of the classic and modern business-level strategy research literature, which deals with how organizations compete in a single business segment.

MAN 7777
Corporate-level Strategic Management. P.R.: Ph.D. Foundation Course. In-depth review of the classic and modern corporate-level strategy research literature, which deals with management of an entire corporation.

MAR 5055
Marketing Concepts. PR: Acceptance into the graduate program. Study of functions, institutions, and basic marketing of goods in the U.S. economy.

MAR 5941
Small Business Consulting. PR: Graduate status, all foundation classes, FIN 6406, MAR 6816. Provides students opportunity to apply knowledge learned in the classroom to real business situations. Open to undergraduate majors in the College of Business Administration with approval of the department chair.

MAR 6077
Contemporary Marketing Problems. PR: Graduate standing, MAR 6816, or C.I. Analysis of contemporary marketing problems resulting from social, economic, and political developments.

MAR 6406
Sales Management and Control. PR: Graduate standing and MAR 5055 or equivalent. Designed to provide an analysis of the sales and management process. Topics covered include selection and training, compensation, behavioral issues and sales planning, evaluation, and control.

MAR 6455
Advanced Industrial Marketing Management. PR: MAR 5055 or equivalent or C.I. This course provides a comprehensive introduction to the distinctive characteristics of industrial markets. The course reviews what is known about organizational buying behavior which provides the foundation necessary to formulate marketing strategies.

MAR 6516
Marketing Research Methods. PR: Graduate standing, ECO 6416. Investigation of primary research methods used to generate information for marketing decision makers. Problem definition, research design, data collection, data processing, statistical interpretation, and communication of research results.

MAR 6616
Marketing Policy. PR: Graduate standing and MAR 5055 or equivalent. (Not open to undergraduate marketing majors.) Marketing policy formulation and decision making with respect to planning, pricing, promotion, and distribution.

MAR 6845
Services Marketing. PR: MAR 5055 or equivalent or C.I. Marketing in services industries is the focus of study with particular emphasis on unique aspects of services marketing, the service marketing mix, and the implementation of service strategies.

QMB 7565
Applied Statistical Business Decision Models. PR: Admission to Business doctoral program; ECO 6416 or equivalent; or C.I. Logic and procedures used in research and data evaluation in the business sciences applying advanced statistical models to decision-making problems.

REE 6306
Corporate Real Estate Investment Decision-Making. PR: Acceptance into the graduate program and FIN 5405 or equivalent. Study of the theory and practice of location, acquisition, management, and disposition of corporate real estate assets.

REE 6308
Corporate Real Estate Development. PR: Graduate standing and REE 6306. Real estate decision making in the private sector utilizing tools of financial economic analysts.

TAX 6015

TAX 6055
Seminar in Tax Research. PR: Graduate standing and all foundation courses for the accounting program or equivalents. Advanced study of and research in tax law. Procedures governing tax controversies and tax compliance.

TAX 6135
Seminar in the Taxation of Estates, Gifts, and Trusts. PR: TAX 5015, graduate standing, and all foundation courses for the accounting program. Federal and Florida estate and inheritance taxes; Substantive provisions of federal tax law; taxation of gifts and trusts.

TAX 6405
Seminar in the Taxation of Partnership Income. PR: TAX 5015, graduate standing, and all foundation courses for the accounting program. Federal taxation relating to partnership income including formation, distributions, and retirements.

TAX 6805
Seminar in the Taxation of Estates, Gifts, and Trusts. PR: TAX 5015, graduate standing, and all foundation courses for the accounting program. Federal and Florida estate and inheritance taxes; Substantive provisions of federal tax law; taxation of gifts and trusts.

TAX 6845
Seminar in Tax Planning. PR: TAX 5015, graduate standing, and all foundation courses for the accounting program. Substantive provisions of federal tax law; tax planning from a business viewpoint; case studies of the effect of tax law on business decisions.

TAX 7066
Seminar in Doctoral Tax Research. PR: Admission to doctoral program, ACG 7157, and C.I. A review and critical analysis of tax research literature, with emphasis on emerging issues, methodology, and data gathering.
College of Education

Graduate programs through the College of Education are provided for students who have completed 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 and Master of Arts degrees are awarded in many fields. Education Specialists are offered in School Psychology, Curriculum and Instruction, and Educational Leadership. Doctor of Education degrees are available in Educational Leadership and Curriculum/Instruction. All programs in the College of Education are accredited by NCATE (National Council for the Accreditation of Teacher Education). School Psychology is accredited by the National Association of School Psychologists (NASP/NCATE). Exceptional Student Education is accredited by the Council for Exceptional Education.

College Administration

Sandra L. Robinson .......................................................... Dean
John A. Middleton ......................................................... Associate Dean
Michael C. Hynes ......................................................... Assistant Dean
Margaret Miller ............................................................. Assistant Dean
Jennie L. Loudermilk ..................................................... Director of Development
Donna Walker-Knight .................................................... Brevard Campus Coordinator (407) 631-5339
Jeffrey Kaplan ............................................................. Daytona Beach Campus Coordinator (904) 254-4428

Faculty

Department of Educational Foundations
K. L. Biraimah, Ph.D. ....................................................... Chair and Professor
R. G. Cowgill, Ph.D. ...................................................... Professor
C. D. Dziuban, Ph.D. .................................................... Professor
T. S. Kubala, Ed.D. ....................................................... Professor
M. L. Kysilka, Ph.D. ...................................................... Professor
R. Langa, Ph.D. ............................................................ Professor
K. W. Allen, Ph.D. ....................................................... Associate Professor
S. L. Hiett, Ph.D. .......................................................... Associate Professor
L. C. Holt, Ed.D. .......................................................... Associate Professor
A. J. Miller, Ed.D. ........................................................ Associate Professor
P. T. Scortino, Ph.D. ..................................................... Associate Professor
T. J. Sullivan, Ed.D. ...................................................... Associate Professor
A. T. Wood, Ph.D. ........................................................ Director of Brinson Center for Ethics in Education and Associate Professor
L. Chang, Ph.D. ........................................................... Assistant Professor
C. J. Hutchinson, Ed.D. ................................................ Assistant Professor
J. S. Kaplan, Ph.D. ........................................................ Assistant Professor

Department of Educational Services
D. J. Baumbach, Ed.D. .................................................... Professor
W. C. Bozeman, Ph.D. ................................................... Professor
R. A. Cornell, Ed.D. .................................................... Professor
D. E. Hernandez, Ed.D. ................................................ Professor
W. H. Johnson, Ph.D. ................................................... Professor
M. A. Lynn, Ed.D. ........................................................ Professor
D. J. Mealer, Ph.D. ........................................................ Professor
G. W. Orwig, Ed.D. ....................................................... Interim Chair and Professor
R. A. Rothberg, Ed.D. ................................................... Professor
C. R. Beledo, Ed.D. ....................................................... Associate Professor
R. M. Bollet, Ed.D. ....................................................... Associate Professor
J. A. Middleton, Ed.D. .................................................. Associate Dean and Associate Professor
B. Murray, Ph.D. .......................................................... Associate Professor
K. Murray, J.D., Ph.D. ................................................ Associate Professor
G. Pawlas, Ph.D. .......................................................... Associate Professor
L. Tubbs, Ed.D. ........................................................... Vice President of Student Affairs and Associate Professor
A. Cremer, Ed.D. .......................................................... Assistant Professor
G. Gunter, Ph.D. .......................................................... Assistant Professor
J. R. Lee, Ed.D. .......................................................... Assistant Professor
D. Shepard-Tew, Ph.D. .................................................. Assistant Professor

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Department of Instructional Programs

T. Blair, Ph.D. .................................................. Professor
D. K. Brumbaugh, Ed.D. ........................................... Professor
M. C. Hynes, Ph.D. ................................................ Assistant Dean, Director of Lockheed Martin/UCF Academy, and Professor
A. R. Joels, Ph.D. .................................................. Professor
R. D. Martin, Ed.D. ................................................. Professor
M. J. Palmer, Ed.D. .................................................. Professor
S. L. Robinson, Ph.D. ............................................. Dean and Professor
C. Scott-Kassner, Ph.D. .......................................... Professor
R. A. Thompson, Ed.D. ........................................... Professor
J. S. Allen, Ed.D. .................................................. Associate Professor
J. H. Armstrong, Ed.D. ........................................... Associate Professor
R. A. Bailey, Ph.D. ................................................ Associate Professor
D. J. Camp, Ph.D. .................................................. Associate Professor
J. W. Cornett, Ph.D. ................................................. Associate Professor
R. M. Everett, Ph.D. ................................................. Associate Professor
D. W. Gurney, Ph.D. .............................................. Associate Professor
M. H. Hopkins, Ph.D. .............................................. Associate Professor
L. R. Hudson, Ph.D. .............................................. Associate Professor
J. A. Johnson, Ph.D. ................................................ Associate Director of Lockheed Martin/UCF Academy and Associate Professor
S. E. Ortiz, Ed.D. .................................................. Associate Professor
R. F. Paugh, Ed.D. ................................................ Associate Professor
M. K. Romjue, Ph.D. .............................................. Associate Professor
B. W. Siebert, Ph.D. .............................................. Associate Professor
S. E. Sorg, Ph.D. .................................................. Interim Chair and Associate Professor
K. Williams, Ph.D. ................................................ Associate Professor
S. Atkins, Ph.D. .................................................. Assistant Professor
T. Brewer, Ph.D. .................................................. Assistant Professor
E. F. Clifford, Ph.D. .............................................. Assistant Professor
P. Crawford, Ph.D. ................................................ Assistant Professor
P. L. Holmes, Ed. D ............................................... Assistant Professor

Department of Exceptional and Physical Education

J. L. Olson, Ph.D. .................................................. Professor
J. M. Platt, Ed.D. .................................................. Interim Chair and Professor
F. D. Rohter, Ph.D. .................................................. Professor
L. Cross, Ph.D. .................................................. Associate Professor
P. E. Higginbotham, Ed.D. .................................... Associate Professor
M. Lue, Ph.D. .................................................. Associate Professor
M. Miller, Ed.D. .................................................. Assistant Dean and Associate Professor
J. W. Powell, Ed.D. ............................................. Assistant Professor
W. Taylor, M.D. .................................................. Assistant Professor
H. P. Martin, Ed.D. ............................................. Assistant Professor
D. L. Mitchell, Ed.D. .............................................. Assistant Professor
S. Pankaskie, Ph.D. .............................................. Assistant Professor
S. Y. Smalley, Ph.D. .............................................. Assistant Professor

Programs in Education

Master’s Degrees

Art Education
Counselor Education
Educational Leadership
Educational Media
Educational Technology
Elementary Education
English Language Arts
Exceptional Student Education

Education Specialist Degrees

School Psychology
Educational Leadership
Curriculum and Instruction

Doctoral Degrees

Instructional Systems
Mathematics Education
Music Education
Physical Education
Reading Education
Science Education
Social Science Education
Vocational Education

Research Education
Science Education
Social Science Education
Vocational Education
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 qualified students who have completed a baccalaureate degree and have completed course work for regular Florida State Teaching Certification. This degree is appropriate for the practicing educators who wishes to update and extend knowledge of their present teaching field.

Master of Arts programs are open to qualified individuals who are seeking both a master’s degree and a new teaching certification. Students who are presently teaching with a valid Florida Teaching Certificate may add a teaching field to their certificate by completing a Master of Arts degree. Those students without previous certification and who are seeking initial certification in a teaching area may be required by the program area to complete an internship to complete the state-approved program.

NOTE: All Master of Arts programs at UCF leading to initial certification are state-approved programs. Completion of the prescribed program results in the affixing of a state-approved program stamp to the transcript. This stamp will ensure that certification will be issued by the Florida Department of Education in the indicated area. Failure to complete the prescribed state-approved program through petitions, waivers, or unauthorized course substitutions will be cause to not affix the stamp of approval on the transcript. While the student may graduate with a Master of Arts, a transcript without the stamp will be evaluated for certification on a course-by-course basis. UCF and the College of Education do not guarantee that any non-stamped program transcript will lead to certification by the Florida Department of Education.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimal requirements for admission are (1) a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study and a minimum score of at least 840 on the verbal-quantitative sections of the GRE or (2) a GPA of less than 3.0 combined with a GRE of 1000 or above. 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, may be planned without the student’s having previously completed certification courses.

Education programs at the area campuses are limited access programs. Acceptance to the university and/or the College of Education does not constitute admission to the UCF Brevard or Daytona education program. A separate application must be made directly to the Daytona or Brevard Campus.

Provisional Admission

Students who fail to meet university admissions standards have the opportunity to apply for admission via the provisional category. To be considered for provisional admission, students must file an application for provisional status in the Education Student Services Office (ED 109: 823-2332). Department committees make recommendations to the College Graduate Standards and Curriculum Committee. The following criteria are applied in evaluating applications:

- 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 post-baccalaureate hours taken
- Grade point average on any post-baccalaureate work
- Recommendations by college faculty and other professionals.

Provisional students who do not maintain a 3.0 GPA during their first nine hours of enrollment will be reverted to post-baccalaureate status. Those who are accepted as provisional students by one program are not accepted into another, but must reapply for provisional admittance into another program.
Students are officially assigned formal academic advisors upon admission to a College of Education graduate degree program. It is the student's responsibility to seek advisement and finalize a program of study early in the degree program. Students are advised to file a program of study within the first nine hours of their graduate study. The acceptability and application of post-baccalaureate/transfer hours toward a degree is contingent upon the recommendation of the academic advisor and is approved only after a program of study has been officially filed through all university channels.

Academic advisors are not assigned to individuals admitted as post-baccalaureate students. Post-baccalaureate students may seek information and general advisement in the Education Student Services Office (ED 109; 823-2332). Those who are post-baccalaureates seeking certification in the state of Florida who have been initially certified elsewhere are not eligible for financial assistance from the university. In general, post-baccalaureates cannot receive financial assistance unless enrolled for at least half-time and they have not previously been certified. Students should check their specific circumstances with the Office of Student Financial Assistance.

Minimum university-wide standards and regulations are applicable in addition to the specific College of Education requirements and regulations described in this section. In addition to the minimum university standard of maintaining a "B" (3.0 GPA) on all graduate work and earning no more than six hours of "C" work or unresolved "I" (incomplete) grades, College of Education students must maintain at least a 2.5 GPA in all co-requisite work prescribed in concert with a graduate degree program.

Students whose grade point average on degree work falls below 3.0 will be placed on academic provisional status for a nine semester-hour period of enrollment. During this time, the GPA must reach or exceed the 3.0 minimum to remain in the program. Only one academic provisional period is permitted, and no transfer credit may be applied.

Prior to graduation, all students are required to successfully complete an academic culminating experience which is planned and evaluated by each student’s program area. Comprehensive examinations are the most common form of culminating experience. Failure on a comprehensive examination requires re-enrollment and re-examination during a subsequent semester. Students are required to be enrolled during the semester in which they take examinations to satisfy this requirement.

In most programs, master's degree students in Education, with consultation with advisors, may select one of three options: Thesis, a research paper with a formal faculty committee and defense; Research Report, a research paper supervised by the student's advisor; or the non-thesis option, course substitution for the research papers. Both the thesis and research report options result in programs with a minimum of 33 semester hours. In the non-thesis option the courses selected must be approved in advance by the student's advisor and result in a program of at least 36 semester hours. For specific options within programs, please consult the program coordinator for the degree sought.
Master of Arts: Tracks in Extended Content

Program Coordinator: T. S. Kubala
ED 350, Phone: (407) UCF-2007, e-mail: tkubala@pegasus.cc.ucf.edu

Minimum hours required for M.A. 42 Semester Hours

Several of the education Master of Arts degrees have a track available to individuals who have a goal of teaching in a content area at the community college level. Every attempt is made to build at least 18 hours of graduate-level content into the program of study from the following areas: Art, Mathematics, Music, Science, Social Studies, and English Language Arts. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an advisor if courses are difficult to schedule in content areas. Students take content courses in lieu of internship with the full understanding that they will not be eligible for certification at the secondary level because of the internship deficiency in their program. College of Education content specialists serve as advisors in the program.

Area A: Core (some programs may vary slightly) 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6432 Measurement and Evaluation in Education OR 3 hours
EDF 6401 Statistics for Educational Data 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
ESE 6909 Research Report 2 hours
ESE 6909 Research Report 1 hour

Area B: Specialization (Electives approved by advisor) 27 Semester Hours
Art Education

Program Coordinator: ................................................................. T. Brewer
ED 158, Phone: (407) UCF-3714, e-mail: tbrewer@pegasus.cc.ucf.edu

Master of Education in Art Education

Minimum hours required for M.Ed. .............................................. 39 Semester Hours

This program is 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 previous certification in art.

Area A: Core .............................................................................. 15 or 21 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6886 Multicultural Education 3 hours
Select One Option:
Option A: Research Report
ARE 6938 Research Trends 3 hours
ARE 6909 Research Report 2, 1 hours
Option B: Non-Thesis (Approved by advisor)
Option C: Thesis
EDF 6401 Statistics for Educational Data 3 hours
ARE 6971 Thesis 2, 1 hours

Area B: Specialization (Approved by advisor) ......................... 18 Semester Hours

Area C: Studio .............................................................................. 6 Semester Hours
Two studio courses (4000- or 5000-level ART courses approved by advisor)

Master of Arts in Art Education

Minimum hours required for M.A. .............................................. 54 Semester Hours

The Master of Arts program in Art is planned to provide the art-oriented person with a degree that includes certification. The program meets state certification requirements in foundations, special methods in art education, general methods in teaching, and the student teaching component.

Area A: Core .............................................................................. 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6238 Principles of Instruction and Learning 3 hours
Select One:
EDF 5608 Social Factors in American Education OR 3 hours
EDF 6517 History and Philosophy of American Education 3 hours

Area B: Specialization (Approved by advisor) ......................... 18 Semester Hours
Select One:
Option A: Research Report
ARE 6938 Research Trends 3 hours
ARE 6909 Research Report 2, 1 hours
Option B: Non-Thesis (Approved by advisor)
Area C: Studio
Two studio courses (4000- or 5000-level ART courses approved by advisor)

Area D: Internship
ARE 6946 Graduate Internship

Corequisites:
ARE 4351 Methodology of Teaching K-12 Art Education I
ARE 4352 Methodology of Teaching K-12 Art Education II

Minimum undergraduate specialization requirements must be completed as pre- or corequisites. A track is available for this program in Extended Content and requires 18 hours of graduate-level content in the program. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an advisor if courses are not offered in content areas.

Counselor Education

Program Coordinator: ............................................. A. Creamer
ED 315, Phone: (407) UCF-6044, e-mail: creamer@pegasus.cc.ucf.edu

This program includes two degree options. The Master of Education degree program is designed to meet the needs of students who have a baccalaureate degree and have completed course work for regular Florida State Teaching Certification and plan to seek certification in school counseling.

The second option is a Master of Arts degree program for the student who has a baccalaureate degree in a discipline other than education. This degree is for: (a) the student desiring certification in school counseling; (b) the student who is interested in licensure as a mental health counselor; and (c) the student who is interested in working in college or university student personnel services.

EGC 6909 Research Report may be substituted for two 3-semester-hour courses. All program tracks require clinical experiences in the UCF practicum clinic and on-site in the community. The Mental Health track requires an internship of 1,000 clock hours. The other tracks require an internship of 600 clock hours.

Admissions
To be considered for admission to any of the counselor education program tracks, an applicant must secure, complete, and submit by the deadline (September 1 for spring term admission, February 1 for fall term admission) a special packet of materials for review by a faculty admissions committee. This material is separate from the university graduate admissions application and may be obtained from the Department of Educational Services office (ED 318). A formal interview is required and will be considered for final admission after the College of Education admission requirements are met. This program can accommodate only a limited number of students; therefore, there is a possibility of being denied admission even when all criteria are met.

Exit requirements include:
☐ Achieve at least a GPA of 3.0 in counseling specialization courses.
☐ Achieve a B or better in MHS 6800 and MHS 6830.
☐ Receive approval by Counselor Education faculty.
☐ Pass comprehensive written examinations satisfactorily.

The College of Education reserves the right to refuse student entrance or terminate a student after admission to the Counselor Education Program, if in the judgment of the faculty the student demonstrates unacceptable personal fitness to work in the counseling field with children, youth, and/or adults.
Master of Education in Counselor Education, School Counseling

Minimum hours required for M.Ed. 48 Semester Hours

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>9 or 12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EGC 6909</td>
<td>Research Report or 2 electives 2.1 or 6 hours</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Area B: Specialization</th>
<th>30 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHS 5005</td>
<td>Introduction to the Counseling Profession 3 hours</td>
</tr>
<tr>
<td>MHS 6220</td>
<td>Individual Psychoeducational Testing I 3 hours</td>
</tr>
<tr>
<td>SDS 6330</td>
<td>Career Development 3 hours</td>
</tr>
<tr>
<td>MHS 6400</td>
<td>Theories of Counseling and Personality 3 hours</td>
</tr>
<tr>
<td>MHS 6401</td>
<td>Techniques of Counseling 3 hours</td>
</tr>
<tr>
<td>SDS 6411</td>
<td>Counseling with Children and Adolescents 3 hours</td>
</tr>
<tr>
<td>SDS 6620</td>
<td>Organization and Administration of School Counseling Programs 3 hours</td>
</tr>
<tr>
<td>MHS 6500</td>
<td>Group Procedures and Theories in Counseling 3 hours</td>
</tr>
<tr>
<td>MHS 6780</td>
<td>Consultation, Staffing, and Case Management/Ethical and Legal Issues 3 hours</td>
</tr>
<tr>
<td>MHS 6420</td>
<td>Counseling Special Populations 3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area C: Professional Clinical Experience</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHS 6800</td>
<td>Counseling Practicum 3 hours</td>
</tr>
<tr>
<td>MHS 6830</td>
<td>Counseling Internship I 3 hours</td>
</tr>
<tr>
<td>MHS 6830</td>
<td>Counseling Internship II 3 hours</td>
</tr>
</tbody>
</table>

NOTE: Courses should be taken in the following sequence: MHS 5005, 6400, 6401, 6500, 6800, and 6830.

Master of Arts in Counselor Education, School Counseling

Minimum hours required for M.A. 60 Semester Hours

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>9 or 12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EGC 6909</td>
<td>Research Report or 2 approved electives 2.1 or 6 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area B: Specialization</th>
<th>30 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHS 5005</td>
<td>Introduction to the Counseling Profession 3 hours</td>
</tr>
<tr>
<td>MHS 6220</td>
<td>Individual Psychoeducational Testing I 3 hours</td>
</tr>
<tr>
<td>SDS 6330</td>
<td>Career Development 3 hours</td>
</tr>
<tr>
<td>MHS 6400</td>
<td>Theories of Counseling and Personality 3 hours</td>
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<td>Techniques of Counseling 3 hours</td>
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<td>Organization and Administration of School Counseling Programs 3 hours</td>
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<tr>
<td>MHS 6500</td>
<td>Group Procedures and Theories in Counseling 3 hours</td>
</tr>
<tr>
<td>MHS 6780</td>
<td>Consultation, Staffing, and Case Management/Ethical and Legal Issues 3 hours</td>
</tr>
<tr>
<td>MHS 6420</td>
<td>Counseling Special Populations 3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area C: Professional Clinical Experience</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHS 6800</td>
<td>Counseling Practicum 3 hours</td>
</tr>
<tr>
<td>MHS 6830</td>
<td>Counseling Internship I 3 hours</td>
</tr>
<tr>
<td>MHS 6830</td>
<td>Counseling Internship II 3 hours</td>
</tr>
</tbody>
</table>
Area D: Required DOE Certification

Foundations: Select one of the following:

- EDF 6517 History and Philosophy of American Education (3 hours)
- EDF 6608 Social Factors in American Education (3 hours)
- EDF 6886 Multicultural Education (3 hours)

General Methods (Approved by advisor) (3 Semester Hours)

Master of Arts in Counselor Education, Mental Health Counseling

Minimum hours required for M.A. 60 Semester Hours

This program prepares students for Florida licensure in mental health counseling.

Area A: Core

EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6155 Lifespan Human Development and Learning (3 hours)
EGC 6909 Research Report or 2 approved electives (2, 1 or 0 hours)

Area B: Specialization

MHS 5005 Introduction to Counseling Profession (3 hours)
MHS 6020 Mental Health Care Systems (3 hours)
SDS 6330 Career Development (3 hours)
MHS 6070 Diagnosis and Treatment in Counseling (3 hours)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
MHS 6500 Group Procedures and Theories in Counseling (3 hours)
MHS 6220 Individual Psychoeducational Testing I (3 hours)
MHS 6221 Individual Psychoeducational Testing II (3 hours)
MHS 6480 Human Sexuality and Relationships (3 hours)
MHS 6780 Consultation, Staffing, and Case Management/Ethical Legal Issues (3 hours)
MHS 6420 Counseling Special Populations (3 hours)

Area C: Cognate Electives (Approved by advisor) (3 Semester Hours)

Area D: Professional Clinical Experiences

MHS 6800 Counseling Practicum I (3 hours)
MHS 6800 Counseling Practicum II (3 hours)
MHS 6830 Counseling Internship I (3 hours)
MHS 6830 Counseling Internship II (3 hours)

NOTE: Courses should be taken in the following sequence: MHS 5005, 6400, 6401, 6500, 6800, and 6830.

Master of Arts in Counselor Education, Higher Education/Student Personnel

Minimum hours required for M.A. 48 Semester Hours

Area A: Core

EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Select One Option:

Option A - Research Report
- EDF 6401 Statistics for Educational Data or EDH 6065 History and Philosophy of Higher Education (3 hours)
- EGC 6909 Research Report (2.1 hours)

Option B - Non-Thesis (3 hours of elective approved by advisor)
- EDF 6401 Statistics for Educational Data (3 hours)
- EDH 6065 History and Philosophy of Higher Education (3 hours)
Two master's degree programs are offered in Educational Leadership: the Master of Education Degree (M.Ed.) and the Master of Arts Degree (M.A.). The purpose of the M.Ed. in Educational Leadership is to prepare individuals for leadership positions and administrative careers in education. The M.A. option does not fulfill state certification requirements and requires 42 hours for completion.

Educational Leadership is a 39-semester-hour program of study applicable toward Florida Educational Leadership Certification that is designed to provide the theoretical and conceptual knowledge base required for principalship and for Florida Level I Educational Leadership Certification. Courses required in the program address the eight competency domains specified by the Florida Department of Education and included in the Florida Educational Leadership Examination (FELE). Educational Leadership Certification is subject to Florida Department of Education approval. An M.Ed. in Educational Leadership or its equivalent, three years of teaching experience, and successful completion of the Florida Educational Leadership Examination are required by the state of Florida for certification in Educational Leadership.

Master of Education in Educational Leadership

Minimum hours required for M.Ed.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>12 Semester Hours</th>
</tr>
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<tbody>
<tr>
<td>EDF 6431</td>
<td>Fundamentals of Graduate Research in Education</td>
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<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
</tr>
<tr>
<td>Select One:</td>
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</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education</td>
</tr>
<tr>
<td>EDF 6886</td>
<td>Multicultural Education</td>
</tr>
<tr>
<td>Non-Thesis Option:</td>
<td></td>
</tr>
<tr>
<td>EDA 6946</td>
<td>Graduate Internship*</td>
</tr>
</tbody>
</table>
### Master of Arts in Educational Leadership

**Minimum hours required for M.A.**

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>15 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education OR 3 hours</td>
</tr>
<tr>
<td>EDF 6606</td>
<td>Social Factors in American Education 3 hours</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data OR 3 hours</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education 3 hours</td>
</tr>
<tr>
<td>EDA 6909</td>
<td>Research Report 2,1 hours</td>
</tr>
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<table>
<thead>
<tr>
<th>Area B: Specialization (Approved by advisor)</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDA 6051</td>
<td>Organization and Administration of Schools (required) 3 hours</td>
</tr>
<tr>
<td>EDA 6280</td>
<td>Educational Systems Planning and Management 3 hours</td>
</tr>
<tr>
<td>EDA 6123</td>
<td>Educational Supervisory Practices I OR 3 hours</td>
</tr>
<tr>
<td>EDA 6130</td>
<td>Educational Supervisory Practices II 3 hours</td>
</tr>
<tr>
<td>EDA 6232</td>
<td>Legal Aspects of School Operation 3 hours</td>
</tr>
<tr>
<td>EDA 6240</td>
<td>Educational Financial Affairs 3 hours</td>
</tr>
<tr>
<td>EDA 6931</td>
<td>Contemporary Issues in Educational Leadership (required) 3 hours</td>
</tr>
<tr>
<td>EDA Elective</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

**Master of Education in Educational Leadership, Curriculum and Instruction**

**Minimum hours required for M.Ed.**

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>18 or 21 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6236</td>
<td>Principles of Instruction and Learning 3 hours</td>
</tr>
<tr>
<td>EDG 6223</td>
<td>Curriculum Theory and Organization 3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education 3 hours</td>
</tr>
<tr>
<td>EDG 6909</td>
<td>Research Report or 2 approved electives 2,1 or 6 hours</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Area B: Specialization</th>
<th>12 Semester Hours</th>
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<tbody>
<tr>
<td>EDG 6046</td>
<td>Contemporary Issues in Education 3 hours</td>
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<tr>
<td>EDS 6123</td>
<td>Educational Supervisory Practices I 3 hours</td>
</tr>
<tr>
<td>EDF 6233</td>
<td>Analysis of Classroom Teaching 3 hours</td>
</tr>
<tr>
<td>EDG 6946</td>
<td>Practicum 3 hours</td>
</tr>
</tbody>
</table>

| Area C: Elective approved by advisor | 3 Semester Hours |
Elementary Education

Program Coordinator: M. H. Hopkins
ED 348, Phone: (407) UCF-2939, e-mail: marthah@pegasus.cc.ucf.edu

Master of Education in Elementary Education

Minimum hours required for M.Ed. 33 Semester Hours

This program is 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 and instructional trends in basic subject matter areas, and elective choices in specific areas.

Area A: Core 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6236 Principles of Instruction and Learning 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
Select One Option:
Option A:
EDF 6401 Statistics for Educational Data 3 hours
EDE 6971 Thesis 2.1 hours
Option B:
EDF 6517 History and Philosophy of American Education 3 hours
EDE 6909 Research Report 2.1 hours

Area B: Specialization 18 Semester Hours
EDE 6538 Elementary Education Seminar 2.1 hours
SCE 6616 Trends in Elementary School Science Education 3 hours
SSE 6617 Trends in Elementary School Social Studies Education 3 hours
Select One:
RED 6116 Trends in Reading Education 3 hours
LAEE 6616 Trends in Language Arts Education 3 hours
Select One:
LAEE 5415 Children's Literature Elementary Education (If no previous children's literature course) 3 hours
LAEE 6714 Investigation in Children's Literature 3 hours
MUE 5611 Trends in Elementary School Music Education 3 hours
MUE 5695 Trends in Arts Education 3 hours
Select One:
MAEE 6641 Problem Solving and Critical Thinking Skills 3 hours
MAEE 6517 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher 3 hours

Master of Education in Elementary Education, Primary

Minimum hours required for M.Ed. 36 Semester Hours

The purpose of this program is 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. Students must have certification in Elementary Education. This degree does not meet the requirements for Early Childhood Education.

Area A: Core 12 or 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
Select One Option:

**Option A: Research Project or Thesis**
- EDF 6401 Statistics for Educational Data **3 hours**
- EDE 6971 Thesis OR **2.1 hours**
- EDE 6909 Research Report **2.1 hours**

**Option B: Non-Thesis (6 SH electives approved by advisor)**
- EDF 6886 Multicultural Education **3 hours**

**Area B: Specialization**
- EEC 6405 Guiding and Facilitating Social Competence **3 hours**
- EEC 5205 Programs in Early Childhood Education **3 hours**
- EEC 5205 Organization of Instruction in Early Childhood Education **3 hours**
- EEX 6017 Typical/Atypical Applied Child Development **3 hours**
- EEC 6268 Play Development Intervention and Assessment **3 hours**
- EEX 5750 Communication with Parents and Agencies **3 hours**
- EEX 6224 Observation Assessment **3 hours**
- EEC 5208 Creative Activities in Early Childhood **3 hours**

**Master of Education in Elementary Education, Mathematics Education**

Minimum hours required for M.Ed. **36 Semester Hours**

This is 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 K-8 (pre-algebra) mathematics classroom individualized instruction programs. The program may qualify students for certification in Middle School Mathematics if sufficient mathematics (8 semester hours) content courses and certain experience-methods requirements have been taken.

**Area A: Core**
- EDF 6481 Fundamentals of Graduate Research in Education **3 hours**
- EDF 6401 Statistics for Educational Data OR **3 hours**
- EDF 6432 Measurement and Evaluation in Education **3 hours**

Select One:
- EDF 6155 Lifespan Human Development and Learning **3 hours**
- EDF 6517 History and Philosophy of American Education **3 hours**
- EDF 6608 Social Factors in American Education **3 hours**
- MAE 6909 Research Report or 2 electives **2,1 or 6 hours**

**Area B: Specialization**
- MAE 4634 Programs in Teaching Mathematics **3 hours**
- MAE 5517 Diagnosis/Remediation of Difficulties in Mathematics for the Classroom Teacher **3 hours**
- MAE 6899 Seminar in Teaching Mathematics **3 hours**
- MAE 6946 Practicum **3 hours**

**Area C: Electives (Approved by advisor)**
- MAE 5318 Current Methods in Elementary School Mathematics **3 hours**
- MAE 5146 Mathematics Curriculum, K-12 **3 hours**
- MAE 6641 Problem Solving and Critical Thinking Skills in Mathematics, K-12 **3 hours**

**Total Semester Hours: 36**
This program is not approved for automatic certification by the state of Florida. To be certified as an elementary mathematics specialist, a person must have a minimum of 18 semester hours in mathematics.

**Master of Arts in Elementary Education**

**Minimum hours required for M.A.** 36 Semester Hours

The M.A. in Elementary Education can be completed in the minimum 36 semester hours only if the student has completed previous initial certification in another area, including a supervised internship, and the state-approved beginning teacher program. Students without previous certification must complete all requirements listed. Please note that if this M.A. program provides your initial certification, 80 clock hours of field experience must be completed prior to enrolling in internship.

**Area A: Seminars**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDE 6938</td>
<td>Elementary Education Seminar</td>
<td>2</td>
</tr>
<tr>
<td>EDE 6938</td>
<td>Elementary Education Seminar</td>
<td>1</td>
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</table>

**Area B:**

<table>
<thead>
<tr>
<th>Course</th>
<th>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>EDF 6432</td>
<td>Measurement and Evaluation 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 6236</td>
<td>Principles of Teaching and Learning</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>One elective from EDF 6608, EDF 6517, or EDF 6886</td>
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**Area C:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>PR or CR EDE 6938</td>
<td>(2 SH course)</td>
<td></td>
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<tr>
<td>LAE 5319</td>
<td>Methods of Elementary School Language Arts</td>
<td>3</td>
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<tr>
<td>LAE 5415</td>
<td>Children's Literature in Elementary Education</td>
<td>3</td>
</tr>
<tr>
<td>MAE 5318</td>
<td>Methods of Elementary School Math</td>
<td>3</td>
</tr>
<tr>
<td>SCE 5716</td>
<td>Methods of Elementary School Science</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 Development of Reading Proficiencies (PR: RED 5147)</td>
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<tr>
<td>SSE 5113</td>
<td>Methods of Elementary School Social Science</td>
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**Area D: Internship**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EDE 6946</td>
<td>Graduate Internship</td>
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**Corequisites:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ARE 4313</td>
<td>Art in Elementary Schools</td>
<td>3</td>
</tr>
<tr>
<td>HLP 4722</td>
<td>Teaching Elementary School Health and Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>MUE 3210</td>
<td>Music in Elementary Schools</td>
<td>3</td>
</tr>
</tbody>
</table>

**English Language Arts Education**

Program Coordinator: .................................................. J. S. Allen
ED 353, Phone: (407) UCF-6125, e-mail: allenj@pegasus.cc.ucf.edu

**Master of Education in English Language Arts Education**

**Minimum hours required for M.Ed.** 33 Semester Hours

This program is designed to meet the advanced knowledge and skill needs of the English classroom teacher.

**Area A: Core**

<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 6401</td>
<td>Statistics for Educational Data OR</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
<td>3</td>
</tr>
</tbody>
</table>
### Master of Arts in English Language Arts Education

Minimum hours required for M.A. 42 Semester Hours

A secondary (6-12) program for non-education majors or previously certified teachers in another field.

**Area A: Core**
- **EDF 6481** Fundamentals of Graduate Research in Education 3 hours
- **EDF 6155** Lifespan Human Development and Learning 3 hours
- **EDG 6253** Curriculum Inquiry 3 hours
- **EDF 6517** History and Philosophy of American Education 3 hours
- **EDF 6236** Principles of Teaching and Learning 3 hours
- **ESE 6909** Research Report or 2 approved electives 2,1 or 6 hours

**Area B: Specialization (Approved by advisor)** 15 or 18 Semester Hours

**Area C: Internship**
- **LAE 6946** Graduate Internship 9 Semester Hours

**Corequisites:**
- **LAE 4360** English Instructional Analysis 4 hours

Students must have required English course work to meet the 30-semester-hour rule. A track is available for this program in Extended Content and requires 18 hours of graduate-level content in the program. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an advisor if courses are difficult to schedule in content areas.

### Exceptional Student Education

Program Coordinator: L. Cross
ED 305, Phone: (407) UCF-2036, e-mail: lcross@pegasus.cc.ucf.edu

**Master of Education in Exceptional Student Education**

Minimum hours required for M.Ed. 33 Semester Hours

The Master of Education degree prepares exceptional education teachers to work in programs serving K-12 students with varying exceptionalities. It is designed for teachers already certified in an area of exceptional education.

**Area A: Core**
- **EDF 6481** Fundamentals of Graduate Research in Education 3 hours
- **EDF 6432** Measurement and Evaluation in Education 3 hours
- **EEX 6971** Thesis or 2 approved electives* 2,1 or 6 hours
### Master of Arts in Exceptional Student Education

**Minimum hours required for M.A.**

In addition to these hours, students must complete corequisite and prerequisite courses. The varying exceptionalities option leads to certification in Varying Exceptionalities Learning (VE) and prepares graduates to teach in the areas of VE, Special Learning Disabilities (SLD), Mental Health (MH), and Emotionally Handicapped (EH). Graduates must be certifiable by the completion of the degree program. This program is for non-education majors or previously certified teachers in another field.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>9-12 Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education 3 hours</td>
</tr>
<tr>
<td>EEX 6909</td>
<td>Research Report or 2 approved electives 2,1 or 6 hours</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Area B: Specialization</th>
<th>27 Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>EEX 6107</td>
<td>Teaching Spoken and Written Language 3 hours</td>
</tr>
<tr>
<td>EEX 6912</td>
<td>Methods of Behavioral Management 3 hours</td>
</tr>
<tr>
<td>EEX 6226</td>
<td>Assessment and Curriculum Prescriptions for the Exceptional Population 3 hours</td>
</tr>
<tr>
<td>EEX 6342</td>
<td>Seminar: Critical Issues in Special Education 3 hours</td>
</tr>
<tr>
<td>EEX 6061</td>
<td>Instructional Strategies PreK-6 3 hours</td>
</tr>
<tr>
<td>EEX 6065</td>
<td>Instructional Strategies 6-12 3 hours</td>
</tr>
<tr>
<td>EEX 6524</td>
<td>Organization and Collaboration in Special Education 3 hours</td>
</tr>
<tr>
<td>EEX 6946</td>
<td>Internship 6 hours</td>
</tr>
</tbody>
</table>

**Corequisites:** prescribed by College of Education to meet State Certification requirements or as support for degree program. Waiver/substitutions for corequisites must meet departmental standards and be approved by the Chair of the Department.

- RED 5147 Developmental Reading 3 hours
- MAE 5318 Current Methods of Elementary Math 3 hours
- EDF 6236 Principles in Teaching and Learning 3 hours
- EDF 6233 Analysis of Classroom Teaching 3 hours
- EDF 6259 Strategies of Classroom Management 3 hours

**Prerequisite:**

- EEX 5051 Exceptional Children in School 3 hours

* Suggested electives include ELD 6248, EMR 6365, EED 6226, courses in Pre-K Exceptional Education, Gifted Education, or Elementary Education.
NOTE: The tracks listed below are accredited by both NCATE (The National Council for the Accreditation of Teacher Education) and AECT (The Association for Educational Communications and Technology).

Master of Education in Instructional Technology, Educational Media

Program Coordinator: J. R. Lee
ED 306, Phone: (407) UCF-6139, e-mail: jlee@pegasus.cc.ucf.edu

Minimum hours required for M.Ed. 39 Semester Hours

This program leads to a Master of Education degree and certification as a school media specialist. It is designed to offer skills in administration, production, instructional design, organization, selection, evaluation and research which relate to school media programs. It stresses knowledge and applications of both present and future innovations and technologies for education.

The Master of Education degree is for the student who has completed coursework for basic teaching certification in Florida; at least one year of successful classroom experience is preferred.

Admission to Educational Media Program

To be considered for admission to the Educational Media Program, you must secure, complete and submit by a designated deadline, a special packet of materials for review by the Educational Media Review Committee. Included in this packet will be: (1) an application for admission into the Educational Media Program and (2) forms for three letters of recommendation. This material is separate from the university graduate admissions application and may be obtained from the Educational Services Department Office (ED318). A formal interview with the Educational Media Review Committee is required. All required materials, an interview and a favorable recommendation from the Educational Media Review Committee, acceptance by UCF Graduate Studies and the College of Education are required for acceptance into the Educational Media program.

Area A: Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<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 OR</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education</td>
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Option A - Research Report

<table>
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<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EME 6909</td>
<td>Research Report</td>
<td>2,1</td>
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Option B - Non-Thesis Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EME 6052</td>
<td>Research in Instructional Technology</td>
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<tr>
<td>EME Elective</td>
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</table>

Area B: Specialization

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EME 5208</td>
<td>Production Techniques for Instructional Settings</td>
<td>3</td>
</tr>
<tr>
<td>EME 5051</td>
<td>Techniques of Instruction &amp; Information Management</td>
<td>3</td>
</tr>
<tr>
<td>EME 5225</td>
<td>Media for Children and Young Adults</td>
<td>3</td>
</tr>
<tr>
<td>EME 6605</td>
<td>Role of the Media Specialist in Curriculum and Instruction</td>
<td>3</td>
</tr>
<tr>
<td>EME 6805</td>
<td>Organization of Media and Information</td>
<td>3</td>
</tr>
<tr>
<td>EME 6105</td>
<td>Collection Development Policies and Procedures</td>
<td>3</td>
</tr>
<tr>
<td>EME 6807</td>
<td>Information Sources and Services</td>
<td>3</td>
</tr>
<tr>
<td>EME 6706</td>
<td>Administrative Principles in Media Centers</td>
<td>3</td>
</tr>
</tbody>
</table>
Master of Arts in Instructional Technology, Educational Technology

Program Coordinator: R. A. Cornell
ED 310, Phone: (407) UCF-2053, e-mail: cornell@pegasus.cc.ucf.edu

Minimum hours required for M.A. 36 Semester Hours

This program leads to a Master of Arts degree and is designed for classroom teachers who want to apply technological tools to the learning process as well as develop leadership skills necessary to become site-based technology coordinators in K-12 schools. For those not currently certified in education by the Florida Department of Education, an additional course in the foundations of education area is required. The program does not lead to any current certification in Florida, nor is any add-on certification or endorsement currently available in this area.

Admissions Policy
To be considered for admission to the Educational Technology Program, you must secure, complete and submit by a designated deadline, a special packet of materials for review by the Educational Technology Review Committee. Included in this packet will be: 1) an application for admission in the Educational Technology Program and 2) forms for three letters of recommendation. This material is separate from the university graduate admissions application and may be obtained from the Educational Services Department Office (ED 318). A formal interview with the Educational Technology Review Committee is required. Acceptance by UCF Graduate Studies and the College of Education, in addition to the abovementioned materials, are required for acceptance into the Educational Technology Program.

Area A: Core
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours

Option A - Research Report
EME 6909 Research Report 2,1 hours

Option B - Non-thesis Option
EME 6062 Research in Instructional Technology Elective 3 hours

Area B: Specialization
EME 6051 Techniques of Instruction and Information Management 3 hours
EME 6052 Electronic Resources for Education 3 hours
EME 6406 Application Software for Educational Settings 3 hours
EME 6507 Multimedia in the Classroom 3 hours
EME 6602 Integrating Technology into the Curriculum 3 hours
EME 6707 Technology Coordinator in the Schools 3 hours

Area C: Extension
Electives in current certification area or other as approved by advisor
Elective 3 hours

Elective 3 hours
INSTRUCTIONAL TECHNOLOGY

Area D: Practicum

**EME 6940** Theory into Practice in Educational Technology
(If not currently certified in education) 3 hours

Co-requisite

**EDF 6517** History and Philosophy of American Education OR 3 hours
**EDF 6608** Social Factors in American Education OR 3 hours
**EDF 6886** Multicultural Education 3 hours

**Master of Arts in Instructional Technology, Instructional Systems**

Program Coordinator: G. W. Orwig
ED 320, Phone: (407) UCF-5179, e-mail: orwig@pegasus.cc.ucf.edu

Minimum hours required for M.A. 39 Semester Hours

This program leads to a Master of Arts degree and is designed for those who wish to work in business, industry, government, or other settings where training takes place. Instructional technologists analyze training problems and requirements; design, develop, evaluate, and manage instructional programs.

**Area A:** Core 6 or 9 Semester Hours

**EDF 6481** Fundamentals of Graduate Research in Education 3 hours

Select One Option:

Option A

**EME 6909** Research Report 2 hours

Option B

**EME 6971** Thesis 3 hours

Option C

**EME 6062** Research in Instructional Technology Elective approved by advisor 3 hours

**Area B:** Specialization 24 Semester Hours

**EME 5054** Instructional Systems Survey of Applications 3 hours
**EME 5056** Communication for Instructional Systems - Process 3 hours
**EME 5057** Communication for Instructional Systems - Finish 3 hours
**EME 5408** Computer Applications in Instructional Technology 3 hours
**EME 6613** Instructional Systems Design 3 hours
**EME 6313** Media Systems Design 3 hours
**EME 6705** Administration of Instructional Systems 3 hours
**EME 6946** Graduate Internship in Instructional Systems OR 3 hours
**COE 6949** Cooperative Education

**Area C:** Elective 9 Semester Hours

(Courses not listed below require advisor approval)

**EME 6208** Multimedia Instructional Systems I 3 hours
**EME 6209** Multimedia Instructional Systems II 3 hours
**EME 6053** Current Trends in Instructional Technology 3 hours
**EME xxxx** 3 hours
**EME xxxx** 3 hours
**INP 6317** Organizational Psychology and Motivation 3 hours
**EIN 5255** Training Simulator Engineering 3 hours


Lockheed Martin/UCF Academy for Mathematics and Science

Program Coordinator: J. A. Johnson
ED 148, Phone: (407) UCF-2950, e-mail: jjohnson@pegasus.cc.ucf.edu

The Lockheed Martin/UCF Academy for Mathematics and Science is dedicated to systemic improvement of mathematics and science teaching and learning. This is a limited access program for teachers of mathematics and science in grades K-8 in Orange, Osceola, and Seminole school districts. Teachers accepted into the program pursue master's degrees in their respective fields: elementary education, science education, or mathematics education. Applications for the cohort group are accepted at any time with a deadline of December 15 of each year. Applicants are notified of their acceptance in January, and the program begins in the summer of each year. For further information about the program, call the Lockheed Martin/UCF Academy Office, (407) 823-6076.

Mathematics Education

Program Coordinator: D. K. Brumbaugh
ED 195, Phone: (407) UCF-2045, e-mail: brumbad@pegasus.cc.ucf.edu

Master of Education in Mathematics Education

Minimum hours required for M.Ed. 33 Semester Hours
This program is designed to meet the advanced knowledge and skill needs of the classroom teacher of mathematics.

Area A: Core
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
Select One:
EDF 6401 Statistics for Educational Data OR 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
Select One:
EDF 6155 Lifespan Human Development and Learning OR 3 hours
EDF 6517 History and Philosophy of American Education OR 3 hours
EDF 6608 Social Factors in American Education 3 hours
MAE 6909 Research Report or 2 approved electives 2,1 or 6 hours

Area B: Specialization (Approved by advisor) 6 Semester Hours

Area C: Curriculum Core (Approved by advisor) 15 Semester Hours

Master of Arts in Mathematics Education

Minimum hours required for M.A. 39 Semester Hours
Program for non-education majors, or previously certified teachers in another field.

Area A: Core
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6236 Principles of Teaching and Learning 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
ESE 6909 Research Report or 2 approved electives 2.1 or 6 hours

Area B: Specialization (Electives approved by advisor) 12 Semester Hours
Area C: Internship  
**MAE 6946 Graduate Internship**  
3 hours

**MAE 6946 Graduate Internship**  
6 hours

**Corequisites:**

**MAE 4360 Math Instructional Analysis**  
4 hours

Students must have required mathematics coursework to meet the 30-semester-hour rule. A track is available for this program in Extended Content and requires 18 hours of graduate-level content in this program. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an advisor if courses are difficult to schedule in content areas.

**Music Education**

Program Coordinator: C. Scott-Kassner  
ED 359, Phone: (407) UCF-6493, e-mail: kassner@pegasus.cc.ucf.edu

**Master of Education in Music Education**

**Minimum hours required for M.Ed.**  
36 Semester Hours

This program, offered 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 performance, and curriculum. Advanced courses in music history, music theory, conducting and performance are included.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>12/15 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data OR</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education 3 hours</td>
</tr>
<tr>
<td>Select One:</td>
<td>2,1 hours</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning OR 3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education OR 3 hours</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education 3 hours</td>
</tr>
<tr>
<td>MUE 6909</td>
<td>Research Report</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area B: Specialization (Approved by advisor)</th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUE 6155</td>
<td>Teaching Performance 3 hours</td>
</tr>
<tr>
<td>MUE 6349</td>
<td>Advanced General Music 3 hours</td>
</tr>
<tr>
<td>MUE 6946</td>
<td>Practicum in Music Education 3 hours</td>
</tr>
<tr>
<td>MUE</td>
<td>Directed Elective 3 hours</td>
</tr>
</tbody>
</table>

* Graduate performance and advanced conducting courses are available only after admission to the graduate program and successful completion of 9 semester hours of the graduate program.

**Other Requirements** - A placement examination in music history, music theory, and sight singing (or completion of equivalent courses).

| MUH 4218 | Review of Music History 1 hour |
| MUH 4031 | Review of Music Theory 1 hour |
| MUT 4275 | Review of Sight-Singing and Ear Training 2 hours |
Master of Arts in Music Education

Minimum hours required for M.A. 36 Semester Hours

This program is offered for students who have completed a baccalaureate degree who seek certification in music (K-12). The Master of Arts program is organized to develop basic teaching skills as well as advanced work in research and educational foundations, courses in foundations of music education and methods of teaching music. Supervised internship experiences are included. In most cases, music specialization requirements for certification are met by the B.A. degree.

Area A: Core 16 or 19 Semester Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6236</td>
<td>Principles of Instruction and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3</td>
</tr>
<tr>
<td>Select One:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education OR</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education OR</td>
<td>3</td>
</tr>
<tr>
<td>EDF 6886</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>MUE 6909</td>
<td>Research Report or 2 approved electives</td>
<td>2,1 or 6</td>
</tr>
</tbody>
</table>

Area B: Specialization (Approved by advisor) 11 Semester Hours*

* Graduate performance and advanced conducting courses are available only after admission to the graduate program and successful completion of 9 semester hours of the graduate program.

Area C: Internship 9 Semester Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUE 6946</td>
<td>Graduate Internship (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>MUE 6946</td>
<td>Graduate Internship</td>
<td>6</td>
</tr>
</tbody>
</table>

Corequisites - Music specialization requirements must be met by either a B.A. in Music or additional course work to be determined by advisor.

EDG 4324 | Teaching in Schools                        | 3     |
| MUE 4360 | Secondary School Music Instructional analysis | 2     |

Other Requirements - A placement examination in music history, music theory, and sight singing (or completion of equivalent courses).

MUH 4218 | Review Music History                       | 1     |
| MUT 4031 | Review Music Theory                        | 1     |
| MUT 4275 | Sight Singing and Ear Training OR          | 2     |

Music History Exam Date  Action
Music Theory Exam Date  Action
Sight Singing Exam Date  Action

A track is available for this program in Extended Content and requires 18 hours of graduate-level content in this program. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an advisor if courses are difficult to schedule in content areas.
Physical Education

Program Coordinator: G. R. Gergley
ED 151, Phone: (407) UCF-2034, e-mail: gergley@pegasus.cc.ucf.edu

Master of Arts in Physical Education, Exercise Physiology/Wellness Track

Minimum hours required for M.A. 39 Semester Hours

Area A: Core 9 or 12 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
*PET 6910 Problem Analysis Review of Literature 3 hours
*PET 6946 Internship Practicum 3/3 hours

* Can be taken only after 2/3 of program is completed.

NOTE: Credit in human anatomy is a prerequisite or corequisite for many PET courses. Consult with an advisor.

Area B: Specialization (Approved by advisor) 27 Semester Hours

Research Report Option 3/6 Semester Hours
PET 6909 Research Report or 2 approved electives 2, 1 or 6 hours
(In consultation with the advisor, the student who writes a research report may choose to take 27 hours in the specialization area.)

Reading Education

Program Coordinator: A. R. Joels
ED 351, Phone: (407) UCF-2008, e-mail: ajoels@pegasus.cc.ucf.edu

Master of Education in Reading Education

Minimum hours required for M.Ed. 36 Semester Hours

This program 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 practica with disabled readers from the early childhood to adult levels. Professionals currently certified as Florida teachers are eligible to pursue a degree in the program. See individual course descriptions in this catalog.

Area A: Core 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
EDF 6236 Principles of Instructional and Learning 3 hours

Select One Option:
Option A: Thesis
EDF 6401 Statistics for Educational Data 3 hours
RED 6971 Thesis 2,1 hours

Option B: Research Report
EDF 6155 Lifespan Human Development and Learning 3 hours
RED 6909 Research Report 2,1 hours

Option C: Extended Specialization 6 Semester Hours
(Electives pre-approved by advisor)
### Science Education

Program Coordinator: J. A. Johnson  
ED 146, Phone: (407) UCF-2950, e-mail: johnson@pegasus.cc.ucf.edu

### Master of Education in Science Education

#### Minimum hours required for M.Ed.  
33 Semester Hours

This program is designed to meet the advanced knowledge and skill needs of the science classroom teacher.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data OR 3 hours</td>
</tr>
<tr>
<td>EDF 6432</td>
<td>Measurement and Evaluation in Education 3 hours</td>
</tr>
<tr>
<td>Select One:</td>
<td></td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education 3 hours</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education 3 hours</td>
</tr>
<tr>
<td>ESE 6909</td>
<td>Research Report or 2 approved electives 2, 1 or 6 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area B: Specialization (Approved by advisor)</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area C: Curriculum (Approved by advisor)</td>
<td>12 Semester Hours</td>
</tr>
<tr>
<td>SCE 6238</td>
<td>Inquiry in the Sciences 3 hours</td>
</tr>
</tbody>
</table>

### Master of Arts in Science Education, Biology

#### Minimum hours required for M.A.  
39 Semester Hours

Program for non-education majors, or previously certified teachers in another field.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>18 or 23 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education 3 hours</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6253</td>
<td>Curriculum Inquiry 3 hours</td>
</tr>
<tr>
<td>EDF 6236</td>
<td>Principles of Teaching and Learning 3 hours</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education 3 hours</td>
</tr>
</tbody>
</table>
Select One Option:

Option A - Research Report

ESE 6909 Research Report  
2.1 hours

Option B - Non-Thesis

PCB 5675C Evolutionary Biology  
4 hours
PCB 5045 Conservation Biology  
4 hours

Area B: Specialization (Approved by advisor)  
12 Semester Hours
5000 or 6000 level biology courses approved by advisor*  
9 hours

Area C: Internship  
9 Semester Hours
SCE 6946 Graduate Internship  
3 hours
SCE 6946 Graduate Internship  
6 hours

Corequisites: Students must meet the 30-hour rule with courses in Genetics, General Biology, Ecology, Technology, or History of Science.

SCE 4360 Science Instructional Analysis  
4 hours
EDG 4321 Teaching Strategies I  
4 hours

* Only six hours of independent study.

Master of Arts in Science Education, Chemistry

Minimum hours required for M.A.  
39 Semester Hours
Program for non-education majors, or previously certified teachers in another field.

Area A: Core  
18 or 21 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education  
3 hours
EDF 6155 Lifespan Human Development and Learning  
3 hours
EDG 6253 Curriculum Inquiry  
3 hours
EDF 6236 Principles of Teaching and Learning  
3 hours
EDF 6517 History and Philosophy of American Education  
3 hours

Select One Option:

Option A - Research Report

ESE 6909 Research Report  
2.1 hours

Option B - Non-Thesis

(Chemistry - 5000 or 6000 level; may include 3 hours of 4000 level; approved by advisor)

Area B: Specialization (Approved by advisor)  
12 Semester Hours
5000 or 6000 level chemistry approved by advisor*  
9 hours
SCE 6238 Inquiry in the Sciences  
3 hours

Area C: Internship  
9 Semester Hours
ESE 6946 Graduate Internship  
3 hours
ESE 6946 Graduate Internship  
6 hours

Corequisites: Students must have degree in field or 30 SH in chemistry including Technology or History of Science.

SCE 4360 Science Instructional Analysis  
4 hours

* Only six hours of independent study.

Master of Arts in Science Education, Physics

Minimum hours required for M.A.  
39 Semester Hours
Program for non-education majors, or previously certified teachers in another field.

Area A: Core  
18 or 21 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education  
3 hours
EDF 6155 Lifespan Human Development and Learning  
3 hours
EDG 6253 Curriculum Inquiry  
3 hours
EDF 6236 Principles of Teaching and Learning  
3 hours
EDF 6517 History and Philosophy of American Education  
3 hours
Select One Option:

Option A - Research Report
ESE 5909 Research Report 2,1 hours

Option B - Non-Thesis (3 SH in 5000- or 6000-level physics approved by advisor)
PHY 5015C Physics for Teachers II 3 hours

Area B: Specialization 12 Semester Hours
5000 or 6000 level physics approved by advisor*
SCE 6238 Inquiry in the Sciences 3 hours

Area C: Internship 9 Semester Hours
SCE 6946 Graduate Internship 3 hours
SCE 6946 Graduate Internship 6 hours

Corequisites: Students must have B.S. degree in Physics or B.S. degree with 30 hours in Physics including Technology or History of Science.
SCE 4360 Science Instructional Analysis 4 hours
EDG 4321 Teaching Strategies I 4 hours

A track is available for this program in Extended Content and requires 18 hours of graduate-level content in this program.
* Only six hours of independent study.

Social Science Education

Program Coordinator: J. W. Cornett
ED 311, Phone: (407) UCF-0215, e-mail: cornett@pegasus.cc.ucf.edu

Master of Education in Social Science Education

Minimum hours required for M.Ed. 33 Semester Hours

This program is designed to meet advanced knowledge and skill needs of the social science classroom teacher.

Area A: Core 12 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education 3 hours
EDF 6401 Statistics for Educational Data OR 3 hours
EDF 6432 Measurement and Evaluation in Education 3 hours
Select One:
EDF 6155 Lifespan Human Development and Learning 3 hours
EDF 6517 History and Philosophy of American Education 3 hours
EDF 6608 Social Factors in American Education 3 hours
ESE 6909 Research Report or 2 approved electives 2,1 or 6 hours

Area B: Specialization (Electives approved by advisor) 9 Semester Hours

Area C: Curriculum 12 Semester Hours
ESE 6235 Curriculum Design 3 hours
ESE 6325 Curriculum Theory 3 hours
SSE 6638 Contemporary Social Science Education 3 hours
Elective approved by advisor 3 hours
Master of Arts in Social Science Education

Minimum hours required for M.A. 39 Semester Hours

Program for non-education majors or previously certified teachers in another field.

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>18/21 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481 Fundamentals of Graduate Research in Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6155 Lifespan Human Development and Learning 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6432 Measurement and Evaluation in Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6238 Principles of Teaching and Learning 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6517 History and Philosophy of American Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>ESE 6909 Research Report or 2 approved electives 2, 1 or 6 hours</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Area B: Specialization (Electives approved by advisor)*</th>
<th>12/15 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDG 6253 Curriculum Inquiry 3 hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Area C: Internship</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSE 6946 Graduate Internship 3 hours</td>
<td></td>
</tr>
<tr>
<td>SSE 6946 Graduate Internship 6 hours</td>
<td></td>
</tr>
</tbody>
</table>

Corequisites: Students must meet required courses for 30 hour rule in Social Science.
SSE 4361 Social Science Instructional Analysis 4 hours

A track is available for this program in Extended Content and requires 18 hours of graduate level content in this program.

* Only six hours of independent study.

Vocational Education

Program Coordinator: S. E. Sorg
ED 346, Phone: (407)UCF-25060, e-mail: sorg@pegasus.cc.ucf.edu

Two types of degrees are available in Vocational Education. The Master of Education degree is designed to meet the needs of students who have a baccalaureate degree and who have completed course work for regular vocational Florida State Teaching Certification. The Master of Arts degree is designed for the student who has a baccalaureate degree in a discipline other than education.

Master of Education in Vocational Education

Minimum hours required for M.Ed. 39 Semester Hours

<table>
<thead>
<tr>
<th>Area A: Core</th>
<th>12 or 15 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6432 Measurement and Evaluation in Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6481 Fundamentals of Graduate Research in Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>Select One:</td>
<td></td>
</tr>
<tr>
<td>EDF 6155 Lifespan Human Development and Learning 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDG 6517 History and Philosophy of Higher Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>EDF 6608 Social Factors in American Education 3 hours</td>
<td></td>
</tr>
<tr>
<td>Select One Option:</td>
<td></td>
</tr>
<tr>
<td>EVT 6909 Research Report 2, 1 hours</td>
<td></td>
</tr>
<tr>
<td>EVT 6946 Graduate Internship or Electives (approved by advisor) 6 hours</td>
<td></td>
</tr>
</tbody>
</table>
Area B: Vocational Education Core  
EVT 5561 Student Guidance in the Vocational Program  3 hours  
EVT 5817 Management of Vocational Programs  3 hours  
EVT 6267 Vocational Program Planning, Development, and Evaluation  3 hours

Area B: Vocational Education Core  
EVT 5561 Student Guidance in the Vocational Program  3 hours  
EVT 5817 Management of Vocational Programs  3 hours  
EVT 6267 Vocational Program Planning, Development, and Evaluation  3 hours

Area C: Specialization (Selected with approval of advisor)  
Areas of focus may include: health, technical training, teaching adults, vocational administration, or business education.

Master of Arts in Vocational Education

Minimum hours required for M.A.  
Area A: Core  12 or 15 Semester Hours  
EDF 6481 Fundamentals of Graduate Research in Education  3 hours  
EDF 6432 Measurement and Evaluation in Education  3 hours  
Select One:  
EDF 6155 Lifespan Human Development and Learning  3 hours  
EDF 6517 History and Philosophy of Higher Education  3 hours  
EDF 6608 Social Factors in American Education  3 hours  
EDF 6886 Multicultural Education  3 hours  
EDF 6236 Principles of Teaching and Learning  3 hours  
Select One Option:  
EVT 6946 Graduate Internship  6 hours  
EVT 6971 Research Report  2,1 hours

Area B: Vocational Education Core  
EVT 5561 Student Guidance in the Vocational Program  3 hours  
EVT 5817 Management of Vocational Programs  3 hours  
EVT 6267 Vocational Program Planning, Development, and Evaluation  3 hours

Area C: Specialization (Selected with approval of advisor)  
Areas of focus may include: health, technical training, teaching adults, vocational administration, or business education.

Area D: Corequisites  
If initial certification is desired, the following courses must be taken:  
EVT 3365 General Methods/Testing Evaluation in Vocational Education  4 hours  
EVT 3502 Special Needs of Vocational Students  4 hours  
Select One:  
EVT 3312 Course Construction in Health Occupations Education  4 hours  
EVT 3371 Course Construction in Industrial Education  4 hours  
BTE 4410 Course Construction in Business Education  4 hours  

A track is available for this program in Extended Content and requires 18 hours of graduate-level content in this program.
Specialist Degree Programs in Education

Education Specialist (Ed.S.) degree programs are offered in three areas: Curriculum and Instruction, for persons in teaching and other instruction/training leadership positions; Educational Leadership, for those who are interested in decision-making positions in educational organizations; and School Psychology, for students preparing to enter the specialized field of School Psychology.

Because the courses of the Ed.S. degree may differ from those of the Ed.D., credit earned in an Ed.S. degree program may not be automatically transferrable to a doctoral degree program. If a holder of an Ed.S. degree applies and is accepted for a doctoral program at a later date, the respective doctoral advisory committee will determine the amount of credit earned in the Ed.S. that is applicable to the Ed.D. In any case, 30 semester hours is the maximum amount of credit transferrable to a doctoral program of study.

Admission Requirements

Admission to the Education Specialist program requires:

- A master's degree from a regionally accredited institution (except in the case of School Psychology, which does not require a master's degree but does have other admission requirements) AND
- A combined score of 1000 (verbal and quantitative sections of the General Graduate Record Examination) AND
- Other criteria as required by the respective degree program area AND
- A recommendation from the respective advanced graduate program admission committee.

NOTE: Those applicants who do not meet the admission criteria may appeal to the respective program admission committee for consideration. A second GRE score is required, and at least one of the scores must exceed 900 for review by these committees.

Degree Requirements

A program of study (i.e., required course work) will be specified by the student's program area and approved by the College of Education. In addition, the student must:

- Complete course requirements for the Ed.S. degree (36 hours beyond the master's);
- Complete a course of study that includes a minimum of 12 semester hours in the specialization area, 6 graduate-level hours in research/statistics, and additional requirements that are specified by the program area;
- Maintain an overall 3.0 GPA on all graduate work attempted;
- Pass all required examinations; and
- Satisfy all other academic standards that apply to master's students. (These standards must be met or exceeded by specialist students.)

Transfer of Credit

A maximum of 9 semester hours earned in a master's degree may be applied to the program of study. Decisions about transfer of credit are made by the respective program coordinators and the specialization advisors with approval of the College of Education.

Students entering the School Psychology program from the baccalaureate level may transfer in a maximum of 9 semester hours of graduate credit earned subsequently at an accredited institution of higher education. Graduate-level courses taken as an undergraduate student may not be used for transfer unless the credit was clearly not a part of the undergraduate degree program.

Time Limit and Continuous Attendance

The student has seven years from the date of admission to the Education Specialist degree to complete the program. No courses taken since the entry date may be older than 7 years and be used in the program. The college reserves the right to revert the status of students who do not maintain continuous enrollment to post-baccalaureate. Students who are reverted to post-baccalaureate status must petition to be reinstated to the program.
Examinations

There are appropriate culminating academic experiences for each of the program areas. The specific program area requirements are listed under the program descriptions.

Curriculum/Instruction and Educational Leadership

Program Coordinator, Curriculum and Instruction: M. L. Kysilka ED 355, Phone: (407) UCF-2011, e-mail: kysilka@pegasus.cc.ucf.edu

Program Coordinator, Educational Leadership: W. C. Bozeman RP 215-G, Phone: (407) 384-2189, e-mail: bozeman@pegasus.cc.ucf.edu

Admissions Policy

Admissions will occur two times a year, fall and spring. Completed files must be on campus by September 15 for spring admission screening and February 15 for fall admission screening. Admitted students may begin coursework during the first new semester after admission.

Completed files include: (1) completed UCF graduate application form, (2) transcripts from all post-secondary schools previously attended, (3) GRE scores, (4) three letters of recommendation, (5) professional resumes, (6) statement of professional goals, (7) other information that may be requested after the file is started.

Admission to an Education Specialist Degree Program is separate from admission to the Doctoral Program. Upon completion of the Specialist Degree, the candidate may apply for admission to the Ed.D. degree program.

Degree Requirements

- Complete a minimum of 36 semester hours beyond the master's degree including the selected program requirements.
- Have an overall 3.0 GPA on all graduate work attempted.
- The completed planned program must include a minimum of 12 graduate-level hours in the specialization area AND a minimum of 6 graduate-level hours in Research/Statistics.
- Pass all required examinations.

Examinations

Educational Leadership majors must successfully complete one 5-hour examination in general educational leadership. Curriculum and Instruction majors must successfully complete one 3-hour examination in Curriculum and Instruction and one 3-hour examination in their area of specialization.

School Psychology

Program Coordinator: D. Mealer ED 308, Phone: (407) UCF-2465, e-mail: mealer@pegasus.cc.ucf.edu

The Education Specialist degree program in School Psychology is a unique specialization in psychology and education. This 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 preschool 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 develop-
ment, learning and motivation), psycho-educational assessment, exceptional students, remediation or intervention techniques, counseling skills, as well as full-time supervised internship of two semesters in the public school setting. Graduates are certifiable at the state level and the program is approved and accredited by NASP/NCATE.

Admission
Requirements for consideration for admission to the program include the following:

- Attend an orientation meeting prior to applying to the program (call 407-823-2596 for meeting dates)
- Meet minimum admission requirements for advanced graduate students in the College of Education
- Complete a baccalaureate degree from an accredited institution (usually in Education or Psychology)
- Have an undergraduate GPA of 3.0 (on a 4.0 scale) for the last 60 attempted semester hours
- Attain a GRE score of 1,000 (verbal and quantitative scores combined)
- Submit three letters of recommendation (one from a faculty member)
- Receive a favorable recommendation for admission by the School Psychology Review Committee.

NOTE: Applicants graduating in spring and who might be experiencing difficulty in having complete transcripts sent to UCF by March 1 must request a letter from the Registrar of the institution granting the degree (to be submitted before the deadline) stating: (1) type of degree, (2) date of graduation; (3) major; and (4) final GPA.

This program can accommodate only a limited number of students; therefore, there is a possibility of being denied admission even when all criteria are met. Admissions to this program will occur only in the fall term. Information concerning specific admissions policies and procedures can be obtained from Dr. Carl Balado (407) 823-2054.

Area A: Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEX 5051</td>
<td>Exceptional Children in the Schools</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDF 6155</td>
<td>Lifespan Human Development and Learning</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDF 6236</td>
<td>Principles of Teaching and Learning</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDF 6401</td>
<td>Statistics for Educational Data</td>
<td>3 hours</td>
</tr>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Area B: Specialization

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 6225</td>
<td>Behavior and Observational Analysis</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6501</td>
<td>Introduction to Psychological Services in Schools</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6506</td>
<td>Seminar in School Psychology</td>
<td>3 hours</td>
</tr>
<tr>
<td>MHS 6400</td>
<td>Theories of Individual Counseling</td>
<td>3 hours</td>
</tr>
<tr>
<td>MHS 6401</td>
<td>Techniques of Counseling</td>
<td>3 hours</td>
</tr>
<tr>
<td>MHS 6500</td>
<td>Group Procedures and Theories in Counseling</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6191</td>
<td>Psychoeducational Diagnosis I</td>
<td>4 hours</td>
</tr>
<tr>
<td>SPS 6192</td>
<td>Psychoeducational Diagnosis II</td>
<td>4 hours</td>
</tr>
<tr>
<td>SPS 6606</td>
<td>School Consultation Techniques</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6175</td>
<td>Cultural Diversity and Unbiased Assessment</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6125</td>
<td>Infant Developmental Assessment</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6206</td>
<td>Psychoeducational Interventions</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6194</td>
<td>Assessment of Special Needs</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6931</td>
<td>Ethical and Legal Issues in School Psychological Services</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6909</td>
<td>Research Report I and II</td>
<td>6 hours</td>
</tr>
<tr>
<td>SPS 6946</td>
<td>Practicum in School Psychology I</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6946</td>
<td>Practicum in School Psychology II</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPS 6949</td>
<td>School Psychology Internship</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

Total Minimum Semester Hours Required: 83 hours
Doctoral Degree Programs in Education

Doctor of Education (Ed.D.) degree programs are offered in two areas. One is Educational Leadership for students who are interested in management and leadership positions in educational organizations. The second is Curriculum and Instruction, designed for those interested in teaching in a college of education, teaching a content field at the community college level, becoming a school district leader in curriculum and instruction, or performing instructional design tasks in military or business settings.

Admission Policy
Admissions will occur two times a year, fall and spring. Completed files must be on campus by September 15 for spring admission screening and February 15 for fall admission screening. Admitted students may begin course work during the first new semester after admission.

Completed files include: (1) completed UCF graduate application form, (2) transcripts from all post-secondary schools previously attended, (3) GRE scores, (4) three letters of recommendation, (5) professional resume, (6) statement of professional goals, (7) other information that may be requested after the file is started.

Additional Admission Requirements

- Undergraduate GPA on the last 60 attempted semesters hours of 3.0 (on a 4.0 scale);
- A master's degree from an accredited institution;
- Minimum score of 1000 on the General Graduate Record Examination (verbal/quantitative scores combined);
- Recommended for admission by the appropriate major program area committee;
- Completion of at least three years of full-time teaching or comparable experience.

NOTE: Those applicants who do not meet admission criteria may appeal to the College of Education Graduate Standards and Curriculum Committee for consideration. For those who do not meet the GRE requirement, a second score is required, and one of the two scores must be 940 or higher for consideration for provisional admission. Provisional admittance in one program does not guarantee provisional admittance in another. Each program has its own criteria for regular and provisional admittance.

Transfer Credit
The number of transfer credit hours applied to the course requirements for a doctoral degree may not exceed 30 semester hours. Transfer credit will include graduate hours awarded by an accredited institution toward a master's degree and post-master’s degree work. The transfer credit allowed will be determined on a case-by-case basis by the graduate advisor and program coordinator. Post-master's degree credit taken at UCF prior to admission to the program is considered to be transfer credit.

Financial Support
Students interested in financial support through fellowship programs must have completed application files by December 15. Fellowships are typically awarded in the previous spring for students enrolling for the first time in the fall semester of the next academic year. Graduate assistantships may be granted for those who apply by February 15 for the following academic year.
Curriculum and Instruction

Program Coordinator: .......................................................... M. L. Kysilka
ED 335, Phone: (407) UCF-2011, e-mail: kysilka@pegasus.cc.ucf.edu

Degree Requirements
- Prerequisites 9 hours
  (EDG 6223, EDF 6481, EDF 6401, or equivalent)
- Curriculum/Instruction Core 12 hours
  (EDF 7232, EDG 7221, EDG 7356, EDG 7692) All core courses and the core examination must be completed in the first six semesters of enrollment in the doctoral program.
- Specialization Area Minimum 45 semester hours
  (includes selected courses in Curriculum, Instruction, Foundations, and Educational Leadership)
- Research and Data Analysis (EDF 7403, EDF 7463) 6 hours
- Dissertation Minimum 21 hours
- Pass all required examinations and successfully defend dissertation.
- Have an overall 3.0 GPA on all graduate work included in the planned program.

Educational Leadership

Program Coordinator: .......................................................... W. C. Bozeman
RP 215-G, Phone: (407)384-2189, e-mail: bozeman@pegasus.cc.ucf.edu

Degree Requirements
- Prerequisite Courses (as necessary) 16 semester hours
- Educational Leadership Core Courses Minimum 6 semester hours
- Cognate Courses Minimum 15 semester hours
- Area of Specialization Minimum 12 semester hours
- Research and Data Analysis Minimum 21 semester hours
- Dissertation Minimum 21 semester hours
- Pass all examinations and successfully defend dissertation.
- Have an overall 3.0 GPA on all graduate work attempted.

Candidacy Examinations
- Examinations are normally taken no sooner than the last semester of the student's course work and must be completed prior to admission to candidacy. (The exception is for C & I students who take a qualifying examination after completing the C & I core courses.)
- Examinations will be scheduled near the tenth week of the fall and spring semesters. Examinations in the summer term must be arranged by the student with the coordinator of the respective program.
- All doctoral candidates will be required to write in three areas; these are:
  - Curriculum and Instruction
    Specialization/Teaching Field 5-hour examination
    Curriculum/Instruction Core 3-hour examination
    Research/Data Analysis 3-hour examination
  - Educational Leadership
    General Educational Leadership 5-hour examination
    Area of Specialization 3-hour examination
    Research/Data Analysis 3-hour examination
- Students must be enrolled in the university during the semester an examination is taken.
Continuous Attendance
Graduation policy allows students to fulfill degree requirements as listed in the UCF graduate catalog in force during the student's most recent period of continuous attendance. Because students must occasionally interrupt their attendance for a brief period, they will be considered to have interrupted their attendance only if the interruption is for three or more consecutive terms, including summer. Under these circumstances, students will lose the option of fulfilling degree requirements under earlier catalogs. To avoid problems associated with maintaining graduate status, doctoral students are encouraged to enroll each semester, including summers.

Residency Requirement
Each student shall complete two contiguous resident semesters in full-time graduate student status. “Full-time” for doctoral programs in Education is defined as being enrolled for a minimum of nine hours per semester.

Admission to Candidacy
Before students can enroll in dissertation hours, they must apply for admission to candidacy. To be eligible for candidacy, students must have completed all degree course requirements, passed all candidacy examinations, and successfully presented a dissertation prospectus to their committee.

Status as a Candidate
- **Enrollment**
  Students must continue to enroll for at least four semester hours of dissertation credit each semester after attaining candidacy status until the oral defense of the dissertation has been successful. Post-candidacy enrollment is allowed for a maximum of four years, subject to the seven-year time limitation.
- **Time Limitation**
  A student has seven years from the date of admission to the doctoral program to complete the dissertation. If the seven-year limit is exceeded, the candidacy examinations may need to be repeated.
- **Dissertation Committee Composition**
  A committee, which will consist of a minimum of four faculty members (three from the College of Education and one from outside the College), must be approved by the Dean of the College of Education and the Provost.
- **Dissertation**
  Dissertations are required in all doctoral programs. College of Education candidates will follow the APA (American Psychological Association) guidelines.
Course Offerings

ARE 5251  ED 3(2,1)
Art for Exceptionalities. Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.

ARE 5358  ED 3(3,0)
Found Arts: 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 5648  ED 3(3,0)
Contemporary Visual Arts Education: PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school visual arts programs.

ARE 6195  ED 3(2,1)
Teaching Art Appreciation with Interdisciplinary Strategies: PR: Graduate status and public school teaching experience. Focuses on the examination of art appreciation examples and concepts toward planning curriculum (interdisciplinary for the study of art history, criticism, and aesthetics.

ART 5105C  ED 3(2,1)
Crafts Design: Crafts design and production, including the use of rigid, flexible, and linear materials.

BTE 6171  ED 3(3,0)
Business Education Curriculum: PR: Basic Teacher Certificate or C.I. Curriculum planning and development; objectives, innovations, problems, and issues in contemporary business programs.

BTE 6425  ED 3(3,0)
Advanced Business Instruction Techniques: PR: Graduate standing or C.I. Research, methods, and materials related to current practices in business education.

BTE 6426  ED 3(3,4)
Office Simulation Techniques: PR: Basic Teacher Certificate or C.I. Methods of office simulation for teachers at the developmental and performance levels.

BTE 6935  ED 3(3,0)
Seminar in Business Education: PR: Graduate standing or C.I. Current problems, issues, and trends in business education.

BTE 6946  ED 3(3,0)
Practicum Business Education: PR: Graduate standing. Techniques, materials, and instructional media; evaluation and new trends of instruction in all areas of business education.

CAP 6613  ED 3(0)
Utilizing Microcomputers in Education: Instruction in microcomputers emphasizing applications of software in the classroom and for school recordkeeping.

CGS 5310  ED 3(3,0)
Computer-Based Educational Systems: PR: COP 4020 or equivalent. The design and implementation of computer-based educational systems. Selected projects using high-level programming languages.

EDA 6061  ED 3(3,0)
Organization and Administration of Schools: PR: Basic Teacher Certificate or C.I. Introduction to and overview of educational administration including governance, finance communications and information management, personnel evaluation.

EDA 6106  ED 3(3,0)
Trends in Educational Administration: PR: Master's degree and/or Rank II certification including a course in school organization. Examines exemplary organization patterns in school administration. Study of patterns of functions in selected outstanding school organizations.

EDA 6232  ED 3(3,0)
Legal Aspects of School Operation: 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.

EDA 6240  ED 3(3,0)
Educational Financial Affairs: PR: Basic Teacher Certificate or C.I. Theoretical and practical approaches to managing school business affairs at central office and individual school levels.

EDA 6260  ED 3(3,0)
Educational Systems Planning and Management: PR: Basic Teacher Certificate or C.I. Application of current educational management and behavioral theory for systems approaches in schools and educational facilities.

EDA 6300  ED 3(3,0)
Community School Administration: PR: C.I. The relationships between the school and the community with special emphasis on community needs and the development of a total community school program.

EDA 6502  ED 3(3,0)
Organization and Administration of Instructional Programs: PR: Basic Teacher Certificate or C.I. Study of school organization, administration, and management with emphasis toward organizational theory, leadership, evaluation, and change and improvement strategies.

EDA 6540  ED 3(3,0)
Organization and Administration of Higher Education: PR: C.I. Purposes, organizations, and administration of two-year and four-year institutions of higher education in the United States. Public and private colleges are studied.

EDA 6931  ED 3(3,0)
Contemporary Issues in Educational Leadership: A capstone course intended to stimulate inspection, analysis, and dialogue regarding contemporary issues and tensions facing educational leaders and educational systems.

EDA 6945  ED 1-6
Internship: PR: C.I. Normally, the Educational Leadership internship is completed during the latter part of the degree program. Application must be made in semester prior to internship through the student's advisor.
EDU 7101
Organizational Theory in Education: PR: Advanced graduate status or C.I. Overview of sociological and behavioral theories that are applicable to administration of various educational organizations.

EDU 7192
Educational Leadership: PR: Advanced graduate status or C.I. An analysis of the interactive process and functioning of groups; development of skills essential for effective educational leadership; and the change process.

EDU 7195
Politics, Governance, and Financing of Educational Organizations: PR: Advanced graduate status or C.I. The study of policy development as a political process; governance issues; and financial issues in education.

EDU 7205
Planning, Research, and Evaluation Systems in Educational Administration: PR: Advanced graduate status or C.I. The study of research and evaluation methodologies, system theory, and planning and design strategies in educational administration.

EDU 7225
Educational Personnel, Contracts, and Negotiations: PR: Advanced graduate status or C.I. Program and completion of a course in school law. Readings, discussions, and research pertaining to administration of educational personnel and contracts with emphasis on collective bargaining, negotiations, and grievance resolution.

EDU 7235
Seminar in School Law: PR: C.I. Seminar to explore various legal aspects related to the administration and organization of American education and to enable the individual to research in-depth selected legal topics.

EDU 7236
Legal Issues in Higher Education: PR: Advanced graduate status or C.I. Addresses legal framework of public and private institutions of higher education with emphasis on case law related to organization, governance, faculty, students, curriculum, and environment.

EDU 7250
Educational Facilities: PR: C.I. Administration of educational facilities such as surveys, finance plans and specifications, equipment contracts, construction procedures, maintenance and custodial services.

EDU 7274
Seminar: Applications of Technology to Educational Leadership: PR: EDA 6260 or C.I. Study of administrative and leadership technology applications at the school building or district level.

EDU 7919
Dissertation Research: PR: C.I.

EDU 7930
Seminar in School Administration: PR: C.I. Discussion of problems in school administration, patterns of curriculum organization, and research projects.

EDU 7943
Field Project: PR: C.I. 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.

EDU 7980
Dissertation: PR: Admission to candidacy.

EDU 6205
Elementary School Curriculum: 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.

EDU 5245
Preparation and Management of Classroom Instruction: PR: C.I. Study of strategies for instructional planning and classroom management that result in optimum learning.

EDU 5259
Classroom Management and Teaching: PR: C.I. Study of teaching behaviors and strategies for classroom management that result in a minimum of behavior problems and sound instructional planning.

EDU 6155
Lifespan Human Development and Learning: Research in childhood, adolescent, and adult development relevant to contemporary American education. Emphasis on application of theory to educational practice.

EDU 6233
Analysis of Classroom Teaching: PR: EDF 6481 or C.I. Analyses of effective teaching practices and their effect on classroom instruction and learning.

EDU 6235
Principles of Instruction and Learning: The analysis and application of selected concepts and theories of learning in relation to curriculum design, classroom strategies, and instructional techniques.

EDU 6259
Strategies of Classroom Management: Study of strategies of classroom management that result in optimum learning and a minimum of behavior problems.

EDU 6401
Statistics for Educational Data: PR: EDF 6481 or C.I. Design of educational evaluation, analysis of data, descriptive and inferential statistics, interpretation of results.

EDU 6432
Measurement and Evaluation in Education: PR: Graduate standing. Concepts of measurement and evaluation, classroom test construction, creation and use of derived scores, selection and use of published measurement instruments, current issues.

EDU 6447
Development and Validation of Educational Tests and Measures: PR: EDF 6401, EDF 6432. Criterion and norm-referenced test development for educational agencies: specifications, item development and trial, scaling, passing scores, and test norms.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDF 6481</td>
<td>Fundamentals of Graduate Research in Education</td>
<td>PR: Graduate standing. Review and critique of research literature, use of library resources for educational research, and introduction to the concepts of research design and data analysis.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 6486</td>
<td>Research Design in Education</td>
<td>PR: EDF 7403 or C.I. An examination of methodological techniques for specific educational problems. Intended for students in the process of designing independent research studies.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 6517</td>
<td>History and Philosophy of American Education</td>
<td>PR: C.I. A critical analysis of the conceptual and operative educational systems developed in the United States.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 6608</td>
<td>Social Factors in American Education</td>
<td>Analysis of general and specific aspects of American education as they relate to social and behavioral sciences.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 6886</td>
<td>Multicultural Education: A survey of multicultural education</td>
<td>Analysis of the relationship between cultural transmission, cultural pluralism, and the learning process within American schools.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 7232</td>
<td>Analysis of Learning Theories in Instruction</td>
<td>PR: Advanced graduate standing or C.I. Analysis of theories and research relevant to understanding learning in educational settings.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 7403</td>
<td>Quantitative Foundations of Educational Research</td>
<td>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.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 7463</td>
<td>Analysis of Survey, Record, and Other Qualitative Data</td>
<td>PR: EDF 6401. Applications of summative evaluation for education: interpretation of impact data, measurement scales, survey and record data.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDF 7475</td>
<td>Qualitative Research in Education</td>
<td>PR: EDF 7463 or C.I. Introduction to the philosophical and conceptual basis of qualitative research methods, strategies for gathering, analyzing, and interpreting qualitative data, emerging issues.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 5325</td>
<td>Techniques for the Developing Professional in Education</td>
<td>PR: C.I. Analysis, study, development, and use of techniques for enhanced instruction in the educational setting.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 5337</td>
<td>Teaching Individuals, Small and Large Groups</td>
<td>Study of teaching skills for effectively instructing individuals in various educational groups, with consideration of developmental and behavioral characteristics of students.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 5745</td>
<td>Teaching the Non-English Student</td>
<td>PR: FLE 3063 or bilingual and non-linguistic instruction in curriculum areas and in English, as a second language.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 5941</td>
<td>Clinical Practice</td>
<td>PR: Admission to STEP II, III, or IV. Clinical internship in an appropriate educational setting under the direction of a university supervisor or peer teacher.</td>
<td>2-8(0,11)</td>
</tr>
<tr>
<td>EDG 6046</td>
<td>Contemporary Issues in Education</td>
<td>PR: Graduate standing. An analysis of current issues and concerns in education and their impact on educational programs.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6223</td>
<td>Curriculum Theory and Organization</td>
<td>Analysis and examination of the foundations, design, development, and organization of curriculum in K-Plus settings and professionals' roles in curriculum decision making.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6253</td>
<td>Curriculum Inquiry</td>
<td>PR: Graduate standing. Provides participants with the knowledge and skills necessary to understand, plan, and implement effective curriculum practices and change in K-Plus and other instructional settings.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6265</td>
<td>Evaluation of School Programs</td>
<td>PR: Graduate standing. A survey of multicultural education; examination of the relationship between cultural transmission, cultural pluralism, and the learning process within American schools.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6285</td>
<td>Advanced Curriculum Theory</td>
<td>Analysis and examination of models of teaching. Focus on the roles of the teacher, applicable contexts and learning goals, historical, philosophical, learning, and research bases.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6327</td>
<td>Techniques of Game Use in Education</td>
<td>Analysis, development, and use of educational games as an approach to classroom teaching.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 6340</td>
<td>Graduate Internship</td>
<td>PR: Approval of Student Internship Office. Internship in an appropriate educational setting under the direction of a qualified field supervisor and/or university supervisor. (May be repeated for credit.)</td>
<td>1-8(0,1-8)</td>
</tr>
<tr>
<td>EDG 6346</td>
<td>Practicum, Clinical Practice</td>
<td>PR: C.I.</td>
<td>1-2</td>
</tr>
<tr>
<td>EDG 7221</td>
<td>Advanced Curriculum Theory</td>
<td>PR: EDG 6223 or C.I. Examination of models of teaching. Focus on the roles of the teacher, applicable contexts and learning goals, historical, philosophical, learning, and research bases.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 7356</td>
<td>Models of Teaching and Instruction</td>
<td>PR: EDG 6223; EDF 7232 or C.I. Examination of models of teaching. Focus on the roles of the teacher, applicable contexts and learning goals, historical, philosophical, learning, and research bases.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 7652</td>
<td>Issues in Curriculum</td>
<td>PR: EDG 7221; EDG 7356; EDF 7232 or C.I. Examination of the relationship between the research bases of instructional and curriculum theories with emphasis on current issues and concerns.</td>
<td>3(3,0)</td>
</tr>
<tr>
<td>EDG 7819</td>
<td>Dissertation Research</td>
<td>PR: C.I.</td>
<td>1-5</td>
</tr>
<tr>
<td>EDG 7939</td>
<td>Special Topics/Seminars</td>
<td>PR: Doctoral level.</td>
<td>1-5</td>
</tr>
<tr>
<td>EDG 7980</td>
<td>Dissertation</td>
<td>PR: Admission to Candidacy.</td>
<td>1-20</td>
</tr>
</tbody>
</table>
EDH 6053: The Community College in America. PR: C.I. Study of the history, philosophy, goals, and mission of the community college. Functions, policies, practices to satisfy local needs.

EDH 6061: Contemporary Problems in Community Colleges. PR: EDH 6204 or C.I. Analysis of the critical issues facing community colleges today and in the near future.

EDH 6065: History and Philosophy of Higher Education. PR: C.I. Early European and American universities, both state and private. Also considers small and private junior and senior colleges.

EDH 6204: Community College Organization, Administration, and Supervision. PR: C.I. An analysis of the organizational structure and administrative functions of the community college as they relate to instruction and curriculum.

EDH 6215: Community College Curriculum. PR: C.I. Examination of the background, development, function, and goals of the curriculum of the community college.

EDH 6305: Teaching and Learning in the Community College. PR: EDF 7232. Focuses on teaching effectiveness in the community college.

EDH 5356: Supervision of Professional Laboratory Experiences. PR: C.I. Study of the undergraduate professional laboratory experiences program with emphasis on the role and responsibilities of the teacher education associate or supervising teacher.

EDS 6050: Supervision of Instruction. Effective supervisory principles and practices which can be used for instructional improvement.

EDS 6053: Trends in Educational Supervision. PR: Basic supervision course or C.I. Examination and analysis of the trends, issues, and problems in educational supervision.

EDS 6100: Leadership. PR: C.I. Analysis of the interactive process within and between groups, emphasizing the formation and functioning of groups; development of skills essential for effective leadership.

EDS 6123: Educational Supervisory Practices I. PR: Basic Teacher Certificate or C.I. Analysis of effective supervisory behavior as it relates to human relations/communication skills; leadership; motivation; curriculum development; community relations; and service to teaching.

EDS 6130: Educational Supervisory Practices II. PR: Basic Teacher Certificate or C.I. Analysis of effective supervisory behavior as it relates to planning and change; observation and conferencing skills; staff and group development, problem solving; and decision making.

EEX 5051: Exceptional Children in the Schools. PR: Senior standing or C.I. Characteristics, definitions, educational problems, and appropriate educational programs for the exceptional children in schools.

EEX 5702: Planning Curriculum for Pre-kindergarten Children with Disabilities. Focuses on curriculum planning; developmentally appropriate practices and implementation of individualized instruction for pre-kindergarten children with disabilities.
**COURSE OFFERINGS**

**EEX 5750**  
Communication with Parents and Agencies: Presentation of methods of interacting with community agencies, supporting and collaborating with families, developing a case management system, and facilitating program transition.

**EEX 6017**  
Typical and Atypical Applied Child Development: Focus on the stages and sequence of development and the impact of disabilities and biomedical risk factors on learning and development.

**EEX 6017**  
Typical and Atypical Applied Child Development: Focus on the stages and sequence of development and the impact of disabilities and biomedical risk factors on learning and development.

**EEX 6061**  
Instructional Strategies PREK-6: A varying exceptionalities strategies (SLD, EH, MH) course using a cross-categorical model. The course is concerned with the pre-k handicapped child through grade 6. A required field experience must be completed with the class depending on prior experience.

**EEX 6065**  
Instructional Strategies 6-12: A varying exceptionalities strategies (SLD, MH, ED) course using a cross-categorical model. The course is concerned with grades 6-12 and low incidence populations. A required field experience must be completed with the class depending on prior experience.

**EEX 6107**  
Teaching Spoken and Written Language: Diagnosis and remediation of spoken and written language problems found in the exceptional populations. Overview of alternative methods of communication.

**EEX 6224**  
Observation and Assessment of Young Children: Study of formal and informal observation and assessment.

**EEX 6266**  
Assessment and Curriculum Prescriptions for the Exceptional Population: Addresses contemporary assessments and models for assessing exceptional children. Also addresses curriculum and prescription.

**EEX 6342**  
Seminar—Critical Issues in Special Education: PR: EEX 5051. An examination of research and current literature dealing with some of the critical issues in all areas of special education.

**EEX 6524**  
Organization and Collaboration in Special Ed. PR: C.I. Addresses evaluation, assessment, personnel resource, grant writing, and other administrative issues. Presents collaborative models of intervention and service delivery.

**EEX 6612**  
Methods of Behavioral Management: Analysis of the principles of behavior management and precision teaching and application of these principles to the solving of classroom management problems.

**EEX 6863**  
Supervised Teaching Practicum with Exceptional Children: PR: Bachelor’s degree, approved program, and C.I. Supervised observation and teaching of an exceptional student.

**EGC 5036**  
Guiding Human Relationships: PR: Senior standing or Basic Teacher Certificate. Human relationship skills which will enhance intra- and interpersonal relating skills in classrooms.

**EGC 6437**  
Advanced Counseling Techniques: PR: MHS 6400, MHS 6401, or C.I. A presentation of advanced techniques, approaches and strategies to counseling and psychotherapy. Includes an experiential component.

**EGI 6246**  
Education of Special Populations of Gifted Students: Focuses on needs of gifted subgroups, including females, minorities, handicapped, and students with learning and emotional problems. S.E.

**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.

**ELD 6248**  
Instructional Strategies for Students with Learning Disabilities:Instructional strategies for students with specific learning disabilities to include development, implementation, and evaluation of individualized educational plans and adaptation of curriculum and materials.

**EME 5051**  
Technologies of Instruction and Information Management: Theories and practices utilizing instructional media and information technologies. Emphasis on new and emerging technologies and their effects on the school and media program.

**EME 5052**  
Electronic Resources for Education: PR: EME 6938 and/or EME 5051 or C.I. Study and application of electronic resources available for education including techniques for locating, evaluating, and integrating them into the classroom.

**EME 5054**  
Instructional Systems: A Survey of Applications: Applications of instructional technology in settings other than public schools. Survey of facilities, programs, and services in business, industry, religion, government, higher education, and medical settings.

**EME 5055**  
Communication for Instructional Systems—Process: Principles of written and oral communications for instructional technologists; development of assertiveness and interpersonal skills; conducting training programs for employees; creating hard copy materials.

**EME 5057**  
Communication for Instructional Systems—Application: PR: EME 5056. Applications of technology, communications theory,
platform skills, and instructional design to the effective presentation of training programs and instruction.

EME 5208
Production Techniques for Instructional Settings. PR: EME 5051. Skills in producing instructional materials. Emphasis on graphic, audio, video, and photographic skills and the application of instructional and communication theories.

EME 5225
Media for Children and Young Adults: Survey of materials for children's and young adults' informational and recreational needs; analysis, evaluation, and utilization of print and non-print materials.

EME 5408
Computer Applications in Instructional Technology: Techniques and skills for the use of computers for productivity and instruction by the instructional technologist.

EME 5810
Teaching and Learning with Technology: Overview of technologies for teaching and for learning. Practical strategies for using technology in the classroom. (May be repeated three times for credit.)

EME 6053
Current Trends in Instructional Technology: PR: EME 6613. Survey of current trends and issues of importance to the field of instructional technology.

EME 6058
Current Trends in Educational Media. PR: C.I. Survey of current trends and issues of importance to the field of educational media.

EME 6062
Research in Instructional Technology: PR or CR: EDF 6481, EME 6613, or EME 6605. Critical review and evaluation of landmark research in the areas of educational media, instructional design, and instructional systems.

EME 6105

EME 6208

EME 6209

EME 6313
Media Systems Design: PR: EME 5054, EME 6613. Principles of communication, learning theory, and research in instructional technology applied to the design of mediated instructional messages.

EME 6405
Application Software for Educational Settings: PM: EME 6938; basic computer skills; basic skills in using application programs for general productivity. Use of software applications in instructional settings by students and teachers. Includes integrated packages (word processing, database, spreadsheet, telecommunications) graphics software, presentation software, and desktop publishing software as they relate to the K-12 curriculum, students, and teacher productivity.

EME 6457
Distance Education: Technology Process Product: PR: EME 5408 or C.I. Instruction and how it is delivered at a distance. Examines technologies, processes, and products of distance education with emphasis on the relationship between high tech and high touch interactivity.

EME 6507
Multimedia in the Classroom: PR: EME 6938; basic computer skills; basic skills in using application programs for general productivity. Emphasis on the elements and applications of multimedia programs for use by K-12 students and teachers. Includes authoring, design, delivery systems, hardware, software.

EME 6602
Integrating Technology into the Curriculum: PR: EME 6501; basic computer skills. Resources, materials, and strategies for systemic achievement of curriculum goals; investigation of innovative and effective technological advances and practices for use in teaching and learning.

EME 6605
Role of the Media Specialist in Curriculum and Instruction. PR or CR: EME 5051. Development of skills in instruction and instructional design. Emphasis on teaching, consultation, and media skills and curricular involvement of the media specialist.

EME 6607
Planned Change in Instructional Technology: PR: EME 6705 or EME 6706. In-depth study of the processes of planned change and adoption/rejection of innovations in educational settings.

EME 6613
Instructional System Design: PR: EME 6504. 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.

EME 6705
Administration of Instructional Systems: PR: EME 6408, EME 6613. Provides opportunities for students to examine parameters, problems, and areas of importance in the management of instructional systems.

EME 6706
Administrative Principles in Media Centers: PR: EME 5051, EME 6105. Principles of planning, evaluating, budgeting, staffing, and marketing the school media program. Development of policies and procedures for the school media center; legislation technology; professionalism.
### COURSE OFFERINGS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit Hours</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EME 6707</td>
<td>ED 3(3,0)</td>
<td>Technology Coordinator in the Schools: PR: EME 5051, EME 6405, EME 6602. A graduate course in educational technology designed to provide a context for the role of a school-based professional with skills in educational technology. Includes planning, administration, training, leadership, budgeting, ethics, evaluation, and grant writing.</td>
</tr>
<tr>
<td>EME 6605</td>
<td>ED 3(3,0)</td>
<td>Organization of Media and Information: Methods for organizing print and non-print media, with instruction in cataloging and classification, using standard bibliographic tools and procedures.</td>
</tr>
<tr>
<td>EME 6607</td>
<td>ED 3(3,0)</td>
<td>Information Sources and Services: PR: EME 6105. Development of skills in identifying appropriate information sources for school media centers, providing reference services, and teaching research skills and search strategies.</td>
</tr>
<tr>
<td>EME 6609</td>
<td>ED 3(3,0)</td>
<td>Information Retrieval Systems: PR: EME 5408. Examines applications of information retrieval that are appropriate for instructional technologies. Includes elements of search strategy construction, database and index structure, and online search procedures.</td>
</tr>
<tr>
<td>EME 6940</td>
<td>ED 3(3,0)</td>
<td>Theory into Practice in Educational Technology: PR: Completion of all core courses in educational technology. Practicum in facilitating the utilization of instructional media and information technologies.</td>
</tr>
<tr>
<td>EMR 6362</td>
<td>ED 3(3,0)</td>
<td>Teaching Students with Mental Disabilities: Strategies for teaching students with mental disabilities; development, implementation, and evaluation of individualized plans; special approaches to teaching functional skills; developmental programming; data-based management.</td>
</tr>
<tr>
<td>ESE 5214</td>
<td>ED 3(3,0)</td>
<td>Secondary School Curriculum Improvement: PR: Basic Teacher Certificate or C.I. Secondary school self-studies for curriculum projects, accreditation reports, or staff development.</td>
</tr>
<tr>
<td>ESE 6235</td>
<td>ED 3(3,0)</td>
<td>Curriculum Design: PR: Basic Teacher Certificate or C.I. Goal analysis, task analysis, needs assessment, and writing performance objectives for developing courses of study.</td>
</tr>
<tr>
<td>ESE 6416</td>
<td>ED 3(3,0)</td>
<td>Curriculum Evaluation: PR: ESE 6235 or an equivalent curriculum course.</td>
</tr>
<tr>
<td>EVT 5561</td>
<td>ED 2-3(2-3,0)</td>
<td>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.</td>
</tr>
<tr>
<td>EVT 5817</td>
<td>ED 2-4(2-4,0)</td>
<td>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.</td>
</tr>
<tr>
<td>EVT 6264</td>
<td>ED 3(3,0)</td>
<td>Administration in Vocational Education: PR: Basic Teacher Certificate or C.I. Administrative responsibilities in a local program of vocational education that includes two or more fields of occupational education.</td>
</tr>
<tr>
<td>EVT 6265</td>
<td>ED 3(3,0)</td>
<td>Supervision in Vocational Education: PR: Basic Teacher Certificate or C.I. Supervisory techniques for planning and implementing improvement of staff, curriculum, and personal relations in vocational education.</td>
</tr>
<tr>
<td>EVT 6267</td>
<td>ED 2-4(2-4,0)</td>
<td>Vocational Program Planning, Development, and Evaluation: 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.</td>
</tr>
<tr>
<td>EVT 6268</td>
<td>ED 2-4(2-4,0)</td>
<td>School/Community Relations for Vocational Education: 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.</td>
</tr>
<tr>
<td>EXP 5445</td>
<td>ED 3(3,0)</td>
<td>Psychology of Learning and Motivation: PR: DEP 5057 or C.I. Examination of theories and research concerning the acquisition and retention of behavior as well as motivational factors that influence learning and behavior.</td>
</tr>
<tr>
<td>IDS 6933</td>
<td>ED 3(3,0)</td>
<td>Seminar in Teaching Mathematics and Science: PR: Graduate standing and valid Florida Teaching Certificate or C.I. This course is designed so that graduate students may study specific areas related to curriculum, instruction, and assessment in mathematics and science education. (May be repeated for credit.)</td>
</tr>
<tr>
<td>IDS 6934</td>
<td>ED 3(2,1)</td>
<td>Using Technology in Mathematics and Science: PR: Graduate standing and valid Florida Teaching Certificate or C.I. This course emphasizes the learning and use of technology in the teaching of mathematics and science.</td>
</tr>
<tr>
<td>IDS 6937</td>
<td>ED 3(3,0)</td>
<td>Reflecting on Instruction of Mathematics and Science: PR: Graduate standing and valid Florida Teaching Certificate or C.I. Focuses on the work of Dewey and Piaget as it applies to mathematics and science teaching. Emphasizes integrating math and science teaching.</td>
</tr>
</tbody>
</table>
EDUCATION

IDS 6939 ED 3(3,0)
Reforming Curriculum in Mathematics and Science Education: PR: Graduate standing and valid Florida Teaching Certificate or C.I. Emphasizes the reform movement including technology, history of curriculum, curriculum theory, and standards documents.

LAE 5195 ED 3(3,0)
CFWP Teacher Consultant: PR: C.I. This course is designed for Fellows of the CFWP Summer Institute who will plan, practice, and present writing in-service components to public schools.

LAE 5295 ED 1-3(1-3,0)
Writing Workshop I: PR: C.I. Students will engage in exploration and practice of effective writing strategies. May include teaching small groups of students. May be repeated for credit.

LAE 5319 ED 3(3,0)
Methods of Elementary School Language Arts. PR: EDG 4321. Principles, procedures, organization, and current practices in reading, writing, listening, and talking.

LAE 5367 AS 3(3,0)
English Composition and Literature for Teachers of Advanced Placement: PR: Graduate standing and C.I. A two-week summer institute for secondary school teachers preparing to teach Advanced Placement courses.

LAE 5372 AS 3(2,1)
Theory and Practice in Composition: PR: Senior standing or C.I. Intensive study of theories of composition, with practical experience in the writing laboratory and in composition classes.

LAE 5415 ED 3(3,0)
Children's Literature in Elementary Education: Survey of children's literature: criteria for selection according to literary elements and child development needs. Methods for presenting to children; integrating literature with elementary curricula.

LAE 5465 ED 3(3,0)
Literature for Adolescents: 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 5495 ED 3(3,0)
Assessing Writing: PR: C.I. Students will explore a variety of strategies for assessing students' writing including holistic scoring, primary trait scoring, and portfolio assessment.

LAE 8296 ED 3(3,0)
Writing Workshop II: PR: C.I. This course is designed for Fellows in CFWP Summer Institute. Students research topics about writing and participate in writing response groups.

LAE 8467 ED 3(3,0)
Studies in Adolescent Literature: Analysis of major works in genre, examination of criticism, instructional strategies, and research in teaching adolescent literature.

LAE 8616 ED 3(3,0)
Trends in Language Arts Education: PR: Basic Teacher Certificate or C.I. Historical development and trends; English usage systems; materials; instructional strategies.

LAE 6537 ED 3(3,0)
Research in Teaching English: Examination and interpretation of major research in English education. Design of models for research in language instruction in secondary schools.

LAE 5114 ED 3(3,0)
Investigation in Children's Literature: PR: A previous survey course in children's literature. Learning through the utilization of children's literature; literature analysis and evaluation; storytelling; visual and reference materials.

LAE 6792 ED 3(3,0)
CFWP Teacher/Researcher: PR: C.I. Teachers who have completed a NWP Summer Institute will examine classroom research methods and trends, and design a study to conduct the following year.

LEI 6443 ED 3(2,1)
Recreation: A comprehensive study of public, private, and school recreation programs.

MAE 5318 ED 3(3,0)
Current Methods in Elementary School Mathematics: PR: EDG 4321. Strategies of instruction of computation and concepts of number, geometry, and measurement. Instructional materials. (Meets Elementary Education certification requirements.)

MAE 5356 ED 3(3,0)

MAE 5395 ED 3(3,0)
Teaching Measurement in Schools: Metric system, methods of developing different measurement skills and concepts, and curriculum changes needed to accommodate measurement.

MAE 6145 ED 3(3,0)
Mathematics Curriculum, K-12: PR: At least 6 semester hours 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 6337 ED 3(3,0)
Teaching Algebra in the Secondary School: PR: MAE 3330 or C.I. Addresses specific techniques for developing algebra skills for pre-algebra through precalculus algebra needs. Logical deductions, problem solving, computer applications, and innovative methods are explored.

MAE 6339 ED 3(3,0)
Teaching Geometry in the Secondary School: PR: MAE 3330 or C.I. This course addresses specific techniques for developing geometry skills beginning in the general mathematics classes of grade 6 through the high school geometry course.

MAE 8617 ED 3(3,0)
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.
### COURSE OFFERINGS

| MAE 5641 | ED 3(2,1) |
| 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 5655 | ED 3(3,0) |
| Using Technology in the Instruction of K-12 Mathematics: PR: CAP 6615 or C.I. The application of computer technology to mathematics instruction including calculators, CAI, CMI, application software, simulators, and video disc technology. |

| MAE 6599 | ED 3(3,0) |
| 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.) |

| MAE 7795 | ED 3(3,2) |
| Seminar on Research in Mathematics Education: PR: Doctoral standing. |

| MHS 5005 | ED 3(3,0) |
| Introduction to the Counseling Profession: PR: Completion of Phase II of Education Professional Preparation or C.I. Overview of the philosophy, organization, administration, and roles of counselors in various work settings. |

| MHS 6020 | ED 3(3,0) |
| Mental Health Care Systems: PR: MHS 5005 or C.I. Foundations of mental health counseling including organizational, administration, fiscal, and accountability structures. |

| MHS 6070 | ED 3(3,0) |
| Diagnosis and Treatment In Counseling: PR: MHS 6400, MHR 6401. Examines diagnosis in the assessment and treatment of mental disorders and the use of the DSM IV. Disorders reviewed with emphasis on symptoms and implications for treatment. |

| MHS 6220 | ED 3(3,0) |
| Individual Psychoeducational Testing I: An overview of appraisal instruments for individual testing with emphasis on administration, scoring, and interpretation. Designed for practitioners interested in understanding individual assessment. |

| MHS 6221 | ED 3(3,1) |
| Individual Psychoeducational Testing II: 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. |

| MHS 6400 | ED 3(3,0) |
| Theories of Counseling and Personality: PR: MHS 5005 or MHS 6020, EDF 6481, or C.I. Major theories and approaches to counseling, correlating them with counterpart theories of personality and learning. |

| MHS 6401 | ED 3(1,2) |
| Techniques of Counseling: PR: MHS 6400 or C.I. The nature of counseling and its relationships to theoretical concepts. |

| MHS 6420 | ED 3(3,0) |
| Counseling Special Populations: PR: MHS 5005 or MHS 6020 or C.I. Application of counseling principles with various special populations including multicultural subgroups, persons of abuse, exceptional children, gay and lesbian people, etc. |

| MHS 6421 | ED 3(3,0) |
| Play Process in Counseling with Children: PR: SDS 6411 or C.I. Theories and application of the principles of play in the counseling process with children. |

| MHS 6430 | ED 3(1,2) |
| Family Counseling I: PR: MHS 5005 or MHS 6020 or C.I. Presentation of specific family counseling theories. An evolution and current state of the art. |

| MHS 6431 | ED 3(1,2) |
| Family Counseling II: PR: MHS 6430, EDF 6481, or C.I. Presentation of techniques to work with entrenched, paradoxical, and "fixed" family systems that pose problems for the family and the counselor. |

| MHS 6450 | ED 3(3,0) |
| Counseling Substance Use and Abuse: PR: MHS 5005 or MHS 6020, or C.I. Examination within systematic, theoretical framework of the function that a substance, individual, and the environment play in use and abuse of licit and illicit substances. |

| MHS 6480 | ED 3(3,0) |
| Human Sexuality and Relationships: A basic course in understanding how human beings form intra- and interpersonal relationships and how sexuality develops. |

| MHS 6500 | ED 3(3,0) |
| Group Procedures and Theories in Counseling: PR: MHS 6401. This course is designed to give the student an understanding of the role of theories in group counseling as well as the many process applications of groups. |

| MHS 6510 | ED 3(1,2) |
| Advanced Group Counseling: PR: MHS 6500 or C.I. This course is designed to give students practical experience in leading groups. It is also intended to challenge students to explore professional and advanced issues in group counseling. |

| MHS 6500 | ED 3(2,0) |
| Consultation, Staffing, and Case Management: PR: MHS 6500 or C.I. Understanding the counselor's role as consultant and staffing team member. Study of case management procedures. |

| MHS 6780 | ED 3(3,0) |
| Ethical and Legal Issues: Studies of ethical standards and legal issues in counseling and other human service professions. |

| MHS 6800 | ED 3(1,3) |
| Practicum in Counselor Education: PR: MHS 6500 or C.I. Supervised counseling emphasizing competence and experiences in (1) individual counseling; (2) working with groups; (3) tests in educational-career-personal counseling. May be repeated for credit. |

| MHS 6830 | ED 1-6(1,1-6) |
| Counseling Internship: PR: C.I. Supervised placement in setting appropriate for program track. (May be repeated for credit.) |

<p>| MHS 6930 | ED 3(3,0) |
| Current Trends in Counselor Education: PR: MHS 5005 or MHS 6020 or C.I. Current trends affecting the rapid changes in the counseling field. |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUE 5695</td>
<td>Trends in Arts Education: PR: Initial Certification or C.I. Investigation of current trends in arts education; development of strategies for utilizing understandings of arts education in the total curriculum of elementary students.</td>
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<tr>
<td>MUE 6155</td>
<td>Teaching Performing Organizations: PR: Basic Teacher Certificate or C.I. Techniques and skills for planning, administering, and directing performing music organizations. Examination of historical and philosophical foundations of music education.</td>
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<tr>
<td>MUE 6946</td>
<td>Practicum in Music Education: PR: Basic Teacher Certificate. MUE 6349 and MUE 6155, MUE 6610 and MUE 6630 or C.I. Field experience in teaching music. (May be repeated for credit.)</td>
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<tr>
<td>PET 6086</td>
<td>Exercise Intervention and Risk Hazards: Prevention of select major risk hazards through exercise intervention.</td>
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<tr>
<td>PET 6088</td>
<td>Wellness Development in Children: An analysis of wellness characteristics and concepts as they affect the wellness of children.</td>
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<tr>
<td>PET 6089</td>
<td>Personal and Organizational Wellness: Professional implications of the U.S. Wellness Movement and assessment of the nature and quality of corporate and other instructional programming.</td>
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<tr>
<td>PET 6238C</td>
<td>Perceptual Motor Development: Theoretical and laboratory study of the relationship between perceptual motor development and learning. Special attention is given to identifying and remediating motor deficit.</td>
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<tr>
<td>PET 6357C</td>
<td>Environmental Exercise Physiology: A study of physiological adaptation resulting from prescribed physical activity programs.</td>
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<tr>
<td>PET 6367</td>
<td>Physical Performance and Energy Supplies: The relation of nutrients to aerobic performance.</td>
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<tr>
<td>PET 6381</td>
<td>Physiology of Neuromuscular Mechanisms: Human body morphology and function critical in producing motion, strength, power, and endurance.</td>
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<tr>
<td>PET 6388</td>
<td>Exercise Physiology and Cardiovascular Disease Prevention: The physiology of exercise as it affects the onset of cardiovascular diseases.</td>
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<tr>
<td>PET 6416</td>
<td>Administration of Corporate Wellness Programs: Administrative implications for the development of a corporate wellness program.</td>
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<tr>
<td>PET 6615</td>
<td>Psychomotor Assessment of Exceptional Children: PR: PET 6655 or C.I. Presents assessment techniques and methodology for determining psychomotor needs of exceptional children. Application of competencies is required.</td>
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<tr>
<td>PET 6515C</td>
<td>Measurement in Kinesiology and Physical Education: Techniques of measurement and evaluation of human performance and their applications to physical education.</td>
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<tr>
<td>PET 6645</td>
<td>Advanced Studies in Adapted Physical Education: PR: EEX 5050. Survey course that addresses the development, educational, and socialization needs of exceptional children. A minimum of 15 observation hours are required.</td>
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</tr>
<tr>
<td>PET 6646</td>
<td>Methods and Curriculum in Adapted Physical Education: PR: PET 6645, PET 6655, PET 6615. Individualized educational and developmental programming for exceptional children. Presents models of service delivery and instruction. Practicum required.</td>
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<tr>
<td>PET 6647</td>
<td>Program Development in Adapted Physical Education: PR: C.I. Development of appropriate physical education programs for exceptional children. Course includes teacher-consultant, collaboration, in-service training, legislative issues, resource utilization.</td>
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<tr>
<td>PET 6910</td>
<td>Problem Analysis - Review of Literature: 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. (May be repeated for credit.)</td>
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<tr>
<td>RED 5514</td>
<td>Classroom Diagnosis and Development of Reading Proficiencies: PR: RED 5147 or equivalent. Classroom diagnosis and corrective teaching in reading; instructional materials. Case study required.</td>
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<tr>
<td>RED 6116</td>
<td>Trends in Reading Education: PR: Basic Teacher Certificate or C.I. Analysis of historical development and current trends; management systems; instructional strategies and investigation of research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED 6336</td>
<td>Reading in the Content Areas: 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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RED 6337  ED 3(3,0)
Reading in the Secondary School: PR: RED 6336, Basic Teacher Certification, or C.I. Nature of the adolescent reader; organizational patterns, principles, and procedures; diagnostic and remediation materials.

RED 5746  ED 3(3,0)
Management of Reading Programs: Overview of K-12 reading instruction goals and program management models; role of reading supervisor and in-service needs assessment and delivery.

RED 5845  ED 3(3,0)
Advanced Evaluation and Instruction in Reading: PR: RED 5514 or C.I. Administration and interpretation of formal and informal evaluation strategies. Factors and instructional techniques contributing to reading achievement. Case studies, parent involvement.

RED 5846  ED 6(0,5)
Reading Practicum: PR: RED 6845 or C.I. Evaluation and instructional practices for individualization of reading instruction in a laboratory setting. Parent interview and case report.

RED 5946 - Practicum, Clinical Practice

SCE 5716  ED 3(3,0)

SCE 5825  ED 3(3,0)
Space Science for Educators: PR: Senior standing or C.I. Introduction to space science, manned space flight, and space education curriculum.

SCE 6146  ED 3(2,1)
Environmental Education for Educators: PR: Graduate standing and a valid Florida Teaching Certificate or C.I. Emphasizes the importance of environmental education in the school curriculum. Includes facilitator training in national environmental education programs.

SCE 6237  ED 3(3,0)

SCE 6238  ED 3(3,1)
Inquiry in the Sciences: PR: Graduate standing or science certification. Teaching science by inquiry in the secondary school and development of inquiry lessons.

SCE 6516  ED 3(3,0)
Trends in Elementary School Science Education: PR: Basic Teacher Certification or C.I. Study of historical development and current trends; analysis of science curricula, materials.

SDS 6040  ED 3(3,0)
Student Personnel Services in Higher Education: PR: Completion of Phase II of Education Professional Preparation or C.I. A basic introduction to student personnel services which covers philosophy, history, functions, theory, and issues.

SDS 6200  ED 3(2,1)
Procedures for Group Testing: PR: EGC 6005 or EGC 6426, EDF 6481 or EDF 6482. Survey of various educational and psychological objective instruments used in schools to measure achievement, aptitude, interests, ability. Emphasis on administration and score interpretation.

SCE 6330  ED 3(3,0)
Career Development: PR: EGC 5005, 6426, or 6055; EDG 6481, or C.I. A study of career development theories, occupational and educational information, approaches to career decision-making, life-style, and leisure in the development of the whole person.

SCE 6411  ED 3(3,0)
Counseling with Children and Adolescents: PR: EGC 6436 and EDF 6155 or C.I. Study of counseling theory, process, and techniques as applied to children and adolescents. Course will contain an experiential component.

SCE 6426  ED 3(3,0)
Guidance and Counseling of Gifted/Talented Individuals: Guidance and counseling procedures and strategies for gifted/talented students; self-assessment; group dynamics; communication with parents; career goals; alternate educational opportunities.

SCE 6620  ED 3(3,0)
Organization and Administration of School Counseling and Guidance Programs: PR: EGC 5005. In-depth analysis of counseling and guidance programs in schools, including the development and management of comprehensive programs.

SCE 6624  ED 3(3,0)
The College Community and the Student: PR: Completion of Phase II of Education Professional Preparation or C.I. and EGC 5005. A study of the composition of student populations in American colleges and universities and the factors within the learning environment which support student development.

SPS 5175  ED 3(3,0)
Cultural Diversity and Nonbiased Assessment: An investigation of some of the major multicultural issues with emphasis on administration, scoring, and interpretation of instruments related to this population.

SPS 6191  ED 4(4,0)

SPS 6192  ED 4(4,0)

SPS 6194  ED 3(3,0)

SPS 6206  ED 3(3,0)
Psychoeducational Interventions: PR: SPS 6191. This course will enable school psychology students to link psychoeducational assessment results to appropriate prescriptive interventions.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS 6225</td>
<td>Behavioral and Observational Analysis of Classroom Interactions in Schools</td>
<td>PR: Graduate admission. An intensive review of the principles and procedures of applied behavioral and observational analysis and assessment as they relate to changing behavior in schools.</td>
</tr>
<tr>
<td>SPS 6601</td>
<td>Introduction to Psychological Services in Schools</td>
<td>PR: Graduate admission and C.I. A course presenting an overview of the philosophy, organization, programs, and operation of school psychological services.</td>
</tr>
<tr>
<td>SPS 6606</td>
<td>School Consultation Techniques</td>
<td>PR: C.I. Theories and models of school consultation and clinical practice in the consultative role.</td>
</tr>
<tr>
<td>SPS 6608</td>
<td>Seminar in School Psychology</td>
<td>PR: C.I. Diagnostic, instructional, and prescriptive intervention techniques.</td>
</tr>
<tr>
<td>SPS 6931</td>
<td>Ethical and Legal Issues in School Psychological Services</td>
<td>PR: Graduate admission. Introduction to ethical codes, professional standards, ethical-legal decision-making models and case studies impacting the delivery of school psychological services.</td>
</tr>
<tr>
<td>SPS 6946</td>
<td>Practicum in School Psychology</td>
<td>PR: SPS 6661, SPS 6192. Provides each student with an orientation to public schools and experiences which broadly sample the spectrum of psychoeducational assessment and interventions for practicing school psychologists.</td>
</tr>
<tr>
<td>SPS 6949</td>
<td>School Psychology Internship</td>
<td>PR: Graduate admission and C.I. Supervised placement in school setting.</td>
</tr>
<tr>
<td>SSE 5113</td>
<td>Methods in Elementary School Social Science</td>
<td>PR: EDG 4321. Study of instructional programs in the social sciences; objectives; materials; techniques; current research; and their application in elementary school setting.</td>
</tr>
<tr>
<td>SSE 6617</td>
<td>Trends in Elementary School Social Studies Education</td>
<td>PR: Basic Teacher Certificate or C.I. Historical development and current trends; strategies for inquiry instruction, intellectual, social, and personal dimensions of social studies.</td>
</tr>
<tr>
<td>SSE 6636</td>
<td>Contemporary Social Science Education</td>
<td>PR: C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.</td>
</tr>
<tr>
<td>TSL 5141</td>
<td>ESOL Strategies</td>
<td>ED 3(3.0) Surveys cross-cultural communication and understanding, testing and evaluation, curriculum and methods of teaching ESOL to meet the needs of limited English proficient students.</td>
</tr>
<tr>
<td>TSL 5345</td>
<td>Methods of ESOL Teaching</td>
<td>ED 3(3.0) This course is designed to develop understanding, knowledge, and skills of the current methods used in the teaching of ESOL.</td>
</tr>
<tr>
<td>TSL 5525</td>
<td>ESOL Cultural Diversity</td>
<td>ED 3(3.0) This course is designed to identify major cultural groups represented by the LEP population in Florida schools and to understand their special needs.</td>
</tr>
</tbody>
</table>
The College of Engineering offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. Each department within the college offers options for specialized education.

College Administration

M. P. Wanielista, Ph.D., P.E. .................................................. Dean
D. R. Reinhardt, Ph.D., P.E. ............................................. Associate Dean
R. N. Miller, Ph.D., P.E. ................................................. Associate Dean
J. A. Sepulveda, Ph.D., P.E. ........................................... Director of Graduate Affairs
James K. Beck, Ph.D. .......................................................... Director of Undergraduate Affairs

Programs in Engineering

Department of Civil and Environmental Engineering (CEE)
Civil Engineering
Environmental Engineering
Environmental Engineering Sciences
Structures and Foundations
Transportation Systems Engineering
Water Resources Engineering

Department of Electrical and Computer Engineering (ECE)
Computer Architecture
Communications
Computer Engineering
Controls
Digital Signal Processing
Digital Systems
Electrical Engineering
Electromagnetics
Electronics
Electro-Optics
Knowledge-based Systems
Microelectronics
Optical Science and Engineering
Software Engineering

Department of Industrial Engineering and Management Systems (IEMS)
Engineering Management
Human Engineering/Ergonomics
Industrial Engineering
Manufacturing Systems
Operations Research
Precision Engineering and Manufacturing
Product Assurance Engineering
Simulation Modeling and Analysis
Simulators and Training Systems

Department of Mechanical, Materials, and Aerospace Engineering (MMAE)
Aerospace Systems
Materials Science and Engineering
Mechanical Systems
Thermo-Fluids
Mechanical Engineering

In addition to meeting the minimum university criteria, each applicant is required to satisfy college and department admission requirements. Specific department requirements are listed in each departmental section. Meeting the minimum admissions requirements does not automatically guarantee admission, particularly to the doctoral programs, since enrollments may be restricted by limited college or department resources. Supplemental information such as research statements, resumes, work or internship experience may be considered by the departmental program coordinators in making admissions decisions.
Master's Programs Admission Requirements

- A minimum GPA of 3.0 or better during the last two years (60 hours) of attempted undergraduate degree work or a score of at least 1000 on the combined verbal and quantitative sections of the GRE.
- Applicants for master's programs must have bachelor's degrees and must present baccalaureate degree credentials appropriate to the specialized area of study including mathematics through differential equations. Applicants for the Engineering Management and the Human Engineering/Ergonomic programs are required to have completed mathematics through Calculus III (MAC 3313).
- International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score of at least 550 on the TOEFL test.

Doctoral Programs Admission Requirements

- Each applicant is expected to have a master's degree in engineering (or related discipline) awarded by a recognized institution and meet the departmental admission requirements. The applicant must successfully complete a Ph.D. Qualifying Examination conducted by the department. A student is normally given only one opportunity to pass the examination, but a second attempt may be approved by the department. The examination is normally taken within the first year of study beyond the master's degree.
- On the decision of the department's graduate admissions committee, selected outstanding applicants may be considered for direct entrance to the doctoral program from the bachelor's degree. Students selected for this must meet and exceed all master's program admission requirements. These applicants must successfully complete the Ph.D. Qualifying Examination by the term in which they complete the thirtieth hour of graduate course work.

In addition to meeting the minimum university criteria (see University Graduate Regulations), each degree candidate must also satisfy college and department degree requirements. Specific department requirements are listed in respective departmental sections.

Thesis Option, Master's Degree Requirements

- A minimum of thirty semester hours of approved course work including six hours of thesis credits is required.
- No more than six hours of thesis credits will be applied toward degree requirements.
- At least 15 credit hours must be from 6000-level courses.
- A maximum of 9 semester hours of graduate credit may be transferred into the program from UCF post-baccalaureate status or regionally accredited institutions. Only grades of "B" or better can be transferred.
- A maximum of 6 credits of 4000-level courses may be applied toward a master's degree. No 3000-level courses are acceptable.
- A minimum "B" average must be maintained in the program of study and no more than two "C" grades are allowed.
- A written thesis and final oral defense are required.
- A maximum of 6 semester hours of independent study may be used toward the degree. Directed research credits may not be applied toward the degree.

Non-Thesis Option, Master's Degree Requirements

Most departments within the College of Engineering offer a 36 semester hour, non-thesis option intended primarily for part-time students. The program requirements are the same as for the thesis option except that the thesis requirement is replaced by 12 credit hours of course work. An end-of-program comprehensive examination, oral or written, is required.

Doctoral Degree Requirements

- A minimum of 81 semester hours beyond the baccalaureate degree, including 24 semester hours of dissertation credits, are required.
- At least 6 semester hours of course work taken at UCF outside the Department and no more than a combined total of 12 hours of independent study and/or directed research may be used to satisfy degree requirements.
Up to 36 semester hours of credit, including a maximum of 6 credits of thesis, may be transferred into the doctoral program. The transfer credits will consist of a maximum of 6 hours of 4000-level work, no 3000-level courses, and no courses with grades less than "B."

A written dissertation and final oral defense are required.

FEEDS (Florida Engineering Education Delivery System)
FEEDS is a Florida statewide system whereby graduate-level engineering courses are delivered via video tape to cooperating university centers and selected industrial sites. Most graduate courses offered each semester are available through FEEDS. A student taking courses through FEEDS must meet the same requirements as a student on campus and will earn the same credit as if attending on campus. Courses delivered by the system may contribute to graduate degrees in engineering.

An off-campus student in industry need not be enrolled in a graduate degree program in order to take a FEEDS course; however, a student who intends to seek admission to a graduate program should be aware that no more than 9 credit hours of courses may be transferred from post-baccalaureate status into a degree-seeking program. Certain courses may have the requirement that the student come to the main campus for exams or laboratory participation.

For information concerning FEEDS, consult the UCF-FEEDS catalog (published each semester) or contact the Director of UCF-FEEDS at (407) 823-2481.
Civil and Environmental Engineering Department

Roger L. Wayson .................................................................................. Program Coordinator
Office: ENGR 115, Phone: (407) 823-2480, e-mail: wayson@pegasus.cc.ucf.edu

C. D. Cooper, Ph.D., P.E. ........................................................................ Professor
J. P. Hartman, Ph.D., P.E. ........................................................................ Professor
S. S. Kuo, Ph.D., P.E. ............................................................................... Professor
A. E. Radwan Ph.D., P.E. ........................................................................ Chair and Professor
J. S. Taylor, Ph.D., P.E. ............................................................................ Professor
M. P. Wanielista, Ph.D., P.E. ................................................................. Dean and Professor
Y. A. Yousef, Ph.D., P.E. ......................................................................... Professor
H. M. Al-Deek, Ph.D. ............................................................................... Associate Professor
J. D. Dietz, Ph.D., P.E. ............................................................................ Associate Professor
C. M. Head, Ph.D., P.E. .......................................................................... Associate Professor
S. K. Kunnath, Ph.D., P.E. ....................................................................... Associate Professor
A. Mirmiran, Ph.D., P.E. ......................................................................... Associate Professor
R. L. Wayson, Ph.D., P.E. ....................................................................... Associate Professor
M. A. Aty, Ph.D. ...................................................................................... Assistant Professor
M. B. Chopra, Ph.D. ................................................................................ Assistant Professor
S. M. El-Tawil, Ph.D. ............................................................................... Assistant Professor
F. N. Nnadi, Ph.D. .................................................................................. Assistant Professor
U. O. Onyemeluoke, Ph.D ....................................................................... Assistant Professor
A. A. Randall, Ph.D., P.E. ........................................................................ Assistant Professor

Civil Engineering
Graduate work and research in Civil Engineering reflects the very broad nature of the field, which has as its purpose the enhancement of the infrastructure of society. The educational program includes course work in structural analysis and design, geotechnical engineering and foundations, transportation planning and operations, and water resources. Faculty research interests include geotechnical studies of subsurface conditions, soil testing and design of advanced testing devices, intelligent transportation systems, traffic safety, structural dynamics, nonlinear structural analysis and software development, reinforced concrete, and wind engineering. Students completing the program find positions in consulting firms, construction and construction-related industries, and in city, county, state, and federal government agencies.

Environmental Engineering
The Environmental Engineering program concerns itself with prevention and correction of pollution effects on the natural and man-made environments. Strong faculty research interests have resulted in a program of distinction for the college and the university. Applied and basic research interests include the general areas of water treatment, wastewater treatment, solid and hazardous waste management, atmospheric pollution control, air quality modeling, community noise prediction/abatement, and stormwater management. 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, and industry.

Degree Programs
The Civil and Environmental Engineering Department offers Master of Science degrees in Civil Engineering (M.S.C.E.) and Environmental Engineering (M.S.Env.E.), and the Master of Science (M.S.) degree in Structures and Foundations, Transportation Systems Engineering, Environmental Engineering Sciences, and Water Resources Engineering. The department also offers Doctor of Philosophy (Ph.D.) degrees in both Civil Engineering and Environmental Engineering.

There are three options for the master's degree programs: the thesis option, the research report option, and the non-thesis option. The thesis option is available in all master's degree programs and requires a thesis that is equivalent to 6 hours out of a total of 30 hours. It is the required option for students on contracts and grants as well as any student receiving department financial support.
The research report option is available in the M.S. Env.E. and M.S. (Environmental Engineering Sciences) programs only and requires a research report that is equivalent to 3 hours out of a total of 33 hours. This option is primarily suitable for part-time, nonresident students. The research report should meet thesis publication guidelines.

The non-thesis option is available in the M.S.C.E., M.S. (Structures and Foundations), M.S. (Transportation Systems Engineering), and M.S. (Water Resources Engineering) programs only and requires 36 coursework hours and a comprehensive examination that may be oral or written at the discretion of the student's advisor and committee. This option is available only for part-time students on a limited access basis.

Master of Science in Civil Engineering

The Department offers a Master of Science in Civil Engineering (M.S.C.E.) degree to students who have an undergraduate degree in Civil Engineering or another closely related field of engineering. The degree requires 30 semester hours of acceptable graduate work which includes a thesis (6 semester hours), or 36 semester hours of acceptable graduate work with a comprehensive final examination. The student must develop an individual program of study with a faculty advisor.

Required Courses

Take any three of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES 5325</td>
<td>Bridge Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CES 5606</td>
<td>Advanced Steel Structures</td>
<td>3</td>
</tr>
<tr>
<td>CES 5706</td>
<td>Advanced Reinforced Concrete</td>
<td>3</td>
</tr>
<tr>
<td>CES 6715</td>
<td>Prestressed Concrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>CES 6840</td>
<td>Composite Steel Concrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>CEG 6115</td>
<td>Foundation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CEG 5015</td>
<td>Geotechnical Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>CEG 5700</td>
<td>Geo-Environmental Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

Take two courses from among:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTE 5204</td>
<td>Traffic Engineering OR</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5805</td>
<td>Geometric Design of Transportation Systems</td>
<td>3</td>
</tr>
<tr>
<td>CWR 5205</td>
<td>Hydraulic Engineering OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 5545</td>
<td>Water Resources Engineering OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6125</td>
<td>Groundwater Hydrology OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6235</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses that comprise the elective part of the program are selected in accordance with the general requirements of the College of Engineering, and often include courses taken from the following three subdiscipline areas:

Elective Sub-Discipline

Take three courses with a thesis, or seven courses without a thesis from among:

Structural and Geotechnical Engineering

Any of the structural/geotechnical courses not taken as required 3 hours each

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEG 6065</td>
<td>Soil Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>CEG 6317</td>
<td>Advanced Geotechnical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CES 5821</td>
<td>Masonry and Timber Design</td>
<td>3</td>
</tr>
<tr>
<td>CES 5325</td>
<td>Bridge Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CES 6715</td>
<td>Prestressed Concrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>CES 6230</td>
<td>Advanced Structural Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CES 6840</td>
<td>Composite Steel Concrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>CES 6116</td>
<td>Finite Element Structural Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CES 6170</td>
<td>Boundary Elements in Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CES 6209</td>
<td>Dynamics of Structures</td>
<td>3</td>
</tr>
<tr>
<td>CES 6220</td>
<td>Wind and Earthquake Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CES 6910</td>
<td>Research in Structural Engineering</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5835</td>
<td>Pavement Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Other courses with advisor's consent 3 hours each
Transportation Engineering
The transportation course not taken as required 3 hours
CGN 6655 Regional Planning, Design, and Systems 3 hours
TTE 5205 Highway Capacity 3 hours
TTE 5315 Transportation Safety Analysis 3 hours
TTE 5700 Railroad Engineering 3 hours
TTE 5835 Pavement Design 3 hours
TTE 6256 Traffic Operations 3 hours
TTE 6270 Intelligent Transportation Systems 3 hours
TTE 6526 Planning and Design of Airports 3 hours
TTE 6625 Mass Transportation Systems 3 hours

Water Resources Engineering
Any of the water resources courses not taken as required 3 hours each
CWR 6126 Groundwater Modeling 3 hours
CWR 6535 Modeling Water Resources Systems 3 hours
CWR 6236 River Engineering and Sediment Transport 3 hours
CWR 6102 Advanced Hydrology 3 hours

Thesis 6 Semester Hours
Total Hours Required for M.S.C.E. 30 or 36 Semester Hours

Master of Science in Structures and Foundations
The Department offers a Master of Science (M.S.) degree in Structures and Foundations Engineering to students with appropriate engineering baccalaureate backgrounds. The degree requires 30 semester hours of acceptable graduate course work which includes a thesis (6 hours), or 36 semester hours of acceptable graduate course work with a comprehensive final examination. The student must develop an individual program of study with a faculty advisor and must have background or articulation course work to include:

Prerequisites
Structural Analysis I (CES 4100)
Structural Analysis II (CES 4101)
Concrete Structures (CES 4702)
Steel Structures (CES 4605)
Geotechnical Engineering I (CEG 4101C)

Required Courses 12 Semester Hours
Take 30 semester hours (Thesis option) or 36 semester hours (Non-Thesis option) from the following courses, with at least 2 courses from each sub-group. Other courses may also be taken with the consent of the faculty advisor.

Sub-Group A: Geotechnical Engineering
CEG 5015 Geotechnical Engineering II 3 hours
CEG 5700 Geo-Environmental Engineering 3 hours
CEG 6065 Soil Dynamics 3 hours
CEG 6115 Foundation Engineering 3 hours
CEG 6317 Advanced Geotechnical Engineering 3 hours
CES 6170 Boundary Elements in Civil Engineering 3 hours
TTE 5835 Pavement Design 3 hours

Sub-Group B: Structural Engineering
CES 5821 Masonry and Timber Design 3 hours
CES 5326 Bridge Engineering 3 hours
CES 5006 Advanced Steel Structures 3 hours
CES 5706 Advanced Reinforced Concrete 3 hours
CES 6715 Prestressed Concrete Structures 3 hours
CES 6230 Advanced Structural Mechanics 3 hours
CES 6840 Composite Steel Concrete Structures 3 hours
CES 6116 Finite Element Structural Analysis 3 hours
CES 6209 Dynamics of Structures 3 hours
Master of Science in Transportation Systems Engineering

The Department offers a Master of Science (M.S.) degree in Transportation Systems Engineering to students with appropriate science or engineering baccalaureate backgrounds. Students should have background (or articulation course work) in the following areas:

**Prerequisites**
- Probability and Statistics for Engineers (EIN 2032)
- Engineering Economic Analysis (EGN 3613)
- Transportation Engineering (TTE 4004)
- Mathematics through Differential Equations (MAC 2311, 2312, 2313; MAP 2302)
- Physics I with Calculus (PHY 2048)

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>TTE 5204</td>
<td>Traffic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5805</td>
<td>Geometric Design of Transportation Systems</td>
<td>3</td>
</tr>
<tr>
<td>TTE 6256</td>
<td>Traffic Operations</td>
<td>3</td>
</tr>
<tr>
<td>TTE 6270</td>
<td>Intelligent Transportation Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGN 6655</td>
<td>Regional Planning, Design, and Development</td>
<td>3</td>
</tr>
<tr>
<td>ENV 5071</td>
<td>Environmental Analysis of Transportation Systems</td>
<td>3</td>
</tr>
<tr>
<td>STA 5156</td>
<td>Probability and Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5315</td>
<td>Transportation Safety Analysis</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5205</td>
<td>Highway Capacity</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5700</td>
<td>Railroad Engineering</td>
<td>3</td>
</tr>
<tr>
<td>TTE 5835</td>
<td>Pavement Design</td>
<td>3</td>
</tr>
<tr>
<td>TTE 6526</td>
<td>Planning and Design of Airports</td>
<td>3</td>
</tr>
<tr>
<td>TTE 6625</td>
<td>Mass Transportation Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

**Thesis**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
</table>

| Thesis     | 6 Semester Hours                                |

**Total Hours Required for M.S.**

| Hours     | 30 or 36 Semester Hours                        |

The table above outlines the requirements for the Master of Science in Transportation Systems Engineering, including prerequisites, required courses, elective courses, and thesis options. Students must complete a certain number of hours to fulfill the requirements for the degree.
Master of Science in Water Resources Engineering

The Water Resources Engineering program is offered to students with appropriate baccalaureate backgrounds and should include the following articulation course work. Each student must have an individual program of study approved by their faculty committee.

Prerequisites
Geotechnical Engineering (CEG 4101C)
Probability and Statistics for Engineers (EIN 2032)
Hydrology (CWR 4101C)
Hydraulics (CWR 4203C)
Engineering Economic Analysis (EGN 3813)

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWR 5205</td>
<td>Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CWR 5545</td>
<td>Water Resources Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6125</td>
<td>Groundwater Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6235</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6128</td>
<td>Groundwater Modeling OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6535</td>
<td>Modeling Water Resources Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWR 6126 or CWR 6535 if not taken as required</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CWR 6236</td>
<td>River Engineering and Sediment Transport</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6102</td>
<td>Advanced Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>Other courses with advisor’s consent</td>
<td></td>
<td>3 each</td>
</tr>
</tbody>
</table>

Thesis

6 Semester Hours

Total Hours Required for M.S.

30 or 36 Semester Hours

Master of Science in Environmental Engineering

The Department offers a Master of Science degree in Environmental Engineering (M.S.Env.E.) for students who have an undergraduate degree in Environmental Engineering or any other closely related field of engineering. The degree requires 30 semester hours of acceptable graduate work which includes a thesis (6 semester hours), or 33 semester hours of acceptable graduate work which includes a research report (3 semester hours). The student develops an individual program of study with a faculty advisor.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWR 5545</td>
<td>Water Resources Engineering OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6125</td>
<td>Groundwater Hydrology OR</td>
<td>3</td>
</tr>
<tr>
<td>CWR 6235</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6015</td>
<td>Physical/Chemical Treatment Systems</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6016</td>
<td>Biological Treatment Systems</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6558</td>
<td>Industrial Waste Treatment OR</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6347</td>
<td>Hazardous Waste Treatment</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6106</td>
<td>Atmospheric Dispersion Modeling OR</td>
<td>3</td>
</tr>
<tr>
<td>ENV 6126</td>
<td>Design of Air Pollution Controls</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses that comprise the elective part of the program are selected in accordance with the general requirements of the College of Engineering and often include courses taken from the following two subdiscipline areas:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Environmental

Any of the appropriate ENV graduate-level courses (5000 or 6000) with the consent of the student’s advisor | | 3 each |
### Master of Science in Environmental Engineering Sciences

This option is offered to students with appropriate science baccalaureate degrees. The student entering this program should have background (or articulation course work) in the following areas:

**Prerequisites**
- Mathematics through Differential Equations (MAC 2311, 2312, 2313; MAP 2302)
- Physics with Calculus (PHY 2048)
- Chemistry Fundamentals (CHM 2045, 2046, 2046L)
- Engineering Fluid Mechanics (CWR 3201)
- Engineering and the Environment (EGN 3704)
- FORTRAN Programming (CGS 3422)
- Engineering Economics (EGN 3613)
- Probability and Statistics for Engineers (EIN 2032)
- Environmental Engineering-Process Design (ENV 4561)
- Chemical Process Control (EES 4202C)
- Biological Process Control (EES 4111C)
- Air Pollution (ENV 4121C)
- Hydrology (CWR 4101C)
- Hydraulics (CWR 4203C)
- Solid Waste (ENV 4341) [This course may be used in Program of Study with advisor’s consent.]

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>12 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWR 5545</td>
<td>Water Resources Engineering OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>CWR 6235</td>
<td>Open Channel Hydraulics OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>CWR 6125</td>
<td>Groundwater Hydrology</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6015</td>
<td>Physical/Chemical Treatment Systems OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6016</td>
<td>Biological Treatment Systems OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6558</td>
<td>Industrial Waste Treatment</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6106</td>
<td>Atmospheric Dispersion Modeling OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6126</td>
<td>Design of Air Pollution Controls OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6347</td>
<td>Hazardous Waste Incineration</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 5071</td>
<td>Env Analysis Transportation Systems OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6615</td>
<td>Receiving Water Impacts OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>ENV 6519</td>
<td>Aquatic Chemical Processes</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

**Elective Courses**

Any of the appropriate ENV or CWR graduate-level courses (5000 or 6000) with the consent of the student's advisor 3 hours each

**Research Report or Thesis**

Total Hours Required for M.S. 30 or 33 Semester Hours
Doctor of Philosophy in Civil Engineering or Environmental Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for a student with a master's degree in Civil or Environmental Engineering or a closely related discipline. The Ph.D. program in Civil Engineering is intended to allow a student to study in depth, with emphasis on research in a specific area, structural analysis and design, geotechnical engineering and foundations, transportation planning and operations, and water resources. The Ph.D. program in Environmental Engineering is intended to allow a student to study and conduct research in a specific area of water treatment, wastewater treatment, solid and hazardous waste management, atmospheric pollution control and/or modeling, community noise abatement, or stormwater management.

Doctoral Program Admission
In addition to satisfying regular university admissions criteria, the student must have a master's degree in Civil or Environmental Engineering or a closely related discipline from a recognized institution. Prospective applicants should forward a detailed resume and a letter with research interests for department review. In addition, the student must pass a Ph.D. Qualifying Examination in one of the departmental disciplines. This examination is normally taken within the first year of study beyond the master's degree.

Doctoral Degree Requirements
The Ph.D. degree requires a minimum of 81 semester hours beyond the bachelor's degree, 24 of which will be dissertation credits, and 6 of which will be from courses taken outside the Department. A maximum of 36 semester hours, including 6 thesis hours, may be transferred from a master's degree toward these requirements. An additional 9 semester hours of post-master's work may be transferred. A program of study must be developed with an advisory committee and meet with departmental approval at the beginning of the Ph.D. program, at which time transfer credit will be evaluated on a course by course basis.

Examinations
In addition to the Qualifying Examination, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the coursework and consists of a written portion and an oral presentation of a research proposal. A copy of this examination will be kept as part of the student's official record. The Dissertation Defense Examination is an oral examination taken as defense of the written dissertation.

UCF Accelerated Circular Test Track (UCF-CATT) for testing bridge joints and paving materials
Electrical and Computer Engineering Department

Parveen F. Wahid .................................................. Program Coordinator
Office: ENGR 407, Phone: (407) 823-3027, e-mail: pfw@ece.engr.ucf.edu

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. S. Bauer, Ph.D., P.E.</td>
<td>Professor</td>
</tr>
<tr>
<td>G. D. Boreman, Ph.D., P.E.</td>
<td>Professor</td>
</tr>
<tr>
<td>C. G. Christodoulou, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>A. J. Gonzalez, Ph.D., P.E.</td>
<td>Professor</td>
</tr>
<tr>
<td>J. J. Liou, Ph.D.</td>
<td>Chair and Professor</td>
</tr>
<tr>
<td>D. C. Malocha, Ph.D., P.E.</td>
<td>Professor</td>
</tr>
<tr>
<td>W. B. Mikhail, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>M. G. Moharam, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>H. R. Myler, Ph.D., P.E.</td>
<td>Professor</td>
</tr>
<tr>
<td>R. L. Phillips, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>M. J. Solleau, Ph.D.</td>
<td>CREOL Director and Professor</td>
</tr>
<tr>
<td>N. S. Tzannes, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>I. Batarseh, Ph.D., P.E.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>M. A. Belkeredd, Ph.D., P.E.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>P. Delfyett, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>M. Georgiopoulos, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>J. E. Harvey, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>T. Kasparis, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>H. I. Klee, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>D. G. Linton, Ph.D., P.E.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>R. N. Miller, Ph.D., P.E.</td>
<td>Associate Dean and Associate Professor</td>
</tr>
<tr>
<td>A. Mortazawi, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>B. E. Petrasko, D.Eng.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Z. Qu, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>S. M. Richie, Ph.D.</td>
<td>Associate Professor</td>
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<tr>
<td>N. Riza, Ph.D.</td>
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<tr>
<td>K. B. Sundaram, Ph.D.</td>
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<tr>
<td>P. F. Wahid, Ph.D.</td>
<td>Associate Professor</td>
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<tr>
<td>A. R. Weeks, Ph.D.</td>
<td>Associate Professor</td>
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<tr>
<td>J. S. Yuan, Ph.D.</td>
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</tr>
<tr>
<td>J. Zalewski, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>R. F. DeMara, Ph.D.</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>M. G. Haralambous, D.Sc., P.E.</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>J. Rolland, Ph.D.</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>P. Li Kam Wa, Ph.D.</td>
<td>Assistant Professor</td>
</tr>
</tbody>
</table>

Joint Appointees
L. C. Andrews, Ph.D. .................................................. Professor of Mathematics
M. Bass, Ph.D. .................................................. Professor of Physics
B. Chai, Ph.D. .................................................. Professor of Physics
M. Richardson, Ph.D. .................................................. Professor of Physics
W. T. Sifivast, Ph.D. .................................................. Professor of Physics
G. Stegeman, Ph.D. .................................................. Professor of Physics
E. W. Van Styland, Ph.D. .................................................. Professor of Physics
D. J. Hagan, Ph.D. .................................................. Associate Professor of Physics
R. Peale, Ph.D. .................................................. Associate Professor of Physics
G. Schiavone, Ph.D. .................................................. Associate Professor of Physics

Degree Programs
The Electrical and Computer Engineering Department supports graduate degree programs and research in the major subdiscipline areas of electrical engineering, computer engineering, and optical sciences and engineering. The faculty include members with national and international reputations in teaching and research. Our facilities are among the best with a modern building and well-equipped laboratories.
Research Interests of the faculty include antennas, microwave and millimeter wave circuits and devices, communication systems, digital signal/image processing, IFF devices, electromagnetic theory, speech processing, VLSI design, spread spectrum systems, SAW and ACT devices, spectral estimation, solid state device modeling and CAD techniques, communication networks, integrated services digital networks, neural networks, systems and controls, robotics, robust control, computer control, microelectronics, semiconductors, thin films, power system stability, bipolar device modeling, solid state lasers, optical propagation, fiber optics, optical signal processing, laser-induced damage, optical testing, diffractive optics, phase conjugation, infrared detectors, fourier optics, lens design, nonlinear optics, power electronics, digital systems, computer architecture, software engineering, artificial intelligence, expert systems, simulation, computer communications and computer vision.

Master of Science in Electrical Engineering

The Master of Science degree in Electrical Engineering (M.S.E.E.) is intended for students with a baccalaureate degree in electrical engineering or a related field from an approved institution. Admission requirements include a minimum grade point average of 3.0 (A = 4.0) on the last 60 attempted semester hours of the bachelor's degree and a minimum combined score of 1000 on the verbal-quantitative sections of the Graduate Record Examination. International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score of at least 550 on the TOEFL test.

Students with a grade point average of less than 3.0 may be admitted on a trial program basis in some circumstances. Additional courses may also be required to correct any course deficiencies. Students should contact the ECE Graduate Coordinator for further information.

Detailed information on the specializations is available in the department. Students must have an advisor appointed and an official program of study submitted before completing nine semester hours of course work.

Articulation

Undergraduate articulation courses may be required for students with BS and/or MS degrees in fields other than electrical engineering. The articulation courses will be determined by the graduate coordinator in consultation with student’s research advisor on a case-by-case basis.

In general, students with a non-electrical engineering degree must have had the equivalent course work or satisfy the following articulation program:

Mathematics through Differential Equations (MAP 2302 or equivalent)
Physics with Calculus (PHY 2048, PHY 2049 or equivalent)
Electronics (EEL 3307 or equivalent)
EM Fields (EEL 3470 or equivalent)
Communications (EEL 3552 or equivalent)
Semiconductor Devices (EEL 3306 or equivalent)

Additional courses may also be required to correct any undergraduate course deficiencies.

Thesis Option Degree Requirements

This option requires a minimum of thirty semester hours of approved course work.

Program requirements include:
- Required courses from one of the following specialization areas:
  - Communications
  - Electronics
  - Controls
  - Electro-optics
  - Digital Signal Processing
  - Solid State and Microelectronics
  - Electromagnetics
Course Requirements for the Specialization Areas

### Communication Specialization Courses

**Required Courses:**
- EEL 5542 Random Processes I
- EEL 6530 Communication Theory

**Electives:**
- EEL 6504 Communications Systems Design
- EEL 6543 Random Processes II
- EEL 6537 Detection and Estimation
- EEL 5555 RF Communications
- EEL 5762 Performance Analysis of Computer and Communication Systems
- EEL 5547 Introduction to Radar Systems
- EEL 6765 Advanced Computer Communications
- EEL 6590 Advanced Topics in Communications

### Controls/Power Specialization

**Required Courses:**
- EEL 5530 Digital Control Systems
- EEL 5173 Signal and System Analysis

**Electives in Controls:**
- EEL 6621 Nonlinear Control Systems
- EEL 6671 Modern and Optimal Control Systems
- EEL 6674 Optimal Estimation for Control
- EEL 6617 Fundamentals of Modern Multivariable Control
- EEL 6616 Adaptive Control
- EEL 6680 Advanced Topics in Modern Control Systems

**Electives in Power:**
- EEL 5240 Power Electronics I
- EEL 6255 Advanced Power Systems Analysis
- EEL 6267 Advanced Topics in Power Engineering
- EEL 6xxx Advanced Machines
- EEL 6246 Power Electronics II

### Digital Signal Processing Specialization

**Required Courses:**
- EEL 4750 Digital Signal Processing Fundamentals
- EEL 5513 Digital Signal Processing Applications

**Electives:**
- EEL 6502 Adaptive Digital Signal Processing
- EEL 6505 Multi-dimensional Digital Processing
- EEL 6755 VLSI Design of Digital Signal Processing
- EEL 6558 Advanced Topics in Digital Signal Processing
- EEL 5820 Image Processing I
- EEL 6823 Image Processing II
- EEL 5825 Pattern Recognition

### Electromagnetic Specialization

**Required Courses:**
- EEL 6488 Electromagnetic Fields
One of the following courses is required:
EEL 4436C Microwaves
EEL 5462C Antenna Analysis and Design
EEL 5434 Microwave Circuits and Design

Electives:
EEL 6463 Antenna Analysis and Design I
EEL 6492 Advanced Topics in Electromagnetic and Microwaves

Electronics Specialization
Required Courses:
EEL 6371 Advanced Electronics I

One of the following courses is required:
EEL 5240 Power Electronics I
EEL 5357 CMOS Analog and Digital IC Design

Electives:
EEL 5353 Semiconductor Device Modeling and Simulation
EEL 5370 Operational Amplifiers
EEL 6354 Advanced Semiconductor Devices I
EEL 6372 Advanced Topics in Electronics
EEL 6246 Power Electronics II

Electro-Optics Specialization
Three of the following courses are required:
EEL 5441 Introduction to Wave Optics
EEL 6443 Electro-Optics
EEL 6580 Laser Engineering
EEL 6591 Fourier Optics
EEL 5453 Geometrical Optics

Electives:
EEL 5593 Fiber Optics Communication
EEL 5451L Electro-Optics Laboratory
EEL 6595 Infrared Technology

Microelectronics Specialization
Required Courses:
EEL 5355C Fabrication of Solid-state Devices
EEL 6354 Advanced Semiconductor Device I

Electives:
EEL 5332C Thin Film Technology
EEL 5353 Semiconductor Device Modeling and Simulation
EEL 5357 CMOS Analog and Digital IC Design
EEL 5517 Surface Acoustic Wave Devices and Systems
EEL 5352 Semiconductor Material and Device Characterization
EEL 6359 Advanced Semiconductor Device II
EEL 6338 Advanced Topics in Microelectronics

Detailed information on the research activities in each of the specializations is available in the department. Students must have an advisor appointed and an official program of study submitted before completing nine semester hours of course work.

Non-Thesis Degree Requirements
This option requires a minimum of 36 semester hours of course work and is intended primarily for part-time students. Program requirements are the same as the thesis option except that the thesis requirement is replaced by 12 hours of course work. Students are required to pass a final comprehensive examination.
Doctor of Philosophy in Electrical Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for students with a master's degree in electrical engineering or a closely related discipline who wish to pursue a career in research or academia. Specializations include communications, digital signal processing/image processing, controls, electro-optics, electromagnetics, electronics, and solid-state/microelectronics.

Admission

Students must satisfy university requirements and have completed a master's degree in electrical engineering or a closely related discipline, with a minimum grade point average of 3.5 of a possible 4.0, and a minimum of 1100 on the combined verbal-quantitative sections of the General Test of the Graduate Record Examination. Admissions decisions using these results and supplemental information are made by the departmental program coordinator.

Students are required to pass a qualifying examination. Then the student must form a dissertation committee and submit an approved program of study before being allowed to continue with the doctoral program.

Degree Requirements

The Ph.D. degree requires a minimum of 81 semester hours of graduate course work, 24 of which will be dissertation hours. Graduate course work includes 5000 or higher level courses, with a maximum of 12 hours of independent study. Up to 6 hours of 4000 level work are acceptable if transferred from a master's degree program. At least 6 hours must be taken outside the Department. There is a residency requirement of two contiguous semesters in full-time graduate student status (minimum of 6 semester hours) after acceptance to the graduate program at UCF. A program of study must be developed with an advisory committee and meet with departmental approval at the beginning of the Ph.D. program, at which time transfer credit will be evaluated on a course by course basis. The degree must be completed within seven years from the date of entry to the doctoral program.

Transfer Credits

A limited number of credit hours may be transferred from a master's degree toward these requirements, including a maximum of 6 hours of 4000-level courses; no 3000-level courses; and no courses with grades less than "B."

Examinations

Qualifying/Comprehensive Examination

The prospective doctoral student must take a written Qualifying Examination before being admitted to full doctoral student status. This exam covers relevant material typically learned at the undergraduate and graduate levels, and serves to verify the student's capability and readiness for the Ph.D. program.

The written examination will consist of two separate tests given on two consecutive days.

1. Fundamentals - This is a closed book four-hour examination on the fundamentals of electrical engineering. The student must pass four of the seven subject areas on the test:
   - Circuits
   - Communications
   - Controls/Power
   - Digital Systems
   - Electromagnetic Fields
   - Electronics
   - Physical Electronics

2. Advanced - This is an open book four-hour examination in areas of advanced study of electrical engineering. The student must pass three of the eight areas listed below:
   - Communications
   - Digital Signal Processing
   - Controls/Power
   - Digital Systems
   - Electro-Optics
   - Electromagnetics
   - Physical Electronics
   - Electronics
NOTE: The test on the fundamentals is closed book, and the advanced level is open book. At the advanced examination, tests and student notes are permitted, but published solution manuals for texts are not allowed.

It is the policy of the department that any calculator used during the qualifying examination may not be used to store user-defined programs.

The Candidacy Examination
The Candidacy Examination evaluates the student's preparation to undertake the research in the student's dissertation topic. A student may sit for the Candidacy Examination upon: (1) Passing the Qualifying Examination; (2) Completing all conditions placed as a result thereof; and (3) Completing all but six (6) credits or less of the courses prescribed in the plan of study. The Candidacy Examination consists of the following:

- A Candidacy Proposal developed by the student to identify the chosen area of research.
- An oral presentation of the Candidacy Proposal to the dissertation committee by the student.
- A written Candidacy Examination based on the student's chosen area of research may be required by the major professor. The format is determined by the major professor in consultation with the dissertation committee.

Upon successful completion of the Candidacy Examination, the student can be accepted into Candidacy status, allowing the student to enroll for dissertation credit hours.

The final step in the process is the Dissertation Defense Examination, which is an oral examination taken in defense of the written dissertation before the dissertation committee.

Dissertation Committee
The dissertation committee must consist of a minimum of four members: three faculty members from within the Electrical and Computer Engineering Department, and one from outside the College of Engineering. The Chair must be a member of the graduate faculty approved to direct dissertations.

Master of Science in Computer Engineering

The Master of Science degree in Computer Engineering (M.S.Cp.E.) requires a baccalaureate degree in Computer Engineering or a closely related discipline from an approved institution. Admission requirements for regular status include a 3.0 grade point average (GPA) (A = 4.0) in the last 60 attempted hours of the undergraduate degree program and a minimum of 1000 in the quantitative and verbal portions of the Graduate Record Examination (GRE). International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score of at least 550 on the TOEFL test.

Students with a grade point average of less than 3.0 may be admitted on a trial program basis in some circumstances. Additional courses may also be required to correct any course deficiencies. Students should contact the ECE Graduate Coordinator for further information.

Articulation
Undergraduate articulation courses may be required for students with bachelor's and/or master's degrees in fields other than computer engineering. The articulation courses will be determined by the graduate coordinator in consultation with the student's advisor on a case-by-case basis.

In general, all students must have had the following undergraduate program or equivalent before admission to graduate study:

Mathematics through differential equations (equivalent to MAC 2311, MAC 2312, MAC 2313, MAP 2302)
College physics with calculus (equivalent to PHY 2048 and PHY 2049)
Computer organization (equivalent to EEL 4767C)
Probability and statistics (equivalent to EIN 2032)
Numerical methods and matrix algebra (equivalent to EGN 3420)
Engineering data structures (equivalent to EEL 4651)
Digital logic circuits (equivalent to EEL 3342)
Computer design (equivalent to EEL 4767)

Students without this background must take the appropriate course work. Courses taken to correct deficiencies cannot be used to satisfy minimum degree requirements.

Specialization Areas
There are four specialization areas available in the master's degree program in Computer Engineering. They are:
- Digital Systems
- Computer Architecture
- Software Engineering
- Knowledge-based Systems

Each has a thesis option and a coursework-only (non-thesis) option. The thesis option requires a minimum of 30 semester hours including 6 hours of thesis registration. The non-thesis option requires a minimum of 36 semester hours of course work. Each option requires a minimum of 15 hours at the 6000 level. The actual program of study must be approved by an advisor prior to completing 9 hours of course work. A maximum of 9 semester hours of course work taken prior to admission to the program can be used in a degree program.

Thesis Option Degree Requirements
This program requires 30 semester hours, at least 15 hours of which must be at the 6000 level and will include 6 hours of thesis credit. The prerequisites for the program are shown below. The Core requirements for all students will be met by Required Courses. A program advisor and committee must be selected prior to completing 9 hours of course work. Non-Core courses taken before a student is in regular status and has a chair may not be accepted toward the M.S.Cp.E. The entire graduate committee must be appointed and a thesis abstract provided to them prior to registering for thesis credit.

<table>
<thead>
<tr>
<th>Required Courses (Core)</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEL 5881 Software Engineering I</td>
<td>3 hours</td>
</tr>
<tr>
<td>EEL 5708 High Performance Computer Architecture</td>
<td>3 hours</td>
</tr>
<tr>
<td>EEL 5874 Expert Systems and Knowledge Engineering</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Non-Thesis Degree Requirements
This option requires a minimum of 36 semester hours of course work and is intended primarily for part-time students. Program requirements are the same as for the thesis option except that the thesis requirement is replaced by 12 hours of course work. Students are required to pass a final comprehensive examination.

Specialization Requirements
Digital Systems (Thesis Option)
Core
EEL 6707 Parallel Processing
EEL 6763 Current Topics in Parallel Processing
Two courses in one of the following areas:
Controls, Digital Signal Processing, or Microelectronics
Electives (Selected in consultation with advisor)
Thesis
Total

<table>
<thead>
<tr>
<th></th>
<th>9 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEL 6707 Parallel Processing</td>
<td>3 hours</td>
</tr>
<tr>
<td>EEL 6763 Current Topics in Parallel Processing</td>
<td>3 hours</td>
</tr>
<tr>
<td>6 hours</td>
<td></td>
</tr>
<tr>
<td>3 hours</td>
<td></td>
</tr>
<tr>
<td>6 hours</td>
<td></td>
</tr>
<tr>
<td>30 Semester Hours</td>
<td></td>
</tr>
</tbody>
</table>
**Digital Systems (Non-Thesis Option)**

**Core**
- EEL 6707 Parallel Processing  
- EEL 6763 Current Topics in Parallel Processing  
- EEL 6883 Software Engineering II  

Three courses in one of the following areas: Controls, Digital Signal Processing, or Microelectronics

Electives (Selected in consultation with advisor)

Final Exam

**Total** 36 Semester Hours

**Computer Architecture (Thesis Option)**

**Core**
- EEL 6707 Parallel Processing  
- EEL 6763 Current Topics in Parallel Processing  
- EEL 6769 Parallel Knowledge Processing Systems  
- EEL 6883 Software Engineering II  

Electives (Selected in consultation with advisor)

Thesis

**Total** 30 Semester Hours

**Computer Architecture (Non-Thesis Option)**

**Core**
- EEL 6707 Parallel Processing  
- EEL 6763 Current Topics in Parallel Processing  
- EEL 6769 Parallel Knowledge Processing Systems  
- EEL 6883 Software Engineering II  

Electives (selected in consultation with advisor)

Final Exam

**Total** 36 Semester Hours

**Software Engineering (Thesis Option)**

**Core**
- ECM 6883 Software Engineering II  

At least one of the following courses:
- EEL 6885 Software Engineering Quality Assurance Methods  
- EEL 6887 Software Engineering Life-Cycle Control  
- EEL 6897 Software Development for Real-Time Engineering Systems

Electives (selected in consultation with advisor)

Thesis

**Total** 30 Semester Hours

**Software Engineering (Non-Thesis Option)**

**Core**
- ECM 6883 Software Engineering II  

At least two of the following courses:
- EEL 6885 Software Engineering Quality Assurance Methods  
- EEL 6887 Software Engineering Life-Cycle Control  
- EEL 6897 Software Development for Real-Time Engineering Systems

Electives (selected in consultation with advisor)

Final Exam

**Total** 36 Semester Hours

**Knowledge-based Systems (Thesis Option)**

**Core**
- *EEL 4872 Engineering Applications of Intelligent Systems  
- EEL 6875 Engineering of Artificial Intelligence Systems

At least one of the following courses:
- EEL 6876 Current Topics in AI in Engr. Systems  
- EEL 6878 Modeling and Artificial Intelligence

Electives (Selected in consultation with advisor)

Thesis

**Total** 30 Semester Hours
Knowledge-based Systems (Non-Thesis Option)

Core

*EEL 4872 Engineering Applications of Intelligent Systems 9 hours
EEL 6875 Engineering of Artificial Intelligence Systems 3 hours
EEL 6876 Current Topics in Artificial Intelligence in Engineering Systems 3 hours
EEL 6878 Modeling and Artificial Intelligence 3 hours
EEL 6883 Software Engineering II 3 hours
Electives (selected in consultation with advisor) 12 hours
Final Exam 0 hours
Total 36 Semester Hours

* If the student has taken this course or an equivalent as an undergraduate, then an elective, chosen in consultation with the advisor, can be used to replace this course.

Doctor of Philosophy in Computer Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for students with a master's degree in Computer Engineering or a closely related discipline who wish to pursue a career in research or academia. Specializations include digital systems, computer architecture, software engineering, intelligent systems, image processing, computer networks, and simulation systems.

Admission

Students must satisfy university requirements and have completed a master's degree in Computer Engineering or a closely related discipline, with a minimum grade point average (GPA) of 3.5 of a possible 4.0, and a minimum of 1100 on the combined scores of verbal and quantitative portions of the Graduate Record Examination (GRE).

Admissions decisions using these results and supplemental information are made by the departmental program coordinator.

Students are required to pass a Qualifying Examination. Then the student must form a dissertation committee and submit an approved program of study before being admitted to degree-seeking status.

Degree Requirements

The Ph.D. degree requires a minimum of 81 semester hours of graduate course work, 24 of which must be dissertation hours. Graduate course work includes 5000 or higher level courses, with a maximum of 12 hours of independent study. Up to 6 hours of 4000 level work are acceptable if transferred from a master's degree program. At least 6 hours must be taken outside the Department. There is a residency requirement of two contiguous semesters in full-time graduate student status (minimum of 6 semester hours) after acceptance to the graduate program at UCF. A program of study must be developed with an advisory committee and meet with departmental approval at the beginning of the Ph.D. program, at which time transfer credit will be evaluated on a course-by-course basis. The degree must be completed within seven years from the entry date to the doctoral program.

Transfer Credits

Up to 36 credit hours may be transferred from a master's degree toward these requirements, including a maximum of 6 hours of 4000-level courses; no 3000-level courses; and no courses with grades less than "B."

Examinations

The prospective doctoral student must take a written Qualifying Examination before being admitted to full doctoral student status. This exam covers relevant material typically learned at the undergraduate and graduate levels, and serves to verify the student's capability and readiness for the Ph.D. program.
Qualifying/Comprehensive Examination
This examination consists of two days of written examinations with an optional third day for an oral examination. The oral examination will be held approximately within two weeks of the written examination and is at the option of Computer Engineering Examination Committee. The exam will be offered twice per year, in April and in November.

The written exam will consist of two separate tests given on two consecutive days.

Day #1  Fundamentals of Computer Engineering (4 hours)
The student must pass an examination in the following areas:

- Digital Systems and Computer Architecture
- Software Engineering
- Engineering Mathematics and Numerical Methods

The examination is closed-book and notes, with two 8 1/2 x 11 handwritten reference sheets permitted. No stored program calculators are permitted.

Day #2  Advanced Concepts in Computer Engineering (4 hours)
The student must pass an examination in the following areas:

- Advanced Software Engineering
- Digital Systems and Computer Architecture

In addition, the student must select (at the time of the examination) and pass an examination in one of the following areas:

- Analog Electronics
- Communications
- Controls
- Digital Signal Processing
- Electromagnetics
- Electro-optics
- Knowledge-based Systems
- Physical Electronics

This exam will be open book. It is the policy of the ECE department that any calculator used during the qualifying examination may not be used to store user-defined programs.

The Candidacy Examination
The Candidacy Examination evaluates the student's preparation to undertake the research in the student's dissertation topic. A student may sit for the Candidacy Examination upon:
(1) Passing the Qualifying Examination; (2) Completing all conditions placed as a result thereof; and (3) Completing all but six (6) credits or less of the courses prescribed in the plan of study. The Candidacy Examination consists of the following:

- A Candidacy Proposal developed by the student to identify the chosen area of research.
- An oral presentation of the Candidacy Proposal to the dissertation committee by the student.
- A written Candidacy Examination based on the student's chosen area of research may be required by the major professor. The format is determined by the major professor in consultation with the dissertation committee.

Upon successful completion of the Candidacy Examination, the student can be accepted into Candidacy status, allowing the student to enroll for dissertation credit hours.

The final step in the process is the Dissertation Defense Examination, which is an oral examination taken in defense of the written dissertation before the dissertation committee.

Dissertation Committee
The dissertation committee must consist of a minimum of four members: three faculty members from within the Electrical and Computer Engineering Department, and one from outside the College of Engineering. The Chair must be a member of the graduate faculty approved to direct dissertations.
Master of Science in
Optical Science and Engineering

Admission
The Master of Science degree in Optical Science and Engineering (M.S.O.S.E.) is intended for students with a baccalaureate degree in electrical engineering, physics, optics, or other related fields. Admission requirements include a minimum grade point average of 3.0 (A=4.0) in the last 60 attempted semester hours of the bachelor's degree and a minimum combined score of 1000 in the quantitative and verbal portions of the Graduate Record Examination (GRE). International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score of at least 550 on the TOEFL test. Students with a grade point average of less than 3.0 may be admitted on a trial program basis in some circumstances. Additional courses may be required to correct any academic deficiencies. Students should contact the ECE Graduate Coordinator for further information.

Articulation
Undergraduate articulation courses may be required for students with bachelor's and/or master's degrees in fields other than electrical engineering, physics, and optics. The articulation courses will be determined by the graduate coordinator in consultation with the student's faculty advisor on a case-by-case basis.

Thesis Option Degree Requirements
This program option requires 30 semester hours of approved course work including a minimum of 6 hours of thesis credit. At least 15 hours of the required semester hours must be at the 6000 level. An approved program of study is chosen in consultation with a faculty advisor. The program must include 15 credit hours in electro-optics and optical science engineering courses of which at least 9 hours must be from EEL 5441, EEL 5453, EEL 6560, EEL 6565, EEL 5451, EEL 6443, or EEL 6561.

Non-Thesis Degree Requirements
This option requires a minimum of 36 semester hours of approved course work. Program requirements are the same as the thesis option except that the thesis requirement is replaced by 12 hours of course work. Students are required to pass a final comprehensive examination.

Doctor of Philosophy in
Optical Science and Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for students with a master's degree in electrical engineering, physics, optics, and other related fields who wish to pursue a career in research or academia. Specializations include photonics, electro-optics, optical signal processing, optical materials, nonlinear optics, optical imaging, IR technology, optical communication, remote sensing and laser radar, and laser engineering.

Admission
Students must satisfy university requirements and have completed a master's degree in electrical engineering, physics, optics, or other related fields. Admission requirements include a minimum grade point average of 3.5 (A=4.0) in the master's program and a minimum combined score of 1100 in the quantitative and verbal portions of the Graduate Record Examination (GRE). International students, except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university, are required to submit a score of at least 550 on the TOEFL test.

Students are required to pass a Qualifying Examination to be advanced to a degree-seeking status. The student must form a dissertation committee and submit an approved program of study upon passing the Qualifying Examination.
Degree Requirements
The Ph.D. program requires a minimum of 81 semester credit hours of graduate course work including a minimum of 24 dissertation hours. The remaining 60 semester hours are divided into a minimum of 24 semester hours of optical science and engineering, a minimum of 12 semester hours of electrical engineering, sciences, or mathematics electives, and up to 24 hours of advanced optics, engineering, or sciences electives, seminars, independent studies and research. Graduate course work includes 5000 or higher level courses with a maximum of 12 hours of combined independent studies and directed research. Up to 6 hours of 4000 level may be included if transferred from a master's program. At least 6 semester hours must be taken at UCF outside the program area. A program of study must be developed with an advisory committee at the beginning of the Ph.D. program. The degree must be completed within seven years from the entry date to the doctoral program.

Articulation
Undergraduate articulation courses may be required for students with master's degrees in fields other than electrical engineering, physics, and optics. The articulation courses will be determined by the student's advisory committee on a case-by-case basis.

Transfer Credits
Up to 36 semester credit hours, with grade "B" or better, may be transferred from a master's degree toward these requirements, including a maximum of 6 hours of 4000-level undergraduate courses. Transfer of credit is considered when the program of study is submitted for approval.

Examinations
In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The dissertation Defense Examination is an oral examination taken in defense of the written dissertation.
The Department's graduate programs have been developed to support the emergence of the Central Florida area as one of the national centers of high technology as well as supporting the diverse service industries in the region. In addition to the Doctor of Philosophy in Industrial Engineering, the original master's degree offerings included the Master of Science in Industrial Engineering (M.S.I.E.) degree and the Master of Science (M.S.) degree with options in Manufacturing Engineering, Computer Integrated Manufacturing, Engineering Management, and Operations Research. In 1984, the Department began offering the nationally unique M.S. degree option in Simulation Systems. These degree options were specifically developed to support the Center of Excellence in Simulation and Training established in the Central Florida region. In 1989, the Department received permission to offer Florida's first graduate degree option in Product Assurance Engineering. This degree serves the increasing demand for individuals trained in the areas of productivity and quality. In 1996, The Department was granted permission to offer an option in Human Engineering/Ergonomics to support the growing need for considering the role of the human in the design and operation of systems. In addition, the Manufacturing Engineering option was refocused to Precision Engineering and Manufacturing that focuses on manufacturing processes that have tight tolerances and demand high precision in manufacturing operations. The Computer Integrated Manufacturing option was expanded to Manufacturing Systems. Graduate student enrollment includes approximately 350 master's level students and 80 doctoral students.

Supporting this diverse educational program is a Departmental sponsored research base of well over $2.0 million, which places the Department within the top ten nationally ranked industrial engineering departments in external support. The Department's emergence as one of the America's leading research units began in 1987 with a multi-year grant from the Florida High Technology and Industry Council. Funding was used to form a consortium among General Electric Company, Embry-Riddle Aeronautical University, and UCF's Industrial Engineering Department to support the development of an Intelligent Simulation and Training System (ISTS) to train air traffic controllers. State funding continues to support follow-on research to produce new knowledge about generic Intelligent Simulation and Training Systems. In 1988, the Department became one of the participants in a multi-

- Robert L. Armacost, Ph.D., P.E., Professor
- Linda C. Malone, Ph.D., Master of Science Programs Coordinator
- John E. Biegel, Ph.D., P.E., Professor
- Yasser A. Hosni, Ph.D., P.E., Professor
- Charles H. Reilly, Ph.D., Chair and Professor
- George F. Schrader, Ph.D., P.E., Professor Emeritus
- Gary E. Whitehouse, Ph.D., P.E., Provost, Academic Vice President, and Professor
- Robert L. Armacost, D.Sc., Associate Professor
- Ahmad K. Elshennawy, Ph.D., C.Q.E., Associate Professor
- Gene C.H. Lee, Ph.D., P.E., Associate Professor
- Linda C. Malone, Ph.D., Associate Professor
- Mansooreh Mollaghasemi, Ph.D., Associate Professor
- Michael A. Mullens, Ph.D., Associate Professor
- James M. Ragusa, D.B.A., Associate Professor
- Ralph V. Rogers, Ph.D., Associate Professor
- Robert R. Safford, Ph.D., P.E., Associate Professor
- José A. Sepúlveda, Ph.D., P.E., Associate Professor
- Kay M. Stanney, Ph.D., Associate Professor
- Robert L. Hoekstra, Ph.D., Assistant Professor
- Timothy G. Kotnour, Ph.D., Assistant Professor
- Pamela R. McCauley-Bell, Ph.D., Assistant Professor
- Julia J.A. Pet-Edwards, Ph.D., Assistant Professor
- Michael D. Proctor, Ph.D., Assistant Professor
- William J. Thompson, Ph.D., Executive Officer and Assistant Professor
The program has retrieval, sponsored by the with efficient, System-wide considerations development and terminal simulations. In the same year, a new major research effort began that involved the development of nonpolluting alternative fuels that use mixtures of hydrogen and methane. System-wide considerations include research in optimization of engine design and performance as well as development of the infrastructure to support alternative fuels. Simulation-related research continues to be a major effort. The simulation research is very broad ranging from development of models for time/space interactions to validation of man-in-the-loop simulations. Research supported by the U.S. Army involves the effectiveness of training simulations and the evaluation of distributed interactive simulation. Human engineering and ergonomics research activities include several studies of human computer interaction, particularly with respect to virtual reality applications as well as studies of cumulative trauma disorders. Several recent studies have addressed the problem of resource constrained project scheduling and have focused on algorithmic improvements, identification of optimality in stochastic networks, and risk in project scheduling. Research funding from the U.S. Coast Guard supported a risk analysis of the International Ice Patrol and Department of Transportation mandates led to industry supported risk analyses of highway transportation of hazardous fuels.

The Department has been recognized for its outstanding performance. In 1993, it was named the 1993 Public Organization of the Year for "world class leadership qualities and professional contributions to engineering education and research" by the Central Florida Joint Council of Engineering Societies. The Department also received the Davis Productivity Award presented by the Florida Council of 100, Inc. and Florida Tax Watch for its leading edge application of a Total Quality Management approach to the continuous improvement of student learning. The Department recently has been designated as one of the seven schools where U.S. Army officers are sent to receive advanced civil schooling at the M.S. and Ph.D. levels in Operations Research and Simulation.

All faculty have terminal degrees in a broad range of disciplines supporting Industrial Engineering, including Industrial Engineering, Manufacturing Engineering, Systems Engineering, Operations Research, Engineering Management, Statistics, and Business Administration. All faculty are student-oriented and heavily involved in teaching and research.

UCF IEMS graduate degrees provide great value. Our graduates have obtained positions at Lockheed Martin, Cient Technologies (AT&T), Walt Disney World, Sabre Decision Technologies, NASA, Rockwell, Oracle, Harris, Deloitte Touche, Arthur Andersen, and many other companies. Ph.D. graduates are on faculties at Old Dominion, East Carolina, Oklahoma, and Arizona State Universities among others, as well as in research and management positions in industry and government.

Degree Programs
The Department of Industrial Engineering and Management Systems offers a Master of Science in Industrial Engineering (M.S.I.E.) and a Master of Science (M.S.) degree with options in Engineering Management, Human Engineering/Ergonomics, Operations Research, Manufacturing Systems, Precision Engineering and Manufacturing, Product Assurance Engineering, Simulators and Training Systems, and Simulation Modeling and Analysis; and the Doctor of Philosophy (Ph.D.) degree in Industrial Engineering.

Master's Program Admission Requirements
Students must satisfy the following criteria: Minimum official TOEFL score of 550 (only international applicants who are not from countries where English is the only official language or who did not graduate from an accredited American college or university); and a minimum GPA of 3.0 in the last 60 attempted semester hours of undergraduate studies; or
1000 on the verbal-quantitative portions of the GRE; or a minimum GRE score of 1000 on the combined verbal-quantitative portion along with a minimum GPA of 2.8 in the last 60 attempted semester hours of undergraduate studies. All students must provide official GRE scores regardless of GPA during the application process. Students who do not meet all of the criteria may be admitted on a conditional basis and be required to demonstrate acceptable performance (minimum GPA of 3.25) in a 9-hour trial program of graduate courses.

Master's Degree Requirements
The Master of Science in Industrial Engineering degree requires an undergraduate degree in Industrial Engineering. It is offered as a 30 semester hour program that includes a thesis. The Master of Science options require an undergraduate degree in engineering (or a closely related discipline) and are available with thesis (30 semester hours) or without thesis (36 semester hours).

A program of study, satisfying the requirements of a departmental discipline, must be developed with a faculty advisor and meet with Departmental approval. Required courses vary from 15 to 24 semester hours depending on the program and are supplemented by electives that may include courses offered by other departments. A student with an undergraduate degree outside the selected departmental discipline may be required to satisfy an articulation program. Many of the graduate courses offered by the EMS Department or required in the MSIE/MS programs (except for those with laboratories) are offered on the Florida Engineering Educational Delivery System (FEEDS) providing videotape versions available at the remote campuses, KSC, and other industrial/academic sites. Thesis students conduct an oral defense of their theses. Non-thesis students must pass an oral comprehensive examination at the end of their program of study. Most students working full-time and many on assistantships take six hours per semester to satisfy the University's requirement for full-time status. At that rate, the program can be completed in six semesters (five with thesis option). However, students with more time available and an early start on a thesis can finish the program in one year (three semesters).

Master of Science in Industrial Engineering

Industrial Engineering (M.S.I.E.)

Industrial Engineering focuses on a total systems approach to optimize operations in manufacturing and service industries. Industrial engineers use many different analytical approaches to improve productivity and quality of working life while reducing operating costs. UCF awards the Master of Science in Industrial Engineering (M.S.I.E.) degree. This degree requires a Bachelor of Science in Industrial Engineering as a prerequisite. The MSIE curriculum builds on the undergraduate IE degree to develop a stronger systems focus and analytical capability.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 5602C</td>
<td>Expert Systems in Industrial Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ESI 5531</td>
<td>Discrete Systems Simulation</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6427</td>
<td>Linear Programming and Extensions</td>
<td>3</td>
</tr>
<tr>
<td>STA 5206</td>
<td>Experimental Design</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6971</td>
<td>Thesis (required)</td>
<td>6</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
</table>

Engineering Management Option (M.S.)

30-36 Semester Hours

Engineering Management focuses on effective decision making in engineering and technological organizations. Addressing the needs of engineers and scientists moving into management positions, Engineering Management complements their technical backgrounds with the human aspects, organizational and financial issues, project considerations, resource allocation, and extended analytical tools required for effective decision
making and program management. This program is designed for technically qualified individuals who plan to assume a management role in project or program-oriented environments in industry or government. It provides the skills to bridge the gap between a technical specialty and technical management.

Prerequisites
Mathematics through Calculus III (MAC 2313)
High level computer language and microcomputer familiarity

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>3</td>
</tr>
<tr>
<td>EIN 5117</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>EIN 5366</td>
<td>Cost Engineering</td>
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<tr>
<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
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</tr>
<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
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<td>EIN 5602C</td>
<td>Expert Systems in Industrial Engineering</td>
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</tr>
<tr>
<td>EIN 6322</td>
<td>Engineering Management</td>
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<tr>
<td>ESI 5316</td>
<td>Operations Research</td>
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Thesis Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 6971</td>
<td>Thesis</td>
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Non-Thesis Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td></td>
</tr>
</tbody>
</table>

Human Engineering/Ergonomics Option (M.S.)

30-36 Semester Hours

As technology has become more sophisticated, the need for designing for the human user has become more difficult and even more important. Human Engineering and Ergonomics assist in ensuring that as technology advances, the abilities, limitations, and needs of humans are considered in the system design. This not only supports the needs of the user, it also optimizes the efficiency and usability of the system designed. Traditionally, ergonomics has been associated with biomechanical issues and work measurement and performance issues in physical system design, as well as occupational and industrial safety. The broader focus of human engineering encompasses those issues as well as incorporating the reaction and effectiveness of human interaction with systems, both physical systems and virtual systems such as computer-based models. This option is designed for students who have an undergraduate degree in engineering or a closely related discipline. The program is designed to provide the student with the necessary knowledge in Human Engineering and Ergonomics to effectively design tasks, industrial systems and work environments which maximize human performance, safety, and overall productivity.

Prerequisites
Mathematics through Calculus III (MAC 2313)
Work Measurement and Design (EIN 3314C)
Probability and Statistics for Engineers (EIN 2032 or equivalent)*
Human Engineering (EIN 4243C or equivalent)**

* May be satisfied by taking STA 5156 as part of program of study as an elective.
** Undergraduate course may be included in program of study as an elective.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 5247</td>
<td>Experimental Design and Taguchi Methods</td>
<td>3</td>
</tr>
<tr>
<td>(can substitute STA 5205 - Experimental Design or PSY 6216 - Advanced Research Methodology)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIN 5248C</td>
<td>Ergonomics</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6215</td>
<td>System Safety Engineering and Management</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6249C</td>
<td>Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6258</td>
<td>Human-Computer Interaction</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6270C</td>
<td>Work Physiology</td>
<td>3</td>
</tr>
</tbody>
</table>

18 Semester Hours
Human Performance/Perception Restricted Elective 3 Semester Hours
Select one of the following courses:
EXP 5256 Human Factors I
EXP 5208 Sensation and Perception
EXP 6116 Visual Performance
EXP 6255 Human Performance
EXP 6506 Human Cognition and Learning

Thesis Option 9 Semester Hours
EIN 6971 Thesis 6 hours
EIN 6971 Electives 3 hours

Non-Thesis Option 15 Semester Hours
EIN 6971 Electives 15 hours

Manufacturing Systems Option (M.S.)
30-36 Semester Hours

The design and operation of manufacturing systems requires a broad knowledge of manufacturing processes and systems, an understanding of the information base required for effective system operation, and the integration of information with those processes and systems to improve productivity. The Manufacturing Systems graduate program provides that basic knowledge and supports education in new manufacturing concepts such as concurrent design and manufacturing, the virtual factory, and agile manufacturing. The Manufacturing Systems option is designed for students who have an undergraduate degree in engineering, mathematics, computer science, or allied fields. With proper selection of electives, the program can focus on engineering aspects, operational aspects, or managerial aspects of manufacturing systems.

Prerequisites
Mathematics through Differential Equations (MAP 2302)
Engineering Economic Analysis (EGN 3613)*
Probability and Statistics for Engineers (STA 3032 or equivalent)**
Operations Research (ESI 4312 or equivalent)***
Manufacturing Engineering (EIN 4381C or equivalent)****

* May be satisfied by taking EIN 6357 or EIN 5256 as part of program of study as an elective.
** May be satisfied by taking STA 5156 as part of program of study as an elective.
*** May be satisfied by taking ESI 5316 as part of program of study as an elective.
**** Undergraduate course may be included in program of study as an elective.

Required Courses 15 Semester Hours
EIN 5368C Integrated Factory Automation Systems 3 hours
EIN 5392C Manufacturing Systems Engineering 3 hours
EIN 6330 Quality Control in Automation 3 hours
EIN 6336 Production and Inventory Control 3 hours
EIN 6399 Concurrent Engineering 3 hours

Thesis Option 15 Semester Hours
EIN 6971 Thesis 6 hours
EIN 6971 Electives 9 hours

Non-Thesis Option 21 Semester Hours
EIN 6971 Electives 21 hours
Operations Research Option (M.S.)

30-36 Semester Hours

Operations Research uses mathematics and computer-based systems to model operational processes and decisions in order to develop and evaluate alternatives that will lead to gains in efficiency and effectiveness. Drawing on probability, statistics, simulation, optimization, and stochastic processes, Operations Research provides many of the analytic tools used by industrial engineers as well as by other analysts to improve processes, decision making, and management by individuals and organizations. This option is designed for students who have an undergraduate degree in engineering, mathematics, or science. The Operations Research curriculum builds on an undergraduate engineering, mathematics, or science degree to develop a strong modeling and analytical capability to improve processes and decision making.

Prerequisites
Mathematics through Differential Equations (MAP 2302)
Probability and Statistics for Engineers (EIN 2032)*
Operations Research (ESI 4312)*
Higher level computer programming and microcomputer familiarity

* These requirements may be met by taking STA 5156 and ESI 5316 as part of the program of study.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ESI 5531</td>
<td>Discrete Systems Simulation</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6427</td>
<td>Linear Programming and Extensions</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6437</td>
<td>Nonlinear Programming and Dynamic Programming OR</td>
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</tr>
<tr>
<td>ESI 6448</td>
<td>Network Analysis and Integer Programming</td>
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<tr>
<td>EIN 5602C</td>
<td>Expert Systems in Industrial Engineering</td>
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<tr>
<td>ESI 6353</td>
<td>Decision Analysis</td>
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</tr>
<tr>
<td>STA 5205</td>
<td>Experimental Design OR</td>
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<tr>
<td>STA 5236</td>
<td>Regression Analysis</td>
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</tr>
<tr>
<td>STA 5825</td>
<td>Stochastic Processes and Applied Probability Theory</td>
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Thesis Option

<table>
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<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EIN 6971</td>
<td>Thesis</td>
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</table>

Non-Thesis Option

| Electives | 3 hours |

Precision Engineering and Manufacturing Option (M.S.)

30-36 Semester Hours

Precision Engineering and Manufacturing focuses on examining and evaluating machine performance for the purpose of producing components or parts with high quality. The objective of the Precision Engineering and Manufacturing program is to provide a comprehensive educational base in fundamental manufacturing techniques and emerging aspects of manufacturing processes for products that have tighter tolerances and demand high precision in manufacturing operations. Precision manufacturing is generally associated with high technology industries and matches with the needs of many of the firms in Florida's "high-tech corridor." The objective of the program is to provide a comprehensive understanding of the need for and the ability to develop and implement manufacturing processes for an increasing number of products that have tighter tolerances and demand precision in the manufacturing operations. The program focuses on precision and nontraditional manufacturing processes to provide this capability. This option is designed for students who have an undergraduate degree in Industrial Engineering or a closely related engineering discipline. Within the Precision Engineering and Manufacturing option is a focused area of study that involves the one-off manufacturing of high performance inter-
nal combustion engines. This program involves internal combustion engine design and optimization, and has a strong laboratory and experience focus that includes an internship in a high performance engine environment.

**Prerequisites**
Mathematics through Differential Equations (MAP 2302)
Engineering Economic Analysis (EGN 3613)*
Probability and Statistics for Engineers (EGN 2032 or equivalent)**
Manufacturing Engineering (EGN 4391C or equivalent)***
* May be satisfied by taking EIN 6357 or EIN 5256 as part of program of study as an elective.
** May be satisfied by taking STA 5156 as part of program of study as an elective.
*** Undergraduate course may be included in program of study as an elective.

**Required Courses**

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<td>Manufacturing Systems Engineering</td>
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<tr>
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<td>Computer Control of Manufacturing Systems</td>
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<tr>
<td>EIN 6417</td>
<td>Precision Engineering</td>
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<tr>
<td>EIN 6398</td>
<td>Advanced and Nontraditional Manufacturing Processes</td>
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**Thesis Option**

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<th>Course Title</th>
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**Non-Thesis Option**

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</thead>
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<tr>
<td></td>
<td>Electives</td>
<td>9</td>
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</tbody>
</table>

**Product Assurance Engineering Option (M.S.)**

30-36 Semester Hours

Product Assurance Engineering focuses on improving product and process quality in manufacturing and service industries. Product Assurance Engineering provides both the quantitative tools for measuring quality and the managerial focus and organizational insight required to implement effective continuous improvement programs and incorporate the voice of the customer. This option is designed for students who have an undergraduate degree in engineering or a closely related discipline. The program is designed to provide the student with the necessary knowledge in Product Assurance Engineering to plan, implement, and supervise the product assurance function in government, military, or individual organizations.

**Prerequisites**
Mathematics through Differential Equations (MAP 2302)
Probability and Statistics for Engineers (EGN 2032)*
Manufacturing Engineering (EGN 4391C or equivalent)**
Operations Research (ESI 4312)*
* These requirements may be met by taking ESI 5316 and STA 5156 as part of the program of study.
** Undergraduate course may be taken as an elective in the program of study.

**Required Courses**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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<td>Expert Systems in Industrial Engineering</td>
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<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
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<tr>
<td>EIN 5392C</td>
<td>Manufacturing Systems Engineering</td>
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<tr>
<td>ESI 6227</td>
<td>Total Quality Management</td>
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<td>ESI 5266</td>
<td>Reliability Engineering</td>
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<td>ESI 6224</td>
<td>Quality Assurance Management</td>
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<td>ESI 6225</td>
<td>Quality Analysis and Control</td>
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<tr>
<td>STA 5205</td>
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</table>
Thesis Option
EIN 6971 Thesis 6 Semester Hours 6 hours

Non-Thesis Option
Electives 12 Semester Hours 12 hours

Simulators and Training Systems Option (M.S.)
30-36 Semester Hours

Simulators and Training Systems focuses on providing a fundamental understanding of the functional and technical design requirements for simulation-based training systems. In conjunction with UCF's Institute for Simulation and Training and many governmental, military, and industrial organizations involved in simulation in the Central Florida region, the program provides exposure to both military and commercial simulators. The program emphasis is on the use and management of training simulators. The Simulators and Training Systems curriculum prepares individuals with an undergraduate degree in engineering, science, mathematics, or a closely related discipline for careers in simulation, focusing particularly on the training simulation (simulator) industries.

Prerequisites
Mathematics through Differential Equations (MAP 2302)
Probability and Statistics (EIN 2032)*
Computer Programming

* This requirement may be met by taking STA 5156 as part of the program of study.

Required Courses 24 Semester Hours
EIN 6140 Project Engineering 3 hours
EIN 6317 Training Systems Engineering 3 hours
EME 6613 Instructional Systems Design 3 hours
EIN 5381 Engineering Logistics 3 hours
EIN 6645 Modeling and Simulation of Real-time Processes 3 hours
ESI 5531 Discrete Systems Simulation 3 hours
EIN 5255 Training Simulator Engineering 3 hours
EIN 5602C Expert System in Industrial Engineering 3 hours

Thesis Option
EIN 6971 Thesis 6 Semester Hours 6 hours

Non-Thesis Option
Electives 12 Semester Hours 12 hours

Simulation Modeling and Analysis Option (M.S.)
30-33 Semester Hours

Simulation Modeling and Analysis focuses on providing a fundamental understanding of the functional and technical design requirements for simulation in manufacturing and service industries. The program is based on a systems modeling paradigm and provides coding and development capability in the context of a broader systems framework. Significant exposure to design and analysis aspects is a core element of the program. The Simulation Modeling and Analysis curriculum prepares individuals with an undergraduate degree in engineering, science, mathematics, or a closely related discipline for careers in simulation, focusing particularly on using simulation as an analysis and design tool for the manufacturing and service industries.
Prerequisites
Mathematics through Differential Equations (MAP 2302)
Probability and Statistics (EIN 2032)*
Computer Programming

* This requirement may be met by taking STA 5156 as part of the program of study.

Required Courses

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<td>EIN 5920C</td>
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<td>EIN 6140</td>
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<td>EIN 6947</td>
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<tr>
<td>ESI 5316</td>
<td>Operations Research</td>
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<tr>
<td>ESI 5531</td>
<td>Discrete Systems Simulation</td>
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<tr>
<td>ESI 6532</td>
<td>Object Oriented Simulation</td>
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<td>Thesis Option</td>
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<tr>
<td>EIN 6971</td>
<td>Thesis</td>
<td>6 hours</td>
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<td>Electives</td>
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<td>3 hours</td>
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<td>Non-Thesis Option</td>
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<td></td>
</tr>
<tr>
<td>Electives</td>
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21 Semester Hours

Doctor of Philosophy in Industrial Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for a student with a master's degree in industrial engineering or a closely related discipline. The program is intended to allow a student to study in depth, with emphasis on some aspect of industrial engineering, manufacturing, engineering management, operations research, simulation modeling, or simulation and training.

Doctoral Program Admission

Students must satisfy regular university admissions criteria specified for master's program admissions. In addition, the student must have a master's degree in Industrial Engineering or a closely related discipline from a recognized and accredited institution and have demonstrated above average performance at the master's level. Students meeting these criteria and the approval of the Doctoral Committee will be admitted as Doctoral students. Students must complete any needed articulation course work and pass a Ph.D. Qualifying Examination in order to continue in regular doctoral status. This examination is normally taken within the first year after all articulation work is completed. Decisions as to whether students are allowed to continue in the doctoral program are based in part on the Qualifying Examination results and are made by the Departmental Doctoral Committee.

Doctoral Degree Requirements

The Ph.D. degree requires a minimum of 81 semester hours of graduate course work, 24 of which will be dissertation hours. Graduate course work includes 5000 or higher level courses, with a maximum of 12 hours of independent study and directed research. A total of 33 semester hours are specified in required Industrial Engineering subjects. Additional course work is usually taken in the student's research area. Up to 6 hours of 4000 level work are acceptable if transferred from a master's degree program. At least 6 hours at UCF must be taken outside of the program area. There is a residency requirement of two contiguous semesters in full-time graduate student status (minimum of 6 semester hours) after acceptance into the doctoral program at UCF. At the beginning of the Ph.D. program, and within the first nine hours of course work, a preliminary program of study must be developed with an advisory committee and meet with Departmental approval. At this time transfer credit will be evaluated on a course-by-course basis. After completion of the Qualifying Examination, the official program of study is developed with an advisor and must meet with Departmental approval. The final program of study is approved by the student's Dissertation Committee after passing the Candidacy Examination. The degree must be completed within seven years from the entry date as a doctoral student and within four years of passing the Candidacy Examination.
Transfer Credits
A maximum of 36 semester hours, including up to 6 thesis hours, may be transferred from a master's degree and other graduate course work toward these requirements. Limitations: a maximum of 6 hours of 4000-level courses from a master's degree; no 3000-level; no courses with grades less than "B."

Examinations
In addition to the Qualifying Examination, the student must pass a Candidacy Examination, a Dissertation Proposal Examination, and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research area to the Dissertation Committee followed by a written examination to determine if the student has the breadth and depth of knowledge required to conduct research in the proposed area. The Dissertation Proposal Examination consists of a written and oral presentation of a detailed dissertation. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

Prerequisites
Students must have background (or articulation course work passed with a grade of B or better) in the following areas:
- A high level structured programming language
- Calculus through Differential Equations (MAP 2302)
- Probability and Statistics (EIN 2032)*
- Work Measurement (EIN 3314)
- Industrial Facilities Planning (EIN 4364)
- Manufacturing Engineering (EIN 4391)

* This requirement may be met by taking STA 5156 as part of the program of study.

Required Courses
The following areas must form part of the student's program of study. Substitute courses may be approved by the Department's Doctoral Committee.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>STA 5205</td>
<td>Experimental Design</td>
<td>3</td>
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<tr>
<td>STA 6236</td>
<td>Regression Analysis</td>
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<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
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<tr>
<td>EIN 5117</td>
<td>Management Information Systems</td>
<td>3</td>
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<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
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<tr>
<td>EIN 5248</td>
<td>Ergonomics</td>
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<tr>
<td>ESI 6225</td>
<td>Quality Analysis and Control</td>
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</tr>
<tr>
<td>ESI 5531</td>
<td>Discrete Systems Simulation</td>
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<tr>
<td>ESI 6427</td>
<td>Linear Programming and Extensions</td>
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</tr>
<tr>
<td>EIN 6336</td>
<td>Production and Inventory Control</td>
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Electives

Dissertation

Minimum Hours Required for Ph.D.
## IEMS Graduate Elective Courses by Area of Study

### Engineering Management

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EIN 5117</td>
<td>Management Information Systems</td>
<td>3 hours</td>
</tr>
<tr>
<td>EIN 5356</td>
<td>Cost Engineering</td>
<td>3 hours</td>
</tr>
<tr>
<td>EIN 5381</td>
<td>Engineering Logistics</td>
<td>3 hours</td>
</tr>
<tr>
<td>EIN 6140</td>
<td>Project Engineering</td>
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<tr>
<td>EIN 6322</td>
<td>Engineering Management</td>
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<tr>
<td>EIN 6339</td>
<td>Productivity Engineering</td>
<td>3 hours</td>
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<tr>
<td>EIN 6367</td>
<td>Advanced Engineering Economic Analysis</td>
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</tr>
<tr>
<td>EIN 6933</td>
<td>Systems Acquisition</td>
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<tr>
<td>ESI 5451</td>
<td>Network-based Project Planning Scheduling and Control</td>
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### Ergonomics

<table>
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<tr>
<td>EIN 5248C</td>
<td>Ergonomics</td>
<td>3 hours</td>
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<tr>
<td>EIN 5251</td>
<td>Human Computer Interaction: Usability Evaluation</td>
<td>3 hours</td>
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<tr>
<td>EIN 6215</td>
<td>Systems Safety Engineering and Management</td>
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<tr>
<td>EIN 6249C</td>
<td>Biomechanics</td>
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<tr>
<td>EIN 6252</td>
<td>Human-Virtual Environment Interaction</td>
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<td>EIN 6258</td>
<td>Human Computer Interaction</td>
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<tr>
<td>EIN 6264C</td>
<td>Industrial Hygiene</td>
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<td>EIN 6270C</td>
<td>Work Physiology</td>
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<tr>
<td>EIN 6935</td>
<td>Advanced Ergonomics Topics</td>
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### Expert Systems

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<tr>
<td>EIN 5602</td>
<td>Expert Systems in Industrial Engineering</td>
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<tr>
<td>EIN 6603</td>
<td>Readings in Expert Systems/AI in Industrial Engineering</td>
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### Manufacturing/Operations Management

<table>
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<tr>
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<th>Course Title</th>
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<tr>
<td>EGN 5720</td>
<td>Internal Combustion Engine Analysis and Optimization</td>
<td>3 hours</td>
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<tr>
<td>EGN 6xxxC</td>
<td>Metrology</td>
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<td>EGN 6xxxC</td>
<td>Experimental Methods for High Performance Engine Manufacturing</td>
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<td>EIN 5368C</td>
<td>Integrated Factory Automation Systems</td>
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<td>EIN 5388</td>
<td>Forecasting</td>
<td>3 hours</td>
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<tr>
<td>EIN 5415C</td>
<td>Tool Engineering and Manufacturing Analysis</td>
<td>3 hours</td>
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<tr>
<td>EIN 6336</td>
<td>Production and Inventory Control</td>
<td>3 hours</td>
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<td>EIN 6392C</td>
<td>Manufacturing Systems Engineering</td>
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<td>Computer Control of Manufacturing Systems</td>
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<td>Advanced and Nontraditional Manufacturing Processes</td>
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<td>Precision Engineering</td>
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<td>EIN 6418C</td>
<td>Electronics Manufacturing</td>
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<td>EIN 6425</td>
<td>Scheduling and Sequencing</td>
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<td>EIN 6936</td>
<td>Seminar in Advanced Industrial Engineering</td>
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<tr>
<td>EIN 6930</td>
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### Operations Research

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<td>ESI 5316</td>
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<tr>
<td>ESI 5359</td>
<td>Risk Assessment and Management</td>
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<tr>
<td>ESI 5491C</td>
<td>Engineering Applications of Linear and Nonlinear Optimization</td>
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<tr>
<td>ESI 6336</td>
<td>Queuing Systems</td>
<td>3 hours</td>
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<td>ESI 6358</td>
<td>Decision Analysis</td>
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<td>ESI 6427</td>
<td>Linear Programming and Extensions</td>
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<td>Nonlinear Programming and Dynamic Programming</td>
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<td>Network Analysis and Integer Programming</td>
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<td>ESI 6551C</td>
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<td>ESI 6941</td>
<td>Operations Research Practicum</td>
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<tr>
<td>ESI 5315</td>
<td>Research Foundations for IE and OR Modeling</td>
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### Simulation and Training

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<td>EIN 6317</td>
<td>Training Systems Engineering</td>
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<td>EIN 6645</td>
<td>Modeling and Simulation of Real-time Processes</td>
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<td>EIN 6647</td>
<td>Intelligent Simulation</td>
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<td>EIN 6649</td>
<td>Intelligent Simulation Training System Design</td>
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<td>Discrete Systems Simulation</td>
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<td>ESI 6217</td>
<td>Statistical Aspects of Digital Simulation</td>
<td>3</td>
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<tr>
<td>ESI 6529</td>
<td>Advanced Systems Simulation</td>
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<tr>
<td>ESI 6532</td>
<td>Object Oriented Simulation</td>
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### Statistics and Quality Control

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>EIN 5247</td>
<td>Experimental Design and Taguchi Methods</td>
<td>3</td>
</tr>
<tr>
<td>EIN 6330</td>
<td>Quality Control in Automation</td>
<td>3</td>
</tr>
<tr>
<td>ESI 5236</td>
<td>Reliability Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6224</td>
<td>Quality Assurance Management</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6225</td>
<td>Quality Analysis and Control</td>
<td>3</td>
</tr>
<tr>
<td>ESI 6227</td>
<td>Total Quality Management</td>
<td>3</td>
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<tr>
<td>STA 5156</td>
<td>Probability and Statistics for Engineers</td>
<td>3</td>
</tr>
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</table>

### Other

<table>
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<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EIN 5936</td>
<td>Seminar in Industrial Engineering Doctoral Research</td>
<td>1</td>
</tr>
</tbody>
</table>

## Mechanical, Materials, and Aerospace Engineering Department

Alain J. Kassab ... Program Coordinator  
Office: ENGR 381, Phone: (407) 823-2019, e-mail: kassab@pegasus.cc.ucf.edu

P. J. Bishop, Ph.D., P.E. ......................... Director of Graduate Studies and Professor  
L. C. Chow, Ph.D. ........................................ Chair and Professor  
B. E. Eno, Ph.D., P.E. .......................... Associate Chair and Professor  
E. R. Hosler, Ph.D., P.E. ......................... Professor  
J. D. McBrayer, Sc.D., P.E. ....................... Professor  
F. A. Moslehy, Ph.D., P.E. ....................... Professor  
D. W. Nicholson, Ph.D. ............................ Professor  
W. F. Smith, Sc.D., P.E. .......................... Professor  
L. Chew, Ph.D. ........................................ Associate Professor  
V. H. Desai, Ph.D., P.E. .......................... Associate Professor  
A. H. Hagedoorn, Ph.D., P.E. .................... Associate Professor  
R. W. Johnson, Ph.D., P.E. ...................... Visiting Associate Professor  
A. J. Kassab, Ph.D. ............................... Associate Professor  
K. C. Lin, Ph.D. ...................................... Associate Professor  
A. Minardi, Ph.D. .................................... Associate Professor  
J. Nayfeh, Ph.D. ...................................... Associate Professor  
C. E. Nuckolls, Ph.D., P.E. ..................... Associate Professor  
G. G. Venire, Ph.D., P.E. ........................ Associate Professor  
R. H. Chen, Ph.D. ..................................... Assistant Professor  
L. A. Giannuzzi, Ph.D. ........................... Assistant Professor  
A. Kar, Ph.D. ......................................... Assistant Professor

### Joint Appointees

- K. A. Cerqua-Richardson, Ph.D.  
- B. Chai, Ph.D.  
- L. Debnath, Ph.D.  
- N. S. Dhare, Ph.D.  
- B. Nimmo, Ph.D.  
- K. Vajravelu, Ph.D.  

### Fields of Emphasis and Research

Major fields of emphasis in the Mechanical, Materials, and Aerospace Engineering Department include aerospace systems (experimental and computational aerodynamics and astrodynamics, high speed flows, turbulent flow, flight dynamics and simulation, optimal
control and attitude dynamics of space vehicles, and aerospace design), materials science and engineering (crystal growth, glass processing, phase transformation, high temperature materials, environmental degradation, materials characterization, electron microscopy, and microelectronic materials), mechanical systems (experimental mechanics, finite and boundary elements, tribology, fracture, nonlinear dynamics, nondestructive evaluation), vibration, CAD/CAM, rapid prototyping, mechanics of composite structures and thermo-fluids (laser machining, turbomachinery, two-phase flow, combustion, phase change, aeroacoustics, computational thermofluids, and energy conservation). Current research projects in aerospace systems include design of a space robot, advanced life support, automated remote manipulator, collision avoidance path planning for shuttle payload inspection and processing system, launch spacecraft control and test and evaluation methodology (real-time), application of laser doppler anemometry to supersonic flow. Current research projects in materials science and engineering include high temperature oxidation, hot corrosion, microstructure of electrodeposits, laser materials processing and modeling, solar cells, single crystal applications, and glass, ceramic, and chemicomechanical polishing. Current research projects in mechanical systems include laser-based techniques for space shuttle tile bond assessment, dynamics, inverse elasticity and vibration problems, friction and wear modeling in tribosystems, finite element simulation of dynamic crack tip stress fields and penetration by composite projectiles, nonlinear dynamics of composite and smart structures. CAD/CAM, and rapid prototyping. Current research projects in thermo-fluids include computer-aided laser machining, laser-material interactions, heat pipes, cryo power, electronic packaging, combustion generated pollution, material synthesis using combustion methods, inverse heat transfer problems, conjugate heat transfer, boundary elements, and heat conduction in functionally gradient materials.

Degree Programs
The Mechanical, Materials, and Aerospace Engineering Department (MMAE) offers the Master of Science in Mechanical Engineering (M.S.M.E.) and the Doctor of Philosophy (Ph.D.) degrees with options in Aerospace Systems, Materials Science and Engineering, Mechanical Systems, and Thermo-Fluids.

Master of Science in Mechanical Engineering

Admission
The Master of Science degree in Mechanical Engineering (M.S.M.E.) is intended primarily for a student with a bachelor's degree in mechanical or aerospace engineering or a closely related discipline from a recognized institution. Minimum requirements for admission to regular status are a 3.0 grade point average (4.0=A) in the last 60 attempted hours of undergraduate study, a combined score of 1000 on the quantitative and verbal portions of the Graduate Record Examination (GRE), and for international students (except those who are from countries where English is the only official language or those who have earned a degree from an accredited American college or university), a score of 550 on the Test of English as a Foreign Language (TOEFL). A trial program of 9 semester hours may be allowed for students with a grade point average of less than 3.0 but greater than 2.8.

Degree Requirements
The MSME degree is offered as a thesis or a non-thesis program in each of the four departmental disciplines of Aerospace Systems, Materials Science and Engineering, Mechanical Systems, and Thermo-Fluids. The thesis program requires 30 semester hours, at least half of which must be at the 6000 level and will include 6 hours of thesis credit. The non-thesis program requires 36 semester hours of course work, at least 15 of which must be at the 6000 level. A program of study, satisfying the requirements of a departmental discipline, must be developed with an advisor at the beginning of the plan of study and meet with departmental approval. A student with an undergraduate degree outside of the selected departmental discipline may be required to satisfy articulation program. Substitutions to the program of study must meet with the approval of the advisor and the department. A student pursuing the thesis program may not register for thesis credit hours until an advisory committee has been appointed and the committee has reviewed the program of study and the proposed thesis topic. Further information is available in the Master's Degree General Procedures manual available from the MMAE Department.
Aerospace Systems Track
30-36 Semester Hours

Prerequisites (or equivalent)
- Mathematics through Differential Equations (MAP 2302)
- Modeling Methods (EML 3034)
- High Speed Aerodynamics (EAS 4134)
- Flight Mechanics (EAS 4105)
- Flight Structures (EAS 4200)
- Aerothermodynamics of Propulsion Systems (EAS 4300)

Required Courses
- EAS 5123 Intermediate Aerodynamics 3 hours
- EAS 6405 Advanced Flight Dynamics 3 hours
- EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
- EML 6067 Finite Elements in Mechanical, Materials, and Aerospace Engineering I OR 3 hours
- EML 6725 Computational Fluid Dynamics and Heat Transfer I 3 hours

Representative Electives
- EAS 5157 V/Stol Aerodynamics and Performance 3 hours
- EAS 5302 Direct Energy Conversion 3 hours
- EAS 5315 Rocket Propulsion 3 hours
- EAS 6138 Advanced Gas Dynamics 3 hours
- EAS 6185 Turbulent Flow 3 hours
- EAS 6507 Topics in Astrodynamics 3 hours
- EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
- EML 5105 Gas Kinetics and Statistical Thermodynamics 3 hours
- EML 5131 Combustion 3 hours
- EML 5152 Intermediate Heat Transfer 3 hours
- EML 5224 Acoustics 3 hours
- EML 5237 Intermediate Mechanics of Materials 3 hours
- EML 5311 System Control 3 hours
- EML 5402 Turbomachinery 3 hours
- EML 5532 Computer-Aided Design for Manufacture 3 hours
- EML 5713 Intermediate Fluid Mechanics 3 hours
- EML 6808 Analysis and Control of Robot Manipulators 3 hours
- EML 6062 Boundary Element Methods in Engineering 3 hours
- EML 6067 Finite Elements in Mechanical, Materials, and Aerospace Engineering I 3 hours
- EML 6068 Finite Elements in Mechanical, Materials, and Aerospace Engineering II 3 hours
- EML 6124 Two Phase Flow 3 hours
- EML 6223 Advanced Vibrational Systems 3 hours
- EML 6305C Experimental Mechanics 3 hours
- EML 6547 Engineering Fracture Mechanics in Design 3 hours
- EML 6712 Mechanics of Viscous Flow 3 hours
- EML 6725 Computational Fluid Dynamics and Heat Transfer I 3 hours
- EML 6726 Computational Fluid Dynamics and Heat Transfer II 3 hours
- EAS 6971 Thesis 6 hours
Materials Science and Engineering Track
30-36 Semester Hours

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods (EML 3034)
Structure and Properties of Materials (EGN 3365C)
Mechanics of Materials (EGN 3331) or Thermodynamics (EGN 3343)
Experimental Techniques in Mechanics and Materials (EMA 3012C)

Required Courses
- EMA 5104 Intermediate Structure and Properties of Materials 3 hours
- EMA 5106 Metallurgical Thermodynamics OR 3 hours
- EML 5237 Intermediate Mechanics of Materials 3 hours
- EMA 6516 XRD and Crystallography 3 hours
- EMA 6126 Physical Metallurgy 3 hours

Representative Electives
- EMA 5140 Introduction to Ceramic Materials 3 hours
- EMA 5326 Corrosion Science and Engineering 3 hours
- EMA 5504 Modern Characterization Techniques for Materials 3 hours
- EMA 5534 Biomaterials 3 hours
- EMA 5705 High Temperature Materials 3 hours
- EMA 6605 Materials Processing Techniques 3 hours
- EMA 5610 Laser Materials Processing 3 hours
- EMA 6136 Diffusion in Solids 3 hours
- EMA 6626 Mechanical Metallurgy 3 hours
- EMA 6628 Materials Failure Analysis 3 hours
- EMA 6130 Phase Transformations in Metals and Alloys 3 hours
- EMA 6129 Solidification and Microstructure Evolution 3 hours
- EMA 6149 Imperfections in Crystals 3 hours
- EMA 6518 Transmission Electron Microscopy 3 hours
- EML 5245 Tribology 3 hours
- EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
- EML 5546 Engineering Design w/Composite Materials 3 hours
- EML 6002 Boundary Element Methods in Engineering 3 hours
- EML 6211 Continuum Mechanics 3 hours
- EML 6305C Experimental Mechanics 3 hours
- EML 6547 Engineering Fracture Mechanics in Design 3 hours
- EEL 5332C Thin Film Technology 3 hours
- EEL 6561 Fourier Optics 3 hours
- CHM 5711 The Chemistry of Materials 3 hours
- EMA 6971 Thesis 6 hours

12 Semester Hours

Mechanical Systems Track
30-36 Semester Hours

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods (EML 3034)
Kinematics (EML 3262)
Machine Design (EML 3500)
Vibration Analysis (EML 4220)
Experimental Techniques in Mechanics and Materials (EMA 3012C)
Feedback Controls (EML 3312C)

Required Courses
- EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
- EML 5237 Intermediate Mechanics of Materials 3 hours

12 Semester Hours
EML 5271 Intermediate Dynamics 3 hours
EML 6067 Finite Elements in Mechanical and Aerospace Engineering I 3 hours

Representative Electives 18-24 Semester Hours

EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
EML 5224 Acoustics 3 hours
EML 5228 Modal Analysis 3 hours
EML 5245 Tribology 3 hours
EML 5311 System Control 3 hours
EML 5532C Computer-aided Design for Manufacture 3 hours
EML 5546 Engineering Design with Composite Materials 3 hours
EML 5572 Probabilistic Methods in Design 3 hours
EML 6808 Analysis and Control of Robot Manipulators 3 hours
EML 6062 Boundary Elements in Engineering 3 hours
EML 6068 Finite Elements in Mechanical, Materials, and Aerospace Engineering II 3 hours
EML 6211 Continuum Mechanics 3 hours
EML 6223 Advanced Vibrational Systems 3 hours
EML 6226 Analytical Dynamics 3 hours
EML 6227 Nonlinear Vibrations 3 hours
EML 6305C Experimental Mechanics 3 hours
EML 6547 Engineering Fracture Mechanics in Design 3 hours
EML 6653 Theory of Elasticity 3 hours
EML 6971 Thesis 6 hours

Thermo-Fluids Track
30-36 Semester Hours

Prerequisites (or equivalent)
- Mathematics through Differential Equations (MAP 2302)
- Modeling Methods in Mechanical, Materials, and Aerospace Engineering (EML 3034)
- Thermodynamics (EML 3101)
- Energy Systems Lab (EML 3304C)
- Fluid Mechanics (EML 4703)
- Heat Transfer (EML 4142)

Required Courses 12 Semester Hours

EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
EML 5713 Intermediate Fluid Mechanics 3 hours
EML 5152 Intermediate Heat Transfer 3 hours
EML 6725 Computational Fluid Dynamics and Heat Transfer I 3 hours

Representative Electives 18-24 Semester Hours

EAS 5302 Direct Energy Conversion 3 hours
EAS 5315 Rocket Propulsion 3 hours
EAS 6138 Advanced Gas Dynamics 3 hours
EAS 6185 Turbulent Flow 3 hours
EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering 3 hours
EML 5105 Gas Kinetics and Statistical Thermodynamics 3 hours
EML 5131 Combustion Phenomena 3 hours
EML 5402 Turbomachinery 3 hours
EML 5532C Computer-aided Design for Manufacture 3 hours
EML 6062 Boundary Elements in Engineering 3 hours
EML 6104 Classical Thermodynamics 3 hours
EML 6124 Two Phase Flow 3 hours
EML 6154 Conduction Heat Transfer 3 hours
EML 6155 Convection Heat Transfer 3 hours
Doctor of Philosophy in Mechanical Engineering

The Doctor of Philosophy (Ph.D.) degree is primarily intended for a student with a master's degree in mechanical or aerospace engineering or a closely related discipline. The program is intended to allow a student to study in depth, with emphasis on research, Aerospace Systems, Materials Science and Engineering, Mechanical Systems, or Thermo-Fluids.

Admission
In addition to satisfying the admission requirements for the M.S.M.E. degree, admission to the Ph.D. program requires that the student possess a master's degree in mechanical or aerospace engineering or a closely related discipline from a recognized institution. Admission to Doctoral status requires that the student (1) pass a Ph.D. Qualifying Examination in one of the four departmental disciplines of Aerospace Systems, Materials Science and Engineering, Mechanical Systems, or Thermo-Fluids, (2) establish a Doctoral Advisory Committee, and (3) submit a departmentally approved Program of Study. These steps are normally completed within the first year of study beyond the master's degree.

Degree Requirements
The Ph.D. degree requires a minimum of 81 semester hours beyond the bachelor's degree, 24 of which will be dissertation credits and at least 9 credits of which must be graduate level mathematics courses. A maximum of 30 semester hours and 6 thesis hours of graduate credit may be transferred toward these requirements from a master's program. Transfer credits will be evaluated on a course-by-course basis as part of the Program of Study approval process.

Examinations
In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is normally taken near the end of the course work and consists of a written and oral presentation of a research proposal. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation. Further information on these examinations and other requirements of the Ph.D. program are contained in the Ph.D. Degree General Procedures manual available from the MMAE Department.
## Course Offerings

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Notes</th>
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<tbody>
<tr>
<td>CEG 5015</td>
<td>Geotechnical Engineering II. PR: CEG 4101C. Continuation of</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>CEG 4101C with emphasis on shear strength and design factors for</td>
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<td>earth pressures bearing capacity, and slope stability.</td>
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<tr>
<td>CEG 5700</td>
<td>Geo-Environmental Engineering. PR: CEG 4101C. Geotechnical</td>
<td>EN 3(3,0)</td>
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<td></td>
<td>applications to environmental problems, groundwater flow, soil</td>
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<td></td>
<td>contamination and groundwater contaminant transport, geosynthetics</td>
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<td></td>
<td>and stability of landfill design, control of contaminated sites.</td>
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<tr>
<td>CEG 6065</td>
<td>Soil Dynamics. PR: CEG 4101C. Comprehensive coverage in</td>
<td>EN 3(3,0)</td>
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<td></td>
<td>calculating the dynamic response of foundations; presenting a</td>
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<td>a variety of contemporary techniques for fields and laboratory.</td>
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<tr>
<td>CEG 6115</td>
<td>Foundation Engineering. PR: CEG 5015. Analysis and design of</td>
<td>EN 3(3,0)</td>
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<td></td>
<td>spread footings, mat foundations, retaining walls, sheeting, and</td>
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<td>bracing systems and pile foundations.</td>
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<tr>
<td>CEG 6317</td>
<td>Advanced Geotechnical Engineering. PR: CEG 5015. Mechanics of</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>soils and models; elasticity and plasticity of soil bodies,</td>
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<td>strength of soils and stability of soil structures.</td>
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<td>CES 5325</td>
<td>Bridge Engineering. PR: CES 4605 and CES 4706. Structural systems</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>for bridges, loading, analysis by influence lines, slab and</td>
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<td></td>
<td>girder bridges, composite design, prestressed concrete, rating of</td>
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<td>existing bridges, specifications and economic factors.</td>
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<tr>
<td>CES 5606</td>
<td>Advanced Steel Structures. PR: CES 4605. Behavior and design of</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>steel buildings; emphasis on AISC-LRFD building code, complex</td>
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<td>connections, tension members, stability of compression members,</td>
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<td></td>
<td>laterally unsupported beams, frames, and beam columns.</td>
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<tr>
<td>CES 5706</td>
<td>Advanced Reinforced Concrete. PR: CES 4702 or C.I. Design of</td>
<td>EN 3(3,0)</td>
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<td></td>
<td>frames, two-way systems, shear walls, shear and torsion,</td>
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<td></td>
<td>compression field theory; inelastic analysis, wind and seismic</td>
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<td></td>
<td>design; introduction to prestressed concrete.</td>
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<tr>
<td>CES 5821</td>
<td>Masonry and Timber Design. PR: C.I. Structural properties of</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>masonry and timber; design loads, codes and standards; analysis of</td>
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<td>axial loads, flexure and shear.</td>
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<tr>
<td>CES 6116</td>
<td>Finite Element Structural Analysis. PR: CEG 4101 or C.I. Concept</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>theory, and application of the finite element method; analysis of</td>
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<td></td>
<td>one-, two-, and three-dimensional structural components and</td>
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<td>systems; stability and dynamics; applications.</td>
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<tr>
<td>CES 6129</td>
<td>Analysis of Plates and Shells. PR: EML 5237 or equivalent. Theory</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>of bending of thin plates. Energy and approximation techniques.</td>
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<td>Non-linear behavior of plates. Theory of thin shells with small</td>
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<td></td>
<td>deformations.</td>
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<tr>
<td>CES 6170</td>
<td>Boundary Element Methods in Civil Engineering. PR: C.I. Green's</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>theorems; integral formulations for two- and three-dimensional</td>
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<td>and axisymmetric problems of solid mechanics; applications to</td>
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<td>structural and geomechanics problems; programming.</td>
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<td>CES 6209</td>
<td>Dynamics of Structures. PR: C.I. Response analysis of single and</td>
<td>EN 3(3,0)</td>
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<td>multi-degree-of-freedom systems to periodic and non-periodic</td>
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<td>excitations; continuous systems; response spectra; applications in</td>
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<td>structural engineering.</td>
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<tr>
<td>CES 6218</td>
<td>Structural Stability. PR: EML 5237 or equivalent. Analysis of</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>structural elements, columns, frameworks, lateral stability.</td>
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<td></td>
<td>Introduction to the stability of plates. Energy and approximate</td>
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<td>methods.</td>
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<tr>
<td>CES 6220</td>
<td>Wind and Earthquake Engineering. PR: CES 6209 or C.I. Wind</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>characteristics; wind effects on structures; dynamic analysis for</td>
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<td>wind loads; nature of earthquake forces; response spectra and</td>
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<td>seismic design; wind and seismic codes.</td>
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<tr>
<td>CES 6230</td>
<td>Advanced Structural Mechanics. PR: C.I. Review of biaxial bending</td>
<td>EN 3(3,0)</td>
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<td></td>
<td>and torsion; plate bending; theory of elasticity, visco-elasticity</td>
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<td>and plasticity, anisotropic elasticity and stability.</td>
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<tr>
<td>CES 6715</td>
<td>Prestressed Concrete Structures. PR: CES 4702 and CES 5706 or</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>C.I. Prestressed concrete behavior and design; applications in</td>
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<td>building and bridge design including pre- and post-</td>
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<tr>
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<td>tensioned girders, floors, roofs, and walls.</td>
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<tr>
<td>CES 6840</td>
<td>Composite Steel Concrete Structures. PR: CES 5506 and CES 5706 or</td>
<td>EN 3(3,0)</td>
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<tr>
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<td>C.I. Fundamentals of composite action; high performance materials;</td>
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<tr>
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<td>design of composite beams, slabs, beam-columns, joints; applications</td>
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<tr>
<td></td>
<td>of prestressing; composite buildings and bridges; construction</td>
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<td>methods.</td>
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<tr>
<td>CES 6890</td>
<td>Research in Structural Engineering. PR: C.I. Behavior and design</td>
<td>EN 3(3,0)</td>
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<tr>
<td></td>
<td>of steel, concrete, or composite structures under cyclic, wind,</td>
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<td>earthquake, impact, or blast loading.</td>
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<tr>
<td>CGN 5320C</td>
<td>Geographic Information Systems. Programming theory and application</td>
<td>EN 3(2,2)</td>
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<td>of geographic information systems to civil engineering projects.</td>
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<tr>
<td>CGN 5504C</td>
<td>Civil Engineering Materials. PR: EGN 3365C, EGN 3331, or C.I.</td>
<td>EN 3(2,2)</td>
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<td>Structure, properties, and applications of materials used in</td>
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<td>civil engineering including concrete, steel, asphalt, wood,</td>
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<td>soils, and composite materials.</td>
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</table>
CGN 5506C  EN 3(2,2)
Asphalt Concrete Mix Design. PR: CEG 4101C, Properties of asphalt, aggregate and asphalt mixtures, Marshall mix design, Hveem mix design, pavement rehabilitation.

CGN 5655  EN 3(3,0)
Regional Planning, Design, and Development. PR: ENV 4651. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.

CWR 5205  EN 3(3,0)
Hydraulic Engineering. PR: CWR 4101C and CWR 4203C. Concepts of fluid mechanics and hydrodynamics applied to natural and man-made flow of intent to civil and environmental engineering.

CWR 5545  EN 3(3,0)
Water Resources Engineering. PR: CWR 4101C, CWR 4203C. Systems identification and solution to complex water allocation problems, and other hydraulic engineering designs and operations using economic analysis and operations research techniques.

CWR 6102  EN 3(3,0)
Advanced Hydrology. PR: CWR 4101 or C.I. Single site and regional frequency analysis; modeling hydrologic systems; lumped and distributed event models for urban and natural drainage basins; continuous simulation; real-time forecasting.

CWR 6125  EN 3(3,0)
Groundwater Hydrology. PR: CWR 4203C or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.

CWR 6126  EN 3(3,0)

CWR 6235  EN 3(3,0)
Open Channel Hydraulics. PR: CWR 4203C or C.I. Free surface flow studies by empirical and theoretical methods for the design, operation, and management of open channels.

CWR 6535  EN 3(3,0)
Modeling Water Resources Systems. PR: CWR 4101C and CWR 4203C. Contemporary mathematical models for water quality and quantity considerations including computer-based hydraulic and hydrologic models.

CWR 6236  EN 3(3,0)
River Engineering and Sediment Transport. PR: CWR 4203C and CWR 4101C. River morphology and regime with stabilization and modification of river courses. Sediment transport including control methods and modeling.

EAS 5123  EN 3(3,0)

EAS 5157  EN 3(3,0)

EAS 5302  EN 3(3,0)
Direct Energy Conversion. PR: EML 3101 and EML 4142. Direct methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics and magnetohydrodynamics. Analysis and systems design.

EAS 5315  EN 3(3,0)
Rocket Propulsion. PR: EAS 4134 or EML 4703. Analysis and performance of rocket motors; selection and thermochernistry of chemical propellants; liquid and solid propellant rockets.

EAS 6133  EN 3(3,0)

EAS 6185  EN 3(3,0)
Turbulent Flow. PR: EML 5060 and EML 5713. Phenomena and methods of characterizing turbulence; spatial and temporal velocity correlation; energy spectra; transition prediction; turbulent boundary layer equations; hot wire and LDV measurement techniques.

EAS 6405  EN 3(3,0)

EAS 6507  EN 3(3,0)

ECM 5135  EN 3(3,0)

ECM 6235  EN 3(3,0)

EEL 5173  EN 3(3,0)

EEL 5245C  EN 3(2,1)
ENGINEERING

EEL 532C  
Thin Film Technology. PR: EEL 3306 or equivalent. Presents the various thin film deposition techniques for the fabrication of microelectronic, semiconductor, and optical devices.

EEL 5352  
Semiconductor Material and Device Characterization. PR: EEL 3306 or C.I. Semiconductor material characterization resistance, mobility, doping carrier lifetime, device properties, threshold voltage, interface charge of MOS devices, optical and surface characterization of films.

EEL 5353  
Semiconductor Device Modeling and Simulation. PR: EEL 4308. Large scale and small signal model development for semiconductor diodes, BJTs, and MOSFETs. Parameter extraction, numerical algorithm, and SPICE simulation are included.

EEL 5355C  
Fabrication of Solid-State Devices. PR: EEL 4308. Fabrication of microelectronic devices, processing technology, ion implantation and diffusion, device design, and layout. Laboratory includes device processing technology.

EEL 5357  
CMOS Analog and Digital IC Design. PR: EEL 3306 and EEL 4309. Presents the principles and techniques of the design of analog and digital circuits that are to be implemented in a CMOS technology.

EEL 5370  

EEL 5434  
Microwave Circuits and Devices. PR: EEL 4436 or EEL 5555. Planar transmission lines; passive microwave circuits; active circuit design using Gunn, IMPATT, FETS, RTDS, etc.; microwave integrated circuits.

EEL 5441  
Introduction to Wave Optics. PR: EEL 4440, or PHY 4424 or C.I. Electromagnetic foundation of light waves as applied to reflection, refraction, diffraction, interference, polarization, coherence, and guided waves.

EEL 5448  
Fundamentals of Optoelectronic. PR: Graduate standing or C.I. Operation, methods of fabrication, applications, and limitation of various optoelectronic devices including quantum well semiconductor devices.

EEL 5450C  
Thin Film Optics. PR: PHY 4424 or EEL 4440 and EEL 5441 or EEL 5451. Principles of thin film optics and its applications in optical electro-optical, and laser systems.

EEL 5453  

EEL 5451L  
Electro-Optics Laboratory. PR: EEL 4440 or EEL 5441 or C.I. Study of laboratory techniques for optical measurements and performance of measurements on electro-optic devices to determine operational characteristics.

EEL 5462C  
Antenna Analysis and Design. PR: EEL 3470 or equivalent. Fundamentals of antennas; dipoles, loops, arrays, apertures, and horns. Analysis and design of various antennas.

EEL 5513  

EEL 5517  
Surface Acoustic Wave Devices and Systems. PR: EEL 3552C. Course discusses SAW technology which includes the physical phenomenon, transducer design and synthesis, filter design and performance parameters. Actual devices and communication systems are presented.

EEL 5542  
Random Processes I. PR: EEL 3552C and EEL 3552C. Elements of probability theory; random variables, and stochastic processes.

EEL 5547  

EEL 5555C  
RF and Microwave Communications. RF and microwave active circuits microstrip amplifier, oscillator, and mixer design and fabrication. Receiver design, noise, familiarization with network and spectrum analyzers.

EEL 5563  

EEL 5630  

EEL 5704  
Introduction to Digital Systems. PR: EEL 3342C or C.I. Analysis and synthesis of combinational, synchronous and asynchronous sequential logic circuits. Introduction to controller design using a digital design language.

EEL 5708  

EEL 5741C  
Microcomputer-based Monitoring and Control Systems. PR: EEL 3342, EEL 4767C, or C.I. Machine language programming, software development aids; systems design; interfacing considerations.

EEL 5762  
SemiMarkov models; application to multiprocessor systems, switching and multi-user communications.


EEL 5820 Image Processing. PR: MAP 2302, EGN 3420, EEL 4750, or C.I. Two-dimensional signal processing techniques; pictorial image representation; spatial filtering; image enhancement and encoding; segmentation and feature extraction; introduction to image understanding techniques.

EEL 5825 Pattern Recognition. PR: MAP 2302, EGN 3420. Theoretic and syntactic methods of pattern analysis. Decision functions; optimum decision criteria; training algorithms; feature extraction; unsupervised learning; data reduction and potential functions.

EEL 5874 Expert Systems and Knowledge Engineering. PR: EEL 4872 or C.I. Introduction to expert systems in engineering. Expert systems tools and interviewing techniques. This course is hands-on and project-oriented.

EEL 5881 Software Engineering I. PR: EGN 3420, EEL 4851, or C.I. Design, implementation, and testing of computer software for engineering applications.

EEL 5891 Continuous System Simulation I. PR: EEL 3657 or C.I. Use of state-space techniques, numerical integration, and CSSL programs. Laboratory assignments.

EEL 6XXX Advanced Machines. PR: EEL 4205.

EEL 6246 Power Electronics II. PR: EEL 5240. Advanced topics in power electronics, soft-switching techniques, small-signal modeling of PWM and resonant converters, control techniques, power factor correction circuits.

EEL 6255 Advanced Power Systems Analysis. PR: EEL 4216 or C.I. Continuation of EEL 4216. Topics to include symmetrical and unsymmetrical fault analysis, power system estimation & control and power system stability.

EEL 6269 Advanced Topics in Power Engineering. PR: EEL 6265. A current topic will be discussed such as power system transients, system protection, T&D, and dielectric engineering.

EEL 6338 Advanced Topics in Microelectronics. PR: C.I. Covers advanced topics in microelectronics such as semiconductor device physics, semiconductors device fabrication, and semiconductor device modeling.

EEL 6354 Advanced Semiconductor Device II. PR: EEL 3306. First course in advanced semiconductor device physics and modeling. Main stream devices including junctions, diode, bipolar transistor, and metal-oxide field-effect transistor.


EEL 6372 Advanced Topics in Electronics. PR: EEL 6371 or C.I. Advanced and current topics in electronics such as power electronics and semiconductor integrated circuits.


EEL 6446 Optical Systems Design. PR: EEL 5453 or C.I. Design principles of lens and mirror optical systems; evaluation of designs using computer techniques.

EEL 6457 Advanced Topics in Electro-Optics. PR: C.I. Current research topics in electro-optics, such as optical computing, binary optics, advanced system design issues, novel laser systems.


EEL 6488 Advanced Topics in Electromagnetics and Microwaves. PR: C.I. Advanced and current topics in EM fields, antennas, and microwaves.

EEL 6502 Adaptive Digital Signal Processing. PR: EEL 5513 or C.I. Wiener filtering, Least Mean Square and Recursive Least Squares based algorithms, adaptive prediction and identifications with applications such as echo cancellation, etc.


EEL 6505 Multidimensional Digital Processing. PR: EEL 5513 or C.I. Multidimensional signals and systems. Two-dimensional transforms and filters. Image processing applications.

EEL 6530 Communication Theory. PR: EEL 5542 or C.I. Communication in the presence of noise; analog and pulse modulation; use of phase-locked loops, synthesizers, VCOs, system implementations.

EEL 6537 Detection and Estimation. PR: EEL 6543. Use of hypothesis testing (Bayes, Minimax, Neyman-Pearson) and estimation theory (Bayes, Maximum-likelihood) for detecting or estimating signals in noise. Application in communications and radar.

Advanced Topics in Digital Signal Processing. PR: C.I. Advanced and current topics in digital signal processing, such as neural network, spectral analysis, speech processing.

Laser Engineering. PR: EEL 5441 or C.I. Principles of laser amplification and oscillations; design of lasers; general characteristics of excitation systems.

Laser Engineering Laboratory. PR: EEL 6660, PHY 5446, or C.I. Designing and device implementation of diode pumped solid-state lasers, nonlinear frequency conversion, Q-switching, mode locking, and pulse second harmonic generation.


Statistical Optics with Applications. PR: EEL 5441 and EEL 5442, or C.I. Characterization of random optical waves with applications in communications, turbulence scattering, and imaging.

Radiation and Detection. PR: C.I. Radiometry, Planck radiators, spectrometers, photon-counting statistics, detector noise analysis, detector mechanisms.

Advanced Topics in Communications. PR: C.I. Advanced and current topics in communications, such as coding theory, information theory, spread spectrum, etc.


Fundamentals of Modern Multivariable Control. PR: EEL 4657, EEL 5173, or C.I. Emphasis on stability and performance analysis in time and frequency domains and on design tools for optimal performance and robustness.

Nonlinear Control Systems. PR: EEL 5173. Phase plane descriptions of nonlinear phenomena, limit cycles, jump conditions, stability, describing functions, Lyapunov and Popov theory, and time and frequency domain analysis for nonlinear systems.

Design of Robot Control Systems. PR: EEL 5173. Coordinate transformation, differential equation of motion, trajectory planning, trajectory control, classical controls, advanced controls, force control, constrained motions, and redundancy.


Optimal Estimation for Control. PR: EEL 5173 or C.I. Optimal filtering, smoothing, and prediction methods are analyzed with applications to a number of linear and nonlinear dynamic systems.

Advanced Topics in Modern Control Systems. PR: C.I. Introduces students to present-day issues in control systems analysis, design, and implementation.

Parallel Processing. PR: EEL 5707, EEL 5762. Systems with one or more central I/O processors. Types of parallelism granularity and memory organization. Processor/memory message passing systems. Shared memory multiprocessors.


Microcomputer Applications Design. PR: EEL 5741 or C.I. Advanced applications of microcomputer systems. Design of systems and software to implement a case study in microcomputer usage.

Current Topics in Parallel Processing. PR: EEL 6708 or C.I. Research topics in parallel architectures, including but not limited to, systolic architectures, wavefront arrays, interconnection networks, reconfigurable architectures and fast algorithms.

Parallel Knowledge Processing Systems. PR: EEL 5762 and EEL 5874 and EEL 6707 or C.I. Design and performance of computer architectures supporting parallel reasoning techniques, including concurrency in search algorithms, genetic algorithms, semantic networks, marker-propagation, and rule-based systems.


Introduction to Neural Networks. PR: EEL 5825 or C.I. Artificial neural network theory, models, and architectures. Neurobiological basis, learning theory, applications, and hardware implementation issues.

Image Processing II. PR: EEL 5820 or C.I. Advance topics in image processing: nonlinear and adaptive filtering morphological processing, color image processing, texture analysis, and image encoding.
EEL 6843 EN 3(3,0)
Machine Perception. PR: EEL 5820 or EEL 5825 or C.I. Advanced methods of machine understanding; simulation of intelligent machine systems; automatic recognition systems; visual tracking systems; multidimensional feature analysis.

EEL 6845 EN 3(3,0)
Intelligent Control. PR: C.I. Design and development of intelligent machine systems; decision theory, intelligence modeling; neural models; advanced techniques in intelligent control.

EEL 6857 EN 3(3,0)
Engineering Data Reduction. PR: C.I. Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.

EEL 6875 EN 3(3,0)
Engineering of Artificial Intelligence Systems. PR: EEL 5874 or C.I. Introduction to the engineering of knowledge-based automated reasoning systems including the use of representation languages and object-oriented techniques. It is based on LISP.

EEL 6876 EN 3(3,0)
Current Topics in Artificial Intelligence in Engineering Systems. PR: EEL 6875 or C.I. Research in current topics including artificial intelligence, relevant to engineering systems including causal modeling, qualitative reasoning, temporal reasoning, and inductive reasoning. Review of current literature.

EEL 6878 EN 3(3,0)
Modeling and Artificial Intelligence. PR: EEL 6875 or C.I. Introduction to various applications of artificial intelligence techniques as they affect the engineering aspects of computer-based simulation, modeling, and training. The course will be taught as a seminar, making significant use of the current research literature. Topics include Intelligent Tutoring Systems, Situational Awareness, Intelligent Instructor Support, and Qualitative Modeling.

EEL 6883 EN 3(3,0)
Software Engineering II. PR: EEL 5891 or equivalent; C.I. Continuation of EEL 5881. Emphasis on term projects and case studies.

EEL 6885 EN 3(3,0)

EEL 6887 EN 3(3,0)
Software Engineering Life-Cycle Control. PR: EEL 5881, EEL 6883. Issues in software development life-cycle control including project cost and time estimation, methods and models, manpower allocation, and system configuration management.

EEL 6893 EN 3(3,0)
Continuous System Simulation II. PR: EEL 5891. Continuation of EEL 6426 including advanced features of Continuous Simulation Languages such as user-defined macros, linear analysis package, sample data systems. A simulation study term project is required.

EEL 6895 EN 3(3,0)
Current Issues in Real-Time Simulation. PR: EEL 5771C, EEL 5891. Design considerations in real-time, computer-based, training simulator systems. Laboratory assignments.

EEL 6897 EN 3(3,0)
Software Development for Real-Time Engineering Systems. PR: EEL 5881, EEL 6883. Issues associated with developing software for real-time systems, including parallel processing, task synchronization, and task scheduling.

EES 5605 EN 3(3,0)
Outdoor Noise Control. PR: C.I. Community noise evaluations and control, legislative standards, instrumentation and measurement, abatement methods, and noise modeling.

EGN 5xxxC EN 3(2,2)
Metrology. PR: EIN 4391C or C.I. Advanced topics in inspection and measurement with applications in engineering and manufacturing.

EGN 5035 EN 3(3,0)
Topics in Technological Development. PR: C.I. Selected topics in the technological development of Western civilization including the weight-driven clock, steam engine, electric light, etc.

EGN 5720 EN 3(2,3)
Internal Combustion Engine Analysis and Optimization. PR: Therm/Fluids or Thermodynamics or permission of instructor. Internal combustion engine operating principles. Topics covered include engine design and operating parameters, combustion, thermodynamics, induction flow, and basic mathematical models.

EGN 5840 EN 3(3,0)
Small Rocket Applications for Teachers. PR: Admission to Martin Marietta/UCF Academy. Earth and space environments, rocket propulsion, meteorological and environmental measurements, payload launch procedures, orbits and trajectories, safety, model rocket experiments, field trips, student science experiments.

EGN 5xxxC EN 3(2,3)
Experimental Methods for High Performance Engine Manufacturing. PR: EGN 5270C; EIN 5247, STA 5205 or STA 6207; or C.I. Examines the unique problems encountered when one-off manufacturing of high performance engines due to the high level of component interaction.

EIN 5117 EN 3(3,0)
Management Information Systems I. PR: C.I. Design and implementation of computer-based management information systems. Organizational, managerial, and economic aspects of MIS.

EIN 5247 EN 3(3,0)
Experimental Design and Taguchi Methods. PR: EIN 2032 or ESL 4234. Introduction to Taguchi Concepts and Methodologies, use of design of experiments for quality design and improvement.

EIN 5248C EN 3(3,0)
Ergonomics. PR: C.I. Applications of anthropometry; functional anatomy, mechanics, and physiology of the musculoskeletal concepts in the engineering design of industrial tools, equipment and workstations.
EIN 5251 EN 3(3,0) Human-Computer Interaction: Usability Evaluation. Usability paradigms/principles; cognitive walk-throughs; heuristic, review-based, model-based, empirical and storyboard evaluation; techniques; query techniques; laboratory techniques; and field study approaches.

EIN 5255 EN 3(3,0) Training Simulator Engineering. Introduction to significant topics relative to the development and use of simulators for knowledge transfer in the technical environment.

EIN 5356 EN 3(3,0) Cost Engineering. Cost estimation and control of engineering systems throughout the product life cycle.

EIN 5368C EN 3(2,2) Integrated Factory Automation Systems. PR: EIN 4391C or C.I. Automated material handling systems, industrial robots, automated guided vehicles, automated storage and retrieval systems, and economic justification.

EIN 5371 Engineering Logistics. Study of the logistics life-cycle involving planning, analysis and design, testing, production, distribution, and support.

EIN 5388 Forecasting. PR: EIN 2032 or STA 5156. Industrial applications of forecasting methods with emphasis on microcomputer-based packages.

EIN 5392C EN 3(2,2) Manufacturing Systems Engineering. PR: EIN 4391C or C.I. The integration of manufacturing technologies and information processing concepts into a system for controlling the manufacturing enterprise.

EIN 5415C EN 3(2,2) Tool Engineering and Manufacturing Analysis. PR: EIN 4411. Tool materials and design, tolerance technology, theory of metal cutting, and machinability.

EIN 5602C EN 3(2,2) Expert Systems in Industrial Engineering. Overview of basic concepts, architecture and construction of expert systems in IE. Intelligent simulation training systems, case studies, and problems. Laboratory exercises.

EIN 5607C EN 3(2,2) Computer Control of Manufacturing Systems. PR: EIN 4391C, C.I. Automated systems for manufacturing, numerical control (NC) machines, NC programming, robot control and programming, machine and system control.

EIN 5936 Seminar in Industrial Engineering Doctoral Research. PR: C.I. Essential topics for successful doctoral research including research areas, skills, funding, proposals, ethics, mentors, seminars, societies, conferences, presentations, interviewing, grants, and publishing.

EIN 6140 EN 3(3,0) Project Engineering. PR: C.I. Role of engineer in project management with emphasis on project life cycle, quantitative and qualitative methods of cost, schedule, and performance control.


EIN 6249C EN 3(2,2) Biomechanics. PR: EIN 5248C or C.I. Applications of body link system, kinematic aspect of body movement and mechanics of the human body concepts in the engineering design of work-systems.

EIN 6252 EN 3(3,0) Human-Virtual Environment Interaction. Sense of presence, cybersickness, health and safety, integration of multi-modal inputs and outputs, user differences, design metaphors, design constraints, social impact of the technology.

EIN 6258 EN 3(2,2) Human Computer Interaction. Computer task analysis, human-computer design guidelines and history, usability testing, next generation user interfaces, human-virtual environment interaction.

EIN 6264C EN 3(2,2) Industrial Hygiene. PR: EIN 5248C or C.I. Evaluation and control of occupational hazards including heat, cold, noise, vibration, radiation, solid waste, air contaminants, illumination, ventilation, and other work environments.

EIN 6270C EN 3(2,2) Work Physiology. PR: EIN 5248 or C.I. Applications of the concepts of endurance fatigue, recovery and the energy cost of work in the determination of work capacity, job design, personnel assignment, and work/rest scheduling.

EIN 6317 EN 3(3,0) Training Systems Engineering. How human performance deficiencies should be addressed from a systems engineering point of view. Manpower, personnel, and training considerations will be examined.

EIN 6322 EN 3(3,0) Engineering Management. PR: EIN 5117, EIN 5356, and EIN 6140. Capstone investigation and analysis of topics for improving engineering enterprises in national and international competitive environments. Quantitative engineering tools and techniques will be used.

EIN 6330 EN 3(3,0) Quality Control in Automation. PR: ESI 4234 or C.I. Quality control applications in industrial automation, implementation of quality control through automated inspection, statistical tolerancing, application of statistics in quality control.

EIN 6336 EN 3(3,0) Production and Inventory Control. PR: EIN 4333 or equivalent. Review of models and techniques used in forecasting, production control and inventory control. Includes aggregate planning, production scheduling, inventory management, models, etc.

EIN 6339 EN 3(3,0) Productivity Engineering. Basic concepts and tools including measurement, evaluation, planning, and improvement. Latest models and techniques pertinent to both the manufacturing and service sectors are introduced.
<table>
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>EIN 6357</td>
<td>Advanced Engineering Economic Analysis</td>
<td>EGN 3613; EIN 2032 or equivalent</td>
<td>3(3,0)</td>
<td>Topics include measuring economic worth, economic optimization under constraints. Analysis of economic risk and uncertainty, foundations of utility functions.</td>
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<tr>
<td>EIN 6398</td>
<td>Advanced and Nontraditional Manufacturing Processes</td>
<td>EIN 4391C or C.I.</td>
<td>3(3,0)</td>
<td>Latest methods and developments in manufacturing process engineering.</td>
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<tr>
<td>EIN 6399</td>
<td>Concurrent Engineering. Elements of concurrent engineering and its applications. Topics include quality function deployment, design for manufacturability, and design for assembly.</td>
<td>C.I.</td>
<td>3(3,0)</td>
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<tr>
<td>EIN 6418C</td>
<td>Electronics Manufacturing. PR: EIN 4391 or C.I. Electronics fabrication and assembly. FMS and CAD/CAM in electronics, information and control systems, micromachining with lasers, and surface mount technology.</td>
<td>EIN 4391 or C.I.</td>
<td>3(3,0)</td>
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<tr>
<td>EIN 6603</td>
<td>Readings in Expert Systems/AI in Industrial Engineering. PR: EIN 5602C or equivalent. Reading and discussing current topics in expert systems/AI as applied to IE. Current literature in intelligent simulation training systems.</td>
<td>EIN 5602C</td>
<td>3(3,0)</td>
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<tr>
<td>EIN 6645</td>
<td>Modeling and Simulation of Real-Time Processes. Mathematical modeling and computer simulation of engineering and scientific systems. Examination of hardware, software, and solution methods for real-time systems.</td>
<td>EIN 5602C or equivalent</td>
<td>3(3,0)</td>
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<tr>
<td>EIN 6647</td>
<td>Intelligent Simulation. The use of intelligent objects in building simulation models to achieve a goal by altering the scenarios during problem solution.</td>
<td>C.I.</td>
<td>3(2,2)</td>
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<td>EIN 6649</td>
<td>Intelligent Simulation Training System Design. A systems approach to building intelligent simulation training systems. Emphasis on removing the human instructor from the content training.</td>
<td>EGN 3365; EIN 5602C</td>
<td>3(2,2)</td>
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<tr>
<td>EIN 6693</td>
<td>Manufacturing Engineering Seminar. PR: C.I. Presentation of latest manufacturing engineering technological advancements and related topics.</td>
<td>EGN 3365; EIN 5602C</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5XXX</td>
<td>Polymer Science and Engineering. PR: EGN 3365. Structure and properties of polymers, preparation and processing of polymers, mechanical properties, use in manufacturing and high tech applications.</td>
<td>EGN 3365</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5106</td>
<td>Metallurgical Thermodynamics. PR: EGN 3343 and EGN 3365. Laws of thermodynamics, phase equilibria, reactions between condensed and gaseous phases, reaction equilibria in condensed solution and phase diagrams.</td>
<td>EGN 3343; EGN 3365</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5108</td>
<td>Surface Science. PR: PHY 2049 and C.I. Methods of chemical and physical analysis of surfaces, with emphasis on ultra-high vacuum spectroscopies utilizing electron, ion, and photon probes.</td>
<td>PHY 2049; C.I.</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5140</td>
<td>Introduction to Ceramic Materials. PR: EGN 3365. Uses, structure, physical and chemical properties, and processing of ceramic materials. Discussions will include recent developments for high technology applications.</td>
<td>EGN 3365</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5326</td>
<td>Corrosion Science and Engineering. PR: EGN 3365. Electrochemical principles and applications to detecting and monitoring corrosion processes. Various forms of corrosion, their causes and control. Techniques of corrosion protection.</td>
<td>EGN 3365</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5504</td>
<td>Modern Characterization of Materials. PR: EMA 5104. Techniques and operation of instrumentation (light, scanning, transmission, and auger microscopy) for the characterization of structure, defects, composition, and surfaces.</td>
<td>EMA 5104</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5584</td>
<td>Biomaterials. PR: EGN 3365. Properties of natural biological materials and their relation to microstructure, biocompatibility, specific applications in orthopedic, cardiovascular, visual, neural, and reconstructive implants.</td>
<td>EGN 3365</td>
<td>3(3,0)</td>
<td></td>
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<tr>
<td>EMA 5610</td>
<td>Laser Materials Processing. PR: EGN 3343. EMA 5106, or C.I. Laser beam optics; laser-material interactions; Laser heating, melting, vaporization. Plasma formation; laser surface treatment, welding, machining; laser material synthesis. Thin film deposition, crystal growth.</td>
<td>EGN 3343; EMA 5106</td>
<td>3(3,0)</td>
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<tr>
<td>EMA 5705</td>
<td>High Temperature Materials. PR: EMA 5104. Desired material properties for high temperature applications: physical metallurgy of such materials, corrosion, hot corrosion and oxidation properties, aero- and land-based gas turbine requirements.</td>
<td>EMA 5104</td>
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<td>EMA 6126</td>
<td>Physical Metallurgy. PR: EMA 5104 or EML 3124. Analytical methods in crystallography, dislocation theory, annealing,</td>
<td>EMA 5104; EML 3124</td>
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solid solutions, phases and phase diagrams, ferrous and non-ferrous alloy systems.

**EMA 6129** EN 3(3,0) Solidification and Microstructure Evolution. PR: EML 4142, EMA 5104, or C.I. Cooling process, nucleation, spinodal decomposition, interface instability, cells, dendrites, austenitic and peritectic microstructures, solute segregation, modeling project.

**EMA 6130** EN 3(3,0) Phase Transformation in Metals and Alloys. PR: EMA 5104 and EMA 5106 or C.I. Principles of thermodynamics, kinetics, and phase diagrams for the understanding of diffusion and diffusionless phase transformations in ferrous and non-ferrous alloys.

**EMA 6136** EN 3(3,0) Diffusion in Solids. PR: EMA 5104 and EML 5060 or C.I. Fundamental equations and mechanisms of diffusion. Diffusion in metallic, ionic, and semiconducting materials with emphasis on measurement techniques.

**EMA 6149** EN 3(3,0) Imperfections in Crystals. PR: EMA 5104 or C.I. Describes vacancy formation, dislocation theory, plasticity, grain boundary modeling, and the interaction between defects.

**EMA 6516** EN 3(3,0) X-Ray Diffraction and Crystallography. PR: EMA 5104 or C.I. Theory and experimental techniques of X-ray diffraction of materials. Topics include the structure of crystalline solids, including lattices, point group and space group theory.

**EMA 6518** EN 3(3,0) Transmission Electron Microscopy. PR: EMA 5104 or C.I. An introduction to the theory and operation of a transmission electron microscope. Electron diffraction techniques, contrast from images, analytical microscopy, and specimen preparation.

**EMA 6605** EN 3(3,0) Materials Processing Techniques. PR: EMA 5104 or C.I. Phase transformation; grain size; surface, powder, and composite processing; shape forming; polymer processes; liquid and vapor phase synthesis; radiation-induced processes, mathematical analysis, project.

**EMA 6626** EN 3(3,0) Mechanical Metallurgy. PR: EMA 5104 or EML 4223. Elastic behavior and plasticity, dislocation theory, mechanical behavior of materials, fracture, elements of fracture mechanics, environment-assisted cracking, creep and fatigue failures.

**EMA 6628** EN 3(3,0) Materials Failure Analysis. PR: EMA 5104. Comprehensive overview of the general procedures for failure analysis, failure theories, causes of failure, fractography of different failures, and modern analytical tools.

**EML 5060** EN 3(3,0) Mathematical Methods in Mechanical, Materials, and Aerospace Engineering. PR: MAP 2302. Vector field theory, generalized coordinates, complex variables, contour integration and Laplace and Fourier transforms and inversions, variable coefficient ODEs and solution of PDEs for governing equations of heat transfer, ideal fluid flow, and mechanics.

**EML 5066** EN 3(3,0) Computational Methods in Mechanical, Materials, and Aerospace Engineering. PR: EML 3034. Error norms, interpolation and extrapolation, quadratures and adaptive quadratures, solution of linear and nonlinear systems of equations, functional approximation, solution of ODEs and MWR.

**EML 5105** EN 3(3,0) Gas Kinetics and Statistical Thermodynamics. PR: EAS 4134 or EML 4703C. Molecular and statistical viewpoint of gases and thermodynamics; Boltzmann collision integral, partition functions, non-equilibrium flows. Applications in thermo-fluid systems.

**EML 5131** EN 3(3,0) Combustion Phenomena. PR: EML 4703C, EML 3101. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation, aerodynamics and stability of premixed and diffusion flames.


**EML 5224** EN 3(3,0) Acoustics. PR: EML 4220. CR: EML 5060. 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 5228C** EN 3(3,0) Modal Analysis. PR: EML 3303C, EML 4220, and EML 5060. Theoretical basis. Measurement techniques, excitation, transducers, data acquisition. Detailed data analysis, modal parameter extraction, curve-fitting procedures. Modeling.


**EML 5245** EN 3(3,0) Tribology. PR: EGN 3331, EML 3701, EGN 3365, or C.I. Principles of fluid film lubrication (liquid and gas, journal and thrust bearings), contact mechanics (rolling element bearings), design of bearings and load bearing surfaces, friction and wear of materials, tribotesting.


**EML 5311** EN 3(3,0) System Control. PR: EML 3312C. CR: EML 5060. Modern control theory for linear and nonlinear systems; controllability and observability. Linear state feedback and state estimators, compensator design.
EML 5402 Turbomachinery. PR: EML 3101, EML 4703, or EAS 4134. Application of the principles of fluid mechanics, thermodynamics, and aerodynamics to the design and analysis of steam and gas turbines, compressors, and pumps.

EML 5532C Computer-aided Design for Manufacture. PR: EML 4535C. Builds on introductory material covered in EML 4535C. Topics include computer modeling for the synthesis, simulation, design, and manufacture of mechanical, thermal, and aerospace systems.


EML 5713 Intermediate Fluid Mechanics. PR: EML 4703, CR: EML 5060. Fluid kinematics; conservation equations; Navier-Stokes equations; boundary layer flow; inviscid flow; circulation and vorticity; low Reynolds number flow; turbulence.

EML 6062 Boundary Element Methods in Engineering. PR: EML 5237 or EML 5713 or C.I. Integral (numerical) solution of potential, Poisson and diffusion equations; applications to heat transfer and fluid flow; complex variable boundary element methods.


EML 6104 Classical Thermodynamics. PR: EML 3101 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 6134 Conduction Heat Transfer. PR: EML 5162 or C.I. Classical and numerical techniques applied to the solution of steady and transient conduction problems. Applications to the design of thermal systems.

EML 5155 Convection Heat Transfer. PR: EML 5162, EML 5713, or C.I. Convection heat, mass and momentum transfer in laminar and turbulent flows. Applications to the design of thermal systems.

EML 5157 Radiation Heat Transfer. PR: EML 5162 or C.I. Radiation properties of surfaces and analysis of radiative heat transfer between black, gray, non-gray and non-diffuse surfaces. Multimode problems.


EML 5211 Continuum Mechanics. PR: EML 5237, or EML 5713 or C.I. Tensors: deformation and strain; stress; field equations; constitutive equations; applications in fluid dynamics and linear elasticity.


EML 5226 Analytical Dynamics. PR: EML 5271. Kane method for kinematics and dynamics of particle and rigid bodies is developed and contrasted with Newton and Lagrange methods. Multibody dynamics.

EML 5227 Nonlinear Vibration. PR: EML 5060 and EML 5271. Robust, reliable algorithms for simulation of nonlinear phenomena: phase planes; limit cycles; stability; period-multiplying bifurcations; strange attractors; Poincare maps; Floquet theory; Lyapunov exponents; applications to mechanical and aerospace systems.

EML 5305C Experimental Mechanics. PR: EML 4304, EML 5237. Selected topics in strain measurements, photoelasticity, h holographic interferometry; laser speckle measurement; acoustic emission, measurement of correlation and coherence functions.

EML 5547 Engineering Fracture Mechanics in Design. PR: EML 5237 or C.I. General understanding of elementary concepts. Practical application enabling useful prediction of fracture safety and characteristics. Some general knowledge of fracture mechanics and fracture criteria.

EML 5653 Theory of Elasticity. PR: EML 5237. Review of stress and strain; solution by tensor stress and potential functions, axisymmetric problems; wave propagation.

EML 6725 EN 3(3,0) Computational Fluid Dynamics and Heat Transfer I. PR: EML 5152 or C.I. Finite Difference methods; error and stability analysis; applications to model equations and further developments; matrix methods.

EML 6726 EN 3(3,0) Computational Fluid Dynamics and Heat Transfer II. PR: EML 6725. Development of governing equations; turbulence modeling; numerical solution of Euler and potential equations, Navier-Stokes equations, and boundary layer equations; grid generation.

EML 6808 EN 3(3,0) Analysis and Control of Robot Manipulators. PR: EML 4312, EML 5271, or C.I. Kinematics and dynamics of multibody systems, especially robot manipulators. Design and control of robot manipulators.

ENV 5071 EN 3(3,0) Environmental Analysis of Transportation Systems. PR: CWR 4101C or C.I. Prediction and abatement of pollution from transportation sources. Analysis techniques and environmental laws.

ENV 5116C EN 3(2,3) Air Pollution Monitoring. PR: ENV 4121C or C.I. Air pollution sampling techniques, equipment, and monitor siting. Emphasis on theory and direct applications in air pollution monitoring.

ENV 5334 EN 3(3,0) Characterization of Hazardous Wastes Sites. PR: CWR 4101C and ENV 4341 or C.I. Practical and comprehensive methods of hazardous waste site characterization, to determine site properties, contamination type, magnitude and risk, and remedial actions.

ENV 5335 EN 3(3,0) Hazardous Waste Management. PR: EGN 3704 or C.I. Engineering planning and analysis associated with the handling, storage, treatment, transportation, and disposal of hazardous wastes.

ENV 5410 EN 3(3,0) Drinking Water Treatment. PR: ENV 4561. Drinking water treatment using existing and newly developed processes. Fe, Mn, As, NO3, DBP3, SOCs and other contaminants using oxidation, membranes, ion exchange, precipitation, sorption, and other processes.

ENV 5505 EN 3(3,0) Sludge Management Operations in Environmental Engineering. PR: ENV 4561. Theory and design of sludge management operations and processes in environmental engineering, including stabilization dewatering and ultimate disposal.

ENV 6015 EN 3(3,0) Physical/Chemical Treatment Systems in Environmental Engineering. PR: ENV 4561 and EES 4202C or C.I. Theory and design of physical and chemical operations and processes in environmental engineering using latest technologies.

ENV 6016 EN 3(3,0) Biological Treatment Systems in Environmental Engineering. PR: EES 4111C and ENV 4561 or C.I. Theory and design of biological operations and processes in environmental engineering using the latest technologies.

ENV 6046 EN 3(3,0) Membrane Mass Transfer. PR: ENV 6015 or C.I. Introduction to modeling of mass transfer in membrane systems; membrane morphology, mathematical development of mass transfer coefficients; fouling mechanisms, system modeling, and applications.

ENV 6055 EN 3(3,0) Fate and Transport of Subsurface Contaminants. PR: EES 4111C, EES 4202C, CWR 6125. Principal concepts and modeling of the physical, chemical, and biological transport and transformation processes for subsurface contaminants.

ENV 6106 EN 3(3,0) Theory and Practice of Atmospheric Dispersion Modeling. PR: ENV 4121C or C.I. Atmospheric composition and dynamics. Engineering methods of mathematical modeling, both for point source and mobile source. Current computer models will be used.

ENV 6126 EN 3(3,0) Design of Air Pollution Controls. PR: ENV 4121C. Current methods for engineering design and performance analysis of air pollution control equipment to include scrubbers, baghouses, electrostatic precipitators, VOC incinerators, others.

ENV 6336 EN 3(3,0) Site Remediation and Hazardous Waste Treatment. PR: EES 4111C, EES 4202C, and ENV 4561 or C.I. Biological and physical/chemical remediation technologies, including theory and application, for groundwater and hazardous wastes.

ENV 6347 EN 3(3,0) Hazardous Waste Incineration. Theory and applications of design and operations of hazardous waste incinerators. Includes detailed consideration of air pollution control equipment.

ENV 6504L EN 3(1,5) Unit Operation and Processes Laboratory. PR: ENV 4561 or equivalent. Bench and small pilot plant experimentation with sedimentation, coagulation, sorption gas-stripping, oxidation ion-exchange, etc. in water, waste-water industrial waste, or hazardous waste treatment.

ENV 6519 EN 3(3,0) Aquatic Chemical Processes. PR: EES 4202C and EES 4111C or C.I. The applicability of water chemistry and physical chemistry on natural waters and waste-water with emphasis on environmental engineering problems.

ENV 6558 EN 3(3,0) Industrial Waste Treatment. PR: ENV 4561. Theories, methods, unit operations of management, reduction, treatment, disposal of industrial wastes.

ENV 6616 EN 3(3,0) Receiving Water Impacts. PR: EES 4202C and EES 4111C or C.I. Study of fate and transport of pollutant loadings into receiving waters, based on physical, chemical, and biological interactions in natural systems.

ESI 5236 EN 3(3,0) Reliability Engineering. PR: ESI 4234 or equivalent or C.I. Reliability theory and modeling approaches. Topics include: failure data analysis, maintainability, reliability standards (DOD), software reliability, reliability in design, and electronic systems reliability.
ESI 5315 EN 3(3,0)  
Research Foundations for IE and OR Modeling. PR: MAP 2032; STA 5156 or equivalent; ESI 4312; and C.I. Research foundations for IE/OR modeling, including constructive analysis of published research, methods of proof, research foundations in decision theory, optimization, and related areas.

ESI 5316 EN 3(3,0)  
Operations Research. Methods of operations research including formulation for models and derivation of solutions; linear programming, network models queuing theory, simulation and nonlinear optimization techniques.

ESI 5318 EN 3(3,0)  
Military Applications of Operation Research. PR: ESI 4312 or ESI 5316. Covers application of operations research models to military planning and operations. Use of optimization, simulation, probability, and statistical modeling to evaluate force alternatives.

ESI 5359 EN 3(3,0)  
Risk Assessment and Management. PR: STA 5156 or EIN 2032. Problems and complexities in risk assessment and management. Selected methodologies are illustrated through realistic applications in engineering and the sciences.

ESI 5419C EN 3(2,2)  
Engineering Applications of Linear and Nonlinear Optimization. PR: ESI 4312 or ESI 5316. Covers linear and nonlinear optimization applications in production planning, staffing, engineering design, distribution networks, and other engineering areas. Focuses on practicing OR analysts.

ESI 5451 EN 3(3,0)  
Network Based Project Planning, Scheduling, and Control. PR: ESI 4312 or ESI 5316. Probabilistic and deterministic approaches for planning, scheduling, and controlling complex, large-scale projects. PERT, CPM, resource leveling, risk analysis.

ESI 5531 EN 3(3,0)  
Discrete Systems Simulation. PR: EIN 2032 or STA 5156, COP 3215. Methods for performing discrete systems simulation, including network modeling, will be treated.

ESI 6217 EN 3(3,0)  
Statistical Aspects of Digital Simulation. PR: STA 5156 or C.I. Statistical issues in digital simulation including input data analysis, pseudorandom number generation, experimental design, and simulation output analysis.

ESI 6224 EN 3(3,0)  
Quality Assurance Management. PR: ESI 4234 or equivalent or C.I. Implementation and management of the quality assurance function. Planning and organization for quality, quality cost, Quality Audit and Corrective Actions.

ESI 6225 EN 3(3,0)  
Quality Analysis and Control. PR: ESI 4234 or equivalent. Methods for quality improvement, statistical process control (SPC), process capability, sampling plans, MIL-STDs and Taguchi Methods.

ESI 6227 EN 3(3,0)  
Total Quality Management. PR: ESI 6225 or equivalent. Origins and practices of the U.S. TQM movement. TQM as a competitive strategy. Productivity and performance improvement strategies with TQM.

ESI 6358 EN 3(3,0)  
Decision Analysis. PR: ESI 4212 or ESI 5316. Classical Bayesian analysis; utility and its measurement, multivariate utility methods; influence diagrams; Analytic Hierarchy Process; behavioral aspects; simulation.

ESI 6427 EN 3(3,0)  
Linear Programming and Extensions. PR: ESI 4312 or ESI 5316. Simplex and Revised Simplex Method; interior-point methods; duality; large-scale optimization; decomposition algorithms; upper bounds; linearization; parametric LP; goal programming.

ESI 6437 EN 3(3,0)  
Nonlinear Mathematical Programming and Dynamic Programming, PR: ESI 4312 or ESI 5316. Optimal conditions and algorithms for unconstrained and constrained nonlinear problems. Introduction to dynamic programming approach to multistage problems.

ESI 6448 EN 3(3,0)  
Network Analysis and Integer Programming. PR: ESI 6427. Modeling and solution methods for problems that can be formulated in terms of flow in networks and for discrete optimization problems.

ESI 6532 EN 3(2,2)  

ESI 6551C EN 3(2,2)  
Systems Engineering. PR: ESI 4312 or ESI 5316. Integration and application of systems science, operations research, systems methodologies, and systems management for the design, production, and maintenance of efficient, reliable systems.

ESI 6921 EN 3(3,0)  

ESI 6941 EN 6(2,10)  
Operations Research Practicum. PR: C.I. Involves full-time participation and experience in an organization conducting operations research analyses.

STA 5156 EN 3(3,0)  
Probability and Statistics for Engineers. PR: EIN 2032 or C.I. Review of descriptive statistics, probability, discrete and continuous probability distributions, estimation, and hypothesis testing. Multivariate distributions, correlation, regression, analysis of variance, and nonparametric statistics.

TTE 5204 EN 3(3,0)  
Traffic Engineering. PR: TTE 4004. Study of operator and vehicle characteristics, and design for street capacity, signals, signs, and markings.

TTE 5205 EN 3(3,0)  
Highway Capacity and Traffic Flow Analysis. PR: TTE 4004. Highway capacity for all functional classes of highways. Traffic signalization, including traffic studies, warrants, cycle length, timing, phasing, and coordination.
TTE 5315 EN 3(3,0)
Transportation Safety Analysis. PR: TTE 4004. Identification of the factors contributing to the accident occurrence and evaluation of safety investments.

TTE 5700 EN 3(3,0)
Railroad Engineering. PR: TTE 4004 and C.I. The major technical factors in location, construction, maintenance, and operation of railroad transportation systems.

TTE 5805 EN 3(3,0)
Geometric Designs of Transportation Systems. PR: TTE 4004. Study of geometric and construction design elements in the engineering of transportation systems.

TTE 5835 EN 3(3,0)
Pavement Design. PR: CEG 4101. Pavement types, wheel loads, stresses in pavement components, design factors such as traffic configurations, environmental, economic, drainage, and materials.

TTE 6256 EN 3(3,0)
Traffic Operations. PR: EIN 2032; TTE 4004 and TTE 5204 or C.I. Fundamental theories and applications of traffic movements on streets and highways.

TTE 6270 EN 3(3,0)
Intelligent Transportation Systems. PR: TTE 4004 and TTE 5204 and C.I. Theories and applications of intelligent vehicle highway systems in transportation engineering.

TTE 6526 EN 3(3,0)
Planning and Design of Airports. 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 6625 EN 3(3,0)
Mass Transportation Systems. PR: C.I. Planning, design, construction, operation, and administration of mass transportation systems.
College of Health and Public Affairs

The College of Health and Public Affairs offers seven graduate programs: the Master of Arts in Communicative Disorders, the Master of Science in Criminal Justice, the Master of Science in Health Services Administration, the Master of Science in Molecular Biology and Microbiology, the Master of Science in Nursing, the Master of Public Administration, and the Master of Social Work. The mission of the College of Health and Public Affairs is to provide undergraduate and graduate education, to foster the development and transmission of knowledge, and to provide graduate education that exceeds national standards while meeting the research and service needs of the local community.

Departments and schools within the college provide professional education, emphasizing the relationship between policy, practice, and the importance of research. By focusing on the development of critical thinking and problem-solving skills, students receive an education that prepares them for a lifetime of professional and personal achievement.

College Administration

- B. R. McCarthy, Ph.D. ...................................................... Dean
- M. J. Sweeney, Ph.D. .................................................... Associate Dean
- J. E. Dorner, M.N. ....................................................... Assistant Dean

Faculty

Department of Communicative Disorders

- C. Nye, Ph.D. ................................................ Chair and Professor
- D. L. Hedrick, Ph.D. .................................................. Professor
- D. L. Ratusnik, Ph.D. .................................................. Professor
- D. B. Ingram, Ph.D. .................................................. Associate Professor
- T. A. Mullin, Ph.D. .................................................. Associate Professor
- J. Ryalls, Ph.D. .................................................. Associate Professor
- H. Parker, M.A. .................................................. Assistant Professor
- K. Rivers, Ph.D. .................................................. Assistant Professor
- L. Rosa-Lugo, Ph.D. .................................................. Assistant Professor
- H. A. Utt, Ph.D. .................................................. Assistant Professor
- M. Vanryckeghem, Ph.D. .................................................. Assistant Professor
- G. Bruten, Ph.D. .................................................. Visiting Professor

Department of Criminal Justice and Legal Studies

- B. J. McCarthy, Ph.D. .................................................. Chair and Professor
- B. R. McCarthy, Ph.D. .................................................. Dean and Professor
- B. Bohm, Ph.D. .................................................. Professor
- D. Fabianic, Ph.D. .................................................. Professor
- R. Surette, Ph.D. .................................................. Professor
- D. Bishop, Ph.D. .................................................. Associate Professor
- D. Hall, Ph.D. .................................................. Associate Professor
- S. Mahan, Ph.D. .................................................. Associate Professor
- R. Pyle, Ph.D. .................................................. Associate Professor
- J. Sanborn, Ph.D. .................................................. Associate Professor
- B. Applegate, Ph.D. .................................................. Associate Professor
- C. Bast, J.D. .................................................. Assistant Professor
- D. Becker, M.S. .................................................. Assistant Professor
- P. Griset, Ph.D. .................................................. Assistant Professor
- M. Lanier, Ph.D. .................................................. Assistant Professor
- K. Lucken, Ph.D. .................................................. Assistant Professor
- F. Ravitch, J.D. .................................................. Assistant Professor
- R. Remis, J.D. .................................................. Assistant Professor
- R. Slaughter, J.D. .................................................. Assistant Professor
- K. Cock, J.D. .................................................. Internship Coordinator
- M. Eastep, M.S. .................................................. Instructor
- R. Lynch, J.D. .................................................. Instructor

Health Professions and Physical Therapy

- G. H. Frazer, Ph.D. .................................................. Chair and Professor
- L. J. Acierno, M.D. .................................................. Professor
<table>
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<th>Name</th>
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<tbody>
<tr>
<td>S. Douglass, M.S.</td>
<td>Associate Professor</td>
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<tr>
<td>T. Edwards, Ed.D., RT(R)</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>E. Hamby, D.B.A., P.T.</td>
<td>Associate Professor</td>
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<tr>
<td>A. Liberman, Ph.D., M.H.A., M.Ed.</td>
<td>Associate Professor</td>
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<tr>
<td>J. S. Lyle, M.S., M.P.H.</td>
<td>Associate Professor</td>
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<tr>
<td>T. S. Mendenhall, Ph.D., M.B.A.</td>
<td>Associate Professor</td>
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<tr>
<td>J. A. Valentia, Ph.D., M.S.W., M.P.H.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>L. T. Worrell, M.P.H</td>
<td>Associate Professor</td>
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<tr>
<td>L. Chase-Beasley, Ph.D., P.T.</td>
<td>Assistant Professor</td>
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<tr>
<td>T. Rotenius, Ph.D., M.B.A.</td>
<td>Assistant Professor</td>
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<tr>
<td>C. J. Barr, M.S.</td>
<td>Instructor</td>
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<tr>
<td>G. Bertetta, M.S.</td>
<td>Instructor</td>
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<tr>
<td>M. Diesen, M.S., M.Ed.</td>
<td>Instructor</td>
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<tr>
<td>K. B. Enckelmayer, M.P.T., O.T.R.</td>
<td>Instructor</td>
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<tr>
<td>T. Faleni, M.S.</td>
<td>Instructor</td>
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<tr>
<td>R. Freeman, M.Ed., P.T.</td>
<td>Instructor</td>
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<tr>
<td>V. J. Hudson, M.P.T., M.B.A., A.T.C.</td>
<td>Instructor</td>
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<tr>
<td>J. Lucy, M.A.</td>
<td>Instructor</td>
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<tr>
<td>P. Welker, M.A., RT(R) (CT)</td>
<td>Instructor</td>
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Department of Molecular Biology and Microbiology

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<tr>
<th>Name</th>
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<tr>
<td>R. N. Gennaro, Ph.D.</td>
<td>Chair and Professor</td>
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<tr>
<td>O. M. Barringer, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>M. J. Sweeney, Ph.D.</td>
<td>Associate Dean and Professor</td>
</tr>
<tr>
<td>R. S. White, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>R. J. Wodzinski, Ph.D.</td>
<td>Professor</td>
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<tr>
<td>J. F. Charba, Ph.D.</td>
<td>Associate Professor</td>
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<tr>
<td>D. W. Washington, Ph.D.</td>
<td>Associate Professor</td>
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<tr>
<td>K. Chai, Ph.D.</td>
<td>Assistant Professor</td>
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<tr>
<td>D. Chakrabarti, Ph.D.</td>
<td>Assistant Professor</td>
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<tr>
<td>R. Chakrabarti, Ph.D.</td>
<td>Assistant Professor</td>
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<tr>
<td>C. Fernandez-Valle, Ph.D.</td>
<td>Assistant Professor</td>
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<tr>
<td>S. Naser Ph.D.</td>
<td>Assistant Professor</td>
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<tr>
<td>D. F. Hitchcock, M.S.</td>
<td>Instructor</td>
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School of Nursing

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<th>Name</th>
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<tr>
<td>E. Stullenbarger, DSN, RN</td>
<td>Director and Professor</td>
</tr>
<tr>
<td>M. L. Sole, Ph.D., RN, CCRN</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>D. Wink, Ed.D., RNC</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>J. Dorner, M.N., RN</td>
<td>Assistant Dean and Associate Professor</td>
</tr>
<tr>
<td>A. Bushy, Ph.D., RN</td>
<td>Professor</td>
</tr>
<tr>
<td>M. Bear, Ph.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>K. Dow, Ph.D., RN</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>G. Giovincio, Ph.D., Ed.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>R. Gropper, Ph.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>K. Kapke, Ph.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>J. Kijek, Ph.D., RN</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>F. Smith, Ed.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>V. Browne-Kirmsley, Ed.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>N. Crigger, Ph.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>L. Hennig, Ed.D., RN</td>
<td>Associate Professor</td>
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<tr>
<td>L. Holcomb, DSN, RN</td>
<td>Associate Professor</td>
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<tr>
<td>E. Kiehl, Ph.D., RN</td>
<td>Associate Professor</td>
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</table>

Department of Public Administration

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. C. Lawther, Ph.D.</td>
<td>Chair and Associate Professor</td>
</tr>
<tr>
<td>P. W. Colby, Ph.D.</td>
<td>Professor</td>
</tr>
<tr>
<td>R. A. Shapek, Ph.D.</td>
<td>Director of the Florida-Eastern Europe Linkage Institute and Professor</td>
</tr>
<tr>
<td>J. D. Jurie, D.P.A.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>K. Tom Liou, Ph.D.</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>M. P. Aristigueta, M.P.A.</td>
<td>Assistant Professor</td>
</tr>
</tbody>
</table>
Communicative Disorders Department

Harold A. Utt, Ph.D. ........................................... Program Coordinator
Office: Research Pavilion Suite 200, Phone: (407) 249-4798
e-mail: hutt@pegasus.cc.ucf.edu
Brevard Campus: (407) 631-5586

Professional education is offered in Communicative Disorders leading to the Master of Arts degree in Speech-Language Pathology. 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 program is accredited by the Educational Standards Board of the American Speech-Language-Hearing Association. Full-time registration (at least 6 hours) in the program is required.

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) make up the clinical faculty, which supplements the clinical expertise of the regular faculty.

All students will enroll in SPA 6505 or 6506, Clinical Practica, or equivalents, each semester in attendance, with the exception of the semester they are enrolled in SPA 5553L, Differential Diagnosis in Speech and Language Laboratory, and the semester they are completing the thesis/non-thesis option. Students must complete 375 clock hours of practicum experience as outlined by the American Speech-Language-Hearing Association before graduation.

Admission Requirements for Communicative Disorders

Admission to graduate status in the Master of Arts (M.A.) in Communicative Disorders degree program is based on the following:

- A baccalaureate degree from a regionally accredited college or university and a grade point average (GPA) of 3.0 (on a 4.0 scale) for the last 60 attempted semester hours of credit earned for the baccalaureate degree, or a Graduate Record Examination (GRE) score of at least 1000 on the combined verbal and quantitative portions of the GRE. In order to be considered every applicant must submit official GRE scores.
- Three letters of recommendation, preferably from former instructors.
- A letter of intent, stating background and experience, interest in the field, future goals, and the semester in which admission is desired.
- A copy of all official transcripts from previously attended colleges and/or universities.
- A copy of the graduate application and official GRE score report.
The department requires international students and students whose native language is not English to submit a score of 500 on the Test of English as a Foreign Language (TOEFL).

Admission into the graduate program will be determined for each semester. Students must have all required materials in the department by the deadline for consideration.

Master of Arts in Communicative Disorders

Prerequisites
B.A. in Speech and Hearing (Communicative Disorders) or special prerequisite courses to be arranged with the program coordinator.

All students must take Statistical Methods II, or equivalent, and achieve a grade of "C" or better prior to, or during, their graduate program. This course is a prerequisite to SPA 5805, Research in Communicative Disorders.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA 5327</td>
<td>Aural Habilitation - Rehabilitation</td>
<td>4 hours</td>
</tr>
<tr>
<td>SPA 5600</td>
<td>Administration and Management of Communicative Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 5805</td>
<td>Research in Communicative Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 6410</td>
<td>Language Problems in Adults: Aphasia and Other Symbolic Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 5225</td>
<td>Fluency Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 6553</td>
<td>Differential Diagnosis in Speech and Language</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 5553L</td>
<td>Differential Diagnosis in Speech and Language Laboratory</td>
<td>1 hour</td>
</tr>
<tr>
<td>SPA 6132</td>
<td>Measurements in Speech Science</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 6204</td>
<td>Advanced Studies in Communicative Disorders: Articulation</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 6211</td>
<td>Voice Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 6403</td>
<td>Language Disorders: School Age Language</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 5236</td>
<td>Speech Problems in Adults: Motor Speech Disorders</td>
<td>3 hours</td>
</tr>
<tr>
<td>SPA 5404</td>
<td>Language Disorders: Pre-School</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

Two seminars must be included in the Program of Study:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Seminar Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPA 6407</td>
<td>Seminar in Language</td>
<td>2 hours</td>
</tr>
<tr>
<td>SPA 6525</td>
<td>Seminar in Speech Pathology</td>
<td>2 hours</td>
</tr>
<tr>
<td>SPA 6825</td>
<td>Seminar in Research</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

Practicum credit toward degree

All students must register for three hours each semester while in attendance, with exceptions as noted in the graduate manual.

Thesis and Non-Thesis Options

Each student will complete a thesis or non-thesis option.

Thesis Option
Students selecting the thesis option will complete a thesis in the area of speech/language pathology for six semester hours of credit. An advisory committee of three faculty members, chaired by a departmental faculty member, will be selected to guide the student through the thesis requirements. An oral defense of the thesis is required.

Non-Thesis Option
A student selecting the Clinical Internship option must complete 6 semester hours of Internship in Speech-Language Pathology. In addition, a student in the Clinical Internship option must register for one hour of Directed Research.

Examinations
A final comprehensive examination on course work is required. This examination must be passed before a student can be considered a degree candidate.

Minimum Hours Required for M.A.

50 Semester Hours
Criminal Justice and Legal Studies Department

Pamala Griset, Ph.D. .................................................. Program Coordinator
Office: HPB 113, Phone: (407) 823-2503, e-mail: griset@pegasus.cc.ucf.edu

Master of Science in Criminal Justice

The Master of Science in Criminal Justice offers students an in-depth exploration of the complex and changing world of criminal justice. The historical, political, economic, and philosophical forces shaping crime and punishment in the United States are examined. Students also learn valuable research and computer skills.

The course of study includes an analysis of patterns and theories of criminal behavior, criminal justice administration, including critical problems facing law enforcement, courts, corrections, and the juvenile justice system; the relationship between law and the legal system; individual and organizational strategies for change; research methods, statistics, and computer technologies in criminal justice; and fieldwork in criminal justice agencies. Federal, state, and local criminal justice agencies benefit from an informed and innovative workforce that is aware of the many complexities of the criminal justice system. The importance of advanced education in criminal justice beyond the bachelor's degree is increasingly being recognized by employers in Central Florida and throughout the United States.

The Master of Science in Criminal Justice is designed for students from a variety of settings. Some will be recent college graduates interested in pursuing a professional career in criminal justice. Others will be employees of criminal justice agencies interested in learning more about their field and advancing their careers. Still others will enter the program as a first step toward a Ph.D. in criminal justice or a related field. And some may be driven simply by a desire to enrich their intellectual lives. Whatever their motivations and background, graduates of the master's program will be better prepared to meet the many challenges facing the criminal justice system today.

Admission
The Graduate Record Examination (GRE) is required of all graduate students. Minimum requirements for regular admission are a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study; or a total score of 1000 or higher on the verbal-quantitative sections of the GRE; or a previous graduate degree. Also, applicants will be asked to submit a personal statement reflecting their educational and career goals. Individuals whose native language is other than English are required to have a minimum TOEFL score of 550.

Degree Requirements
The M.S. program in Criminal Justice consists of 30 semester hours. Each student completes a core of 5 courses (15 semester hours) and advanced curriculum of 5 courses (15 semester hours) selected in consultation with an advisor.

Minimum Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCJ 5011</td>
<td>The Nature of Crime</td>
<td>3 hours</td>
</tr>
<tr>
<td>CCJ 5456</td>
<td>The Administration of Justice</td>
<td>3 hours</td>
</tr>
<tr>
<td>CCJ 5704</td>
<td>Research Methods in Criminal Justice</td>
<td>3 hours</td>
</tr>
<tr>
<td>CCJ 6xxx</td>
<td>Quantitative Methods and Computer Utilization in Criminal Justice</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

And ONE of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCJ 5105</td>
<td>Foundations of Law Enforcement OR</td>
<td>3 hours</td>
</tr>
<tr>
<td>CCJ 5306</td>
<td>Foundations of Corrections</td>
<td></td>
</tr>
</tbody>
</table>

Advanced Curriculum

Choose five of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCJ 6106</td>
<td>Policy Analysis in Criminal Justice</td>
</tr>
<tr>
<td>CCJ 6217</td>
<td>Law and Social Control</td>
</tr>
<tr>
<td>CCJ 6485</td>
<td>Issues in Justice Policy</td>
</tr>
</tbody>
</table>
HEALTH AND PUBLIC AFFAIRS

CCJ 6505  The Juvenile Justice System
CCJ 6705  Applied Criminal Justice Research
CCJ 6730  Planned Change and Innovation in Criminal Justice
CCJ 6908  Independent Study
CCJ 6938  Special Topics in Criminal Justice
CCJ 6946  Criminal Justice Practicum
CCJ 6971  Thesis

(A student may not take more than 6 hours total of Independent Study or Field Work.)

Minimum Hours Required for M.S.  

30 Semester Hours

Students may transfer up to six hours of related graduate course work toward the Master of Science degree. Only courses where the student earned a grade of "B" or above will be accepted for transfer from an accredited university or college.

Health Professions and Physical Therapy Department

Gregory H. Frazer, Ph.D. ....................................................... Chair and Program Coordinator
Office: TR 534, Phone: (407) 823-2359, e-mail: frazer@pegasus.cc.ucf.edu

Master of Science in Health Services Administration

The Department of Health Professions and Physical Therapy offers a Master of Science in Health Services Administration. The program of study required for the Health Services Administration option is outlined below:

Admission

Admission to graduate status in the Master of Science in Health Services Administration program is based on the following:

☐ A baccalaureate degree from a regionally accredited college or university and a grade point average of at least 3.0 on a 4.0 scale for the last 60 attempted semester hours of credit earned for the baccalaureate degree, and a Graduate Record Examination score of at least 640 (a GMAT score of 400 may be used to satisfy this requirement); or a grade point average of at least 2.75 for the last 60 attempted semester hours and a GRE score of at least 1000 (a GMAT score of 500 may be used to satisfy this requirement).

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

☐ Completion of undergraduate course work comprising a knowledge of the U.S. health care systems, basic statistics, and personal computers.

Admission into graduate status is determined for the fall, spring, and summer semesters. All students must take the GRE or GMAT prior to acceptance into the program. After acceptance, all students must meet with their academic advisor to plan a program of study.

Required Courses  

24 Semester Hours

HSA 5198  Information Systems and Computer Applications in Medicine
HSA 6107  Health Care Organization and Management I
HSA 6108  Health Care Organization and Management II
HSA 6126  Principles of Managed Care
HSC 6636  Issues and Trends in the Health Care Industry
HSC 6911  Scientific Inquiry
PHC 6160  Health Care Finance
PHC 6420  Case Studies in Health Law
Electives

Students must choose a minimum of 5 courses in consultation with the advisor. Electives may include a research project, thesis, independent study or courses from such areas as business, public administration, engineering, computer science, or health services administration.

Comprehensive Examination

A final written examination is required of all students in the Program. The exam will be completed in the term in which the student expects to graduate. Examinations will receive an evaluation of "pass," "conditional pass," or "fail." If a student receives a "conditional pass" on the comprehensive examination, a written re-examination will have to be taken covering the area failed. A student failing the examination must repeat the entire examination. All students must successfully pass the comprehensive examination to graduate.

Thesis and Research Report Options

Students may choose to do a research project or thesis with the consent of the academic advisor. Normally, 3 semester hours is earned for the research project and 6 for the thesis. Students should discuss this with the advisor when the program of study is completed.

Minimum Hours Required for M.S.

39 Semester Hours

Molecular Biology and Microbiology Department

R. J. Wodzinski, Ph.D. ................................................................. Program Coordinator
Office: BIO 306, Phone: (407) 823-5932, e-mail: rudyw@pegasus.cc.ucf.edu

Master of Science in Molecular Biology and Microbiology

Admission

The minimum requirements for consideration for graduate status in the M.S. Program in Molecular Biology and Microbiology are a grade point average (GPA) of at least 3.0 for the last 60 attempted semester hours of undergraduate study and a score of at least 1000 on the combined quantitative-verbal sections of the Graduate Record Exam (GRE). Additionally, the department requires three letters of recommendation plus a written statement of past experience and research, area of interest, and immediate and long-range goals. Personal interviews are helpful but not required.

The department requires international students and students whose native language is not English to have a minimum TOEFL score of 550.

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 Subject Biochemistry, Cell and Molecular Biology Test score at or above the 50th percentile. In no case will GRE scores (verbal, quantitative, or advanced) older than five years be accepted.

Applicants need not have an undergraduate degree in molecular biology or microbiology but are expected to have the equivalent of 16 semester hours credit in biological sciences including a course in general microbiology, plus one year of organic chemistry, one year of physics, basic university mathematics and statistics, and laboratory skills equivalent to the minimum required of our own undergraduates. Minor deficiencies may be remedied after acceptance by enrollment at the first opportunity in an appropriate course.

Examinations

A comprehensive examination is required of all students in the M.S. program. The comprehensive exam must be taken no later than the fourth week of that semester after the one in which the student completes all course work in the program of study. If a student fails the comprehensive examination, a minimum of four weeks must elapse before re-
examination. The comprehensive exam may be taken a maximum of two times. In addition, an oral thesis defense is required. A minimum of four weeks must elapse between the comprehensive and thesis defense examinations.

Degree Requirements
The course and credit requirements will consist of a minimum of 30 semester hours of credit, including six credits of Thesis, two credits of Graduate Seminar, and such other courses as specified by the student’s graduate committee in the approved Program of Study.

Molecular Biology and Microbiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCB 5654</td>
<td>Applied Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 6407C</td>
<td>Laboratory Methods for Molecular Biology</td>
<td>5</td>
</tr>
<tr>
<td>MCB 5205</td>
<td>Infectious Processes</td>
<td>3</td>
</tr>
<tr>
<td>MCB 5505</td>
<td>Virology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 6417C</td>
<td>Microbial Metabolism</td>
<td>3</td>
</tr>
<tr>
<td>PCB 5235</td>
<td>Immunopathology</td>
<td>3</td>
</tr>
<tr>
<td>PCB 5806</td>
<td>Endocrinology</td>
<td>3</td>
</tr>
<tr>
<td>ZOO 5745C</td>
<td>Essentials of Neuroanatomy</td>
<td>4</td>
</tr>
<tr>
<td>MCB 5833</td>
<td>Seminar</td>
<td>1-2</td>
</tr>
<tr>
<td>MCB 6971</td>
<td>Thesis</td>
<td>1-6</td>
</tr>
<tr>
<td>MCB 5487</td>
<td>Current Topics in Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 5XXX</td>
<td>Signal Transduction Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MCB 5XXX</td>
<td>Tumor Biology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 5XXX</td>
<td>Molecular Biology of Disease</td>
<td>3</td>
</tr>
</tbody>
</table>

Summary of M.S. Degree Requirements

Admission
- 3.0 G.P.A. Last 60 attempted semester hours at the undergraduate level and 1000 on GRE (quantitative + verbal).
- Three letters of recommendation.
- TOEFL of 550.
- 16 semester hours in biological sciences, including one course in general microbiology, plus one year of organic chemistry, one year of physics, basic university math and statistics, and lab skills equivalent to the minimum of undergraduates at UCF.

Examination
- Comprehensive covering all course work in program of study.
- Final thesis defense.

Degree Requirements
Minimum of 30 semester hours, including six (6) semester hours of Thesis, and two (2) semester hours of Graduate Seminars (one-half at 6000 level).

Nursing Department

Mary Lou Sole, Ph.D., RN, CCRN .................................................. Program Coordinator
Office: HPB 429, Phone: (407) 823-2744, e-mail: msole@pegasus.cc.ucf.edu

Master of Science in Nursing

Administration 36 Semester Hours
Family Nurse Practitioner 43 Semester Hours

The Master of Science in Nursing (M.S.N.) programs are designed to build upon the student’s baccalaureate nursing education and professional experience. The goals of the programs are to prepare advanced nurse practitioners and administrators to assume leadership positions in a variety of health care settings. Students are only admitted to the programs in the fall semester.
The program will prepare the student to:

- Analyze theories as they apply to the profession, health care system, and political systems.
- Analyze social, economic, ethical, legal, and political issues influencing nursing practice and health care delivery.
- Synthesize advanced knowledge from the sciences, the humanities, and nursing theories to support advanced nursing practice.
- Participate in research and disseminate research findings.
- Use nursing research findings to improve nursing practice.
- Demonstrate critical thinking skills in planning, evaluating, and changing the delivery of health care.
- Develop and implement leadership, management, and teaching strategies for the improvement of health care.
- Collaborate with others to improve the quality of professional nursing practice and the health care system.
- Assume responsibility for improving the delivery of health care and influencing health policy.
- Practice in an advanced nursing role. (Graduates of the FNP program are eligible to sit for the ANA certification examination and apply for licensure as an ARNP in Florida.)

Admission Requirements
Requirements for admission to the program include the following:

- A baccalaureate degree in nursing. Program should be NLN accredited.
- An overall grade point average of 3.0 (on a 4.0 scale) for upper-division undergraduate work (usually the last 60 hours).
- A minimum combined GRE score of 1000 on the verbal/quantitative sections.
- Licensure as a Registered Nurse in Florida.
- One year (or equivalent) experience as a Registered Nurse.
- Completion of undergraduate courses in statistics and health assessment.
- Letter of intent stating interest in the field and career goals.
- A resume (no longer than 2 pages) stating background and experiences.
- Three references on School of Nursing form.
- TOEFL score of 500 or passing score on CGFNS (international students only).

Degree Requirements
Graduate students must complete a minimum of 36-43 semester hours of graduate-level course work, depending on major. Either a thesis or research utilization project is required.

<table>
<thead>
<tr>
<th>Required Courses for All Students</th>
<th>15 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5110 Theoretical Bases in Nursing</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 5195 Issues in Nursing and Health Care Policy</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 5810 Research Methods in Nursing</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6840 Statistical Methods in Nursing Research</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6971 Thesis OR Research Utilization Project</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirements for Nurse Practitioner Majors</th>
<th>43 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5155 Health Promotion Across the Lifespan</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 5141 Pathophysiological Bases for Advanced Nursing Practice</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 5002C Advanced Health Assessment</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6192 Pharmacology for Advanced Nursing Practice</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6600C Family Nurse Practitioner I</td>
<td>4 hours</td>
</tr>
<tr>
<td>NGR 6601C Family Nurse Practitioner II</td>
<td>4 hours</td>
</tr>
<tr>
<td>NGR 6602C Family Nurse Practitioner III</td>
<td>4 hours</td>
</tr>
<tr>
<td>NGR 6603C Family Nurse Practitioner Practicum</td>
<td>4 hours</td>
</tr>
<tr>
<td>Required courses (listed above)</td>
<td>15 hours</td>
</tr>
</tbody>
</table>
### Requirements for Nursing Administration Majors

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5720</td>
<td>Organizational Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>NGR 6722</td>
<td>Financial Management and Resource Development</td>
<td>3</td>
</tr>
<tr>
<td>HSA 5198</td>
<td>Information Systems and Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>NGR 6723</td>
<td>Nursing Administration I</td>
<td>4</td>
</tr>
<tr>
<td>NGR 6724</td>
<td>Nursing Administration II</td>
<td>5</td>
</tr>
<tr>
<td>HSA xxxx</td>
<td>Elective (HSA or Business Administration graduate course)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required courses (listed above)**: 15 hours

### RN to MSN Track in Nursing Administration

Accelerated track for students who are licensed as an RN in the state of Florida and meet general education requirements and prerequisites.

**Admission Requirements—Limited Access**

Acceptance to the university does not constitute admission to the accelerated RN-MSN track. Separate application to this limited access program must be made. Contact the School of Nursing for application materials. All applicants must meet the following criteria:

- Graduate of a state-approved or accredited associate degree or diploma nursing program.
- Licensed as an RN in Florida.
- Completion of general education requirements or AA degree from a Florida school.
- Completion of prerequisites for the RN-BSN and MSN nursing track.
- Minimum cumulative GPA of 3.0.
- Letter of intent to pursue accelerated master's (RN-MSN track).
- Interview with School of Nursing to assess interest, motivation, and ability to succeed in graduate school.
- Completion of one year of clinical experience as an RN prior to the first graduate clinical course.

**Interim Requirements**

Completion of the GRE by the end of the second semester in the program.

**Admission Requirements for Graduate Nursing Phase**

(To be met by the end of the third semester of enrollment.)

- Accepted as a student into the upper-division/professional phase at the UCF School of Nursing.
- Completion of all UCF School of Nursing course work to date with a minimum GPA of 3.0.
- A minimum combined GRE score of 1000 on the verbal/quantitative exams.
- A resume.
- Three references submitted on the designated form.
- Interview with faculty.

### Plan of Study

**BSN Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 3065</td>
<td>Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>NUR 3809</td>
<td>Transitional Concepts in Nursing I</td>
<td>3</td>
</tr>
<tr>
<td>NUR XXXX</td>
<td>Professional Development Seminar</td>
<td>3</td>
</tr>
<tr>
<td>NUR 4635C</td>
<td>Scientific Theories of Nursing VI</td>
<td>6</td>
</tr>
<tr>
<td>NUR 4XXX</td>
<td>Directed Nursing Practice</td>
<td>2</td>
</tr>
</tbody>
</table>

**HSA/BA** Elective 3 hours

**Validated credit for previous nursing courses**: 28 Semester Hours

**BSN/MSN Shared Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5195</td>
<td>Issues in Nursing and Health Care Policy</td>
<td>3</td>
</tr>
<tr>
<td>NGR 5720</td>
<td>Organizational Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>NGR 5810</td>
<td>Research Methods in Nursing</td>
<td>3</td>
</tr>
<tr>
<td>HSA 5198</td>
<td>Information Systems and Computer Applications in Medicine</td>
<td>3</td>
</tr>
</tbody>
</table>
The baccalaureate degree will be awarded at the end of the fourth semester when program requirements for the BSN are met and students have completed a minimum of 120 hours of credit. Students will then be reclassified as graduate students.

The MSN will be awarded on completion of the total program of study.

Students who do not meet ongoing program requirements or decide not to continue in the program may withdraw from the RN-MSN track and complete course work for the BSN degree.

Sample Plan of Study for the RN-MSN Track

<table>
<thead>
<tr>
<th>Semester 1 – Fall</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUR 3005 Health Assessment</td>
<td>3 hours</td>
</tr>
<tr>
<td>NUR 3809 Transitional Concepts in Nursing I</td>
<td>3 hours</td>
</tr>
<tr>
<td>NUR XXXX Professional Development Seminar</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2 – Spring</th>
<th>9 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5810 Research Methods in Nursing</td>
<td>3 hours</td>
</tr>
<tr>
<td>NUR 4635C Scientific Theories of Nursing VI</td>
<td>6 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3 – Summer</th>
<th>6 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5195 Issues in Nursing and Health Care Policy</td>
<td>3 hours</td>
</tr>
<tr>
<td>NUR XXXX Elective</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4 – Fall</th>
<th>8 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5720 Organizational Dynamics</td>
<td>3 hours</td>
</tr>
<tr>
<td>HSA 5198 Information Systems and Computer Applications in Medicine</td>
<td>3 hours</td>
</tr>
<tr>
<td>NUR 4XXX Directed Nursing Practice</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 5 – Spring</th>
<th>7 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5110 Theoretical Bases in Nursing</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6723 Nursing Administration I</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 6 – Summer</th>
<th>6 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 6722 Financial Management and Resource Development</td>
<td>3 hours</td>
</tr>
<tr>
<td>NGR 6840 Statistical Methods in Nursing Research</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7 – Fall</th>
<th>8 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 6724 Nursing Administration II</td>
<td>5 hours</td>
</tr>
<tr>
<td>HSA XXXX Elective</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 8 – Spring</th>
<th>3 Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 6971 Thesis/Project</td>
<td>3 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 hours</td>
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<tr>
<td>3 hours</td>
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<td>3 hours</td>
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<tr>
<td>3 hours</td>
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</tbody>
</table>

Additional Information

Information about tuition, fees, and length of nursing program can be obtained from the National League for Nursing Accrediting Commission, 350 Hudson Street, New York, NY 10014; phone: (800) 669-9656, ext. 153.

Program offered at the Daytona Beach campus.
Master of Public Administration

The Department of Public Administration's Master of Public Administration (M.P.A.) degree program provides opportunities for students to prepare for employment or advance their careers as public administrators. Our intention is to produce graduates equipped with the public management skills and analytic techniques needed for successful careers in government, nonprofit, and closely related business fields.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Minimum requirements for regular admission are (1) a grade point average (GPA) of 3.0 for the last 60 attempted semester hours of undergraduate study, (2) a grade point average of 3.0 in a previous graduate degree, or (3) a total score of 1000 or higher on the verbal-quantitative sections of the GRE. A limited number of students who do not meet these requirements but who do have at least a 2.5 GPA and an 800 GRE score may be admitted on a provisional basis. These students must demonstrate proven public sector leadership experience, present strong recommendations from either academic or professional advisors, and provide a clear statement of education goals. More specific information on provisional admissions may be obtained from the department. Individuals whose native language is other than English are required to have a minimum TOEFL score of 550.

Students are expected to be computer literate upon entry to the program or are expected to obtain these skills immediately upon admission to the program.

Degree Requirements

The M.P.A. Program consists of 36-42 hours. Each student completes a core of eight courses (24 hours), an advanced curriculum of three courses (9 hours) selected in consultation with the advisor, and a capstone experience equivalent to one course (3 hours). Those students without practical administrative experience in the public sector must complete an internship (3 hours). Finally, a research report option is available for students wishing to complete a more substantial research project than might be accommodated in the other courses.

### Minimum Core Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAD 6053</td>
<td>Public Administrators in the Governance Process</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6035</td>
<td>Public Administration in the Policy Process</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6700</td>
<td>Analytic Techniques for Public Administrators I</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6701</td>
<td>Analytic Techniques for Public Administrators II</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6037</td>
<td>Public Organization Management</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6227</td>
<td>Public Budgeting and Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6417</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>PAD 6335</td>
<td>Strategic Planning and Management</td>
<td>3</td>
</tr>
</tbody>
</table>

### Advanced Curriculum

An advanced curriculum of at least three courses that concentrate on a specific area germane to the practice of public administration may be taken within the Department of Public Administration or from other departments. Those elective courses offered within the Department will provide an emphasis on state and local government; however, other emphases may be developed in consultation with the advisor.

### Capstone Experience

Students will engage in a capstone experience intended to bring together the various areas of knowledge and skills covered in the MPA program. Students will complete this requirement through enrollment in PAD 6062, Advanced Concepts and Applications in Public Administration. This course will be graded on a pass/fail basis.
Public Administration  □  Social Work

Internship
3 Semester Hours
Required of students with less than one year of continual full-time paid employment in a public or nonprofit sector supervisory or exempt position, the internship will provide an opportunity to apply theory and methodology in a practical setting. The student will be required to submit a summary and critique paper to the departmental internship coordinator at the end of the internship.

Exit Requirements
Students must achieve a GPA of 3.0 in all courses listed under minimum core requirements.

Research Report (Optional)
6 Semester Hours
Six semester hours of credit may be earned by completing an independent investigatory research report which results in a report acceptable to the department’s graduate committee. Three of the six hours credit for the research report may substitute for three hours of the advanced curriculum requirement. This option is available only by permission of the graduate program coordinator.

Basic Requirements (Core, Advanced Curriculum, Capstone Experience)
36 hours

Basic Requirements plus Internship
39 hours

Basic Requirements plus Research Report
39 hours

Basic Requirements plus Internship plus Research Report
42 hours

Exit Requirements
Minimum Hours Required for M.P.A.
36-42 Semester Hours

School of Social Work

Dennis Poole, Ph.D. ................................................. Program Coordinator
Office: TR 542 Phone: (407) 823-2114; e-mail: dpoole@ucfvm.cc.ucf.edu

Master of Social Work
in Clinical Social Work Practice

The master's degree program in social work (M.S.W.) is focused on the study of preventive, developmental, supportive, and remedial interventions aimed at reducing the impact of social problems on children, adults and families. This advanced degree in social work prepares students for licensed clinical practice in Florida.

The UCF program in CLINICAL SOCIAL WORK PRACTICE prepares students for clinical specialist practice functions, particularly in urban settings. “Clinical Specialist Practice Functions” consist of (a) strengthening client social functioning through individual, family, and group interventions, and (b) preventing psychosocial problems.

The M.S.W. program is accredited by the Council on Social Work Education.

Admission Policy
Students begin course work in social work in the fall semester only. Potential students make application to the Office of Graduate Studies at UCF and take the GRE test. UCF requires the following of all applicants to the M.S.W. program:

- Bachelor's degree from an accredited institution.
- Good standing with institution last attended.
- A 3.0 or better Grade Point Average (GPA) on a 4.0 scale for the last 60 attempted semester hours of college studies or at least 1000 on the required verbal and quantitative sections of the GRE.
- One official transcript of all undergraduate and graduate course work attempted and/or completed.
- A resume that outlines work experience.
Three references (one academic, one employment, and one applicant’s choice). If an employment reference is not available, then a personal reference may be submitted in support of graduate study. If a person graduated more than five years ago, that applicant may substitute work or personal references in place of academic references.

One college-level course in each of the following six areas: biology, English or communications, culture, statistics, psychology, and sociology.

A medical history report on the UCF health form.

A typed PERSONAL STATEMENT. Directions for completing this statement may be obtained from the School of Social Work. In the statement the applicant describes reasons and experiences leading to the choice social work as a profession, professional goals and interests, and strengths and limitations related to the practice of social work. Applicants also discuss an issue facing social work from the perspective of the role and responsibility of the profession in relation to that issue.

If you are an international student: a confidential financial statement on the form provided by the Graduate Studies Office; and TOEFL test results of 550 or higher.

Students in the program are expected to demonstrate initiative, dependability, social concern, self awareness, appreciation for diversity in others, problem solving ability, ease in relating with others, skill in writing and speaking, and professional ethics.

Full-time Study
The full-time program includes two years of full-time study in residence. The first year of study includes 24 semester hours in class work and 6 semester hours in field education. The second year of study includes 22 semester hours in class work and 8 semester hours in the field.

Advanced Standing
If the criteria for admission are met, applicants with baccalaureate degrees in social work from a CSWE-accredited school/program are invited to apply for Advanced Standing admission to the Master of Social Work program. Admission with advanced standing is limited to those who demonstrate the potential to meet the academic demands of the program and adequate preparation for M.S.W. practice with only one year of graduate study.

In advanced standing admission, a maximum of 30 undergraduate credits may be accepted as transfer credits to the M.S.W. program. These credits are accepted to meet specific foundation year M.S.W. requirements, which consist of courses in human behavior and the social environment, policy, research, social work practice, and social work field placement.

To be considered for advanced standing admission, the bachelor’s degree must have been completed within six (6) years of the time of initial enrollment in the master’s program.

Part-time Study
Applicants may be considered for admission as part-time students. Careful advanced planning is required to ensure that all requirements will be met. Part-time students must follow an educational plan that provides for the appropriate sequencing of courses. Part-time study must be completed within the time specified by the School of Social Work.

Field Education
Field instruction is an integral part of graduate social work education. It provides the student with an opportunity to test classroom knowledge as well as to develop and refine foundation and advanced practice skills. Decisions regarding the field assignment are jointly reached by the student and the Field Coordinator. Only agency sites approved by the School of Social Work may be used for field instruction. First year M.S.W. students complete a minimum of 448 hours in the field; advanced students complete a minimum of 608 clock hours in the agency.
Degree Requirements

Prerequisites 18 Semester Hours

Introductory college-level courses or equivalents are required before admission into the program.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td></td>
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<tr>
<td>Psychology</td>
<td></td>
<td></td>
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<tr>
<td>Sociology</td>
<td></td>
<td></td>
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<tr>
<td>English or Commun.</td>
<td></td>
<td></td>
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<tr>
<td>Statistics</td>
<td></td>
<td></td>
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<tr>
<td>Culture</td>
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</tr>
</tbody>
</table>

Foundation: Generalist Social Work Practice 30 Semester Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOW 5305</td>
<td>Social Work Practice I: Generalist Practice</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5306</td>
<td>Social Work Practice II: Interventions</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5105</td>
<td>Human Behavior and Social Environment I: Individuals</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5106</td>
<td>Human Behavior and Social Environment II: Social Systems</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5404</td>
<td>Social Work Research</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5432</td>
<td>Evaluating Social Work</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5235</td>
<td>Social Welfare Policies and Services</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5132</td>
<td>Diverse Client Populations</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5532</td>
<td>Field Education I: Generalist Practice (224 clock hours)</td>
<td>3</td>
</tr>
<tr>
<td>SOW 5533</td>
<td>Field Education II: Interventions (224 clock hours)</td>
<td>3</td>
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</tbody>
</table>

Advanced: Clinical Specialist 30 Semester Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOW 6348</td>
<td>Clinical Practice with Individuals</td>
<td>3</td>
</tr>
<tr>
<td>SOW 6324</td>
<td>Clinical Practice with Groups</td>
<td>3</td>
</tr>
<tr>
<td>SOW 6612</td>
<td>Clinical Practice with Families</td>
<td>3</td>
</tr>
<tr>
<td>SOW 6123</td>
<td>Psychosocial Pathology and Differential Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>SOW 6240</td>
<td>Policy Analysis and Social Change</td>
<td>2</td>
</tr>
<tr>
<td>SOW 6914</td>
<td>Advanced Research Project in Clinical Practice</td>
<td>2</td>
</tr>
<tr>
<td>SOW 6535</td>
<td>Field Education III: Clinical Practice—Individuals and Families (304 clock hours)</td>
<td>4</td>
</tr>
<tr>
<td>SOW 6536</td>
<td>Field Education IV: Clinical Practice-Groups</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(304 clock hours) Practice Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Practice or Approved General Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Hours Required for M.S.W. 60 Semester Hours

* Approved general elective in consultation with student's advisor and M.S.W. program coordinator.
Course Offerings

CCJ 5011 HPA 3(3.0)
The Nature of Crime. This course provides an overview of major dimensions of crime in the United States; epidemiology of crime, costs of crime, and typologies of crime and criminals.

CCJ 5105 HPA 3(3.0)
Foundations of Law Enforcement. This course will examine law enforcement systems in the United States and issues that influence the police; individual, group, social, legal, economic, and political manifestations.

CCJ 5305 HPA 3(3.0)
Foundations of Corrections. This course provides an overview of the field of corrections, including a discussion of theories of punishment and their implications for the punishment of offenders.

CCJ 5456 HPA 3(3.0)
The Administration of Justice. This course provides an overview of the criminal justice system and a critical analysis of formal and informal processing of offenders by criminal justice agencies.

CCJ 5704 HPA 3(3.0)
Research Methods in Criminal Justice. An examination of the philosophy and techniques of research as applied in the criminal justice field.

CCJ 6XXX HPA 3(3.0)
Quantitative Methods and Computer Utilization in Criminal Justice. Application of statistical software to quantitative and qualitative methods in criminal justice.

CCJ 6105 HPA 3(3.0)
Policy Analysis in Criminal Justice. This course is designed to familiarize students with the causes and consequences of public policy with an emphasis on criminal justice policy.

CCJ 6217 HPA 3(3.0)
Law and Social Control. This course will examine the types of behavior the state has sought to control and the means employed to exert such control.

CCJ 6485 HPA 3(3.0)
Issues in Justice Policy. Analyzes specific policy issues such as sentencing, capital punishment, and the role of the media in crime policy.

CCJ 6505 HPA 3(3.0)
The Juvenile Justice System. This course will focus on the development and philosophy of the Juvenile Justice System; the measurement of delinquency, theories and correlates of delinquency and prevention.

CCJ 6705 HPA 3(3.0)
Applied Criminal Justice Research. Upon successful completion of this course the student will gain an understanding of the major philosophical, theoretical, and conceptual approaches to evaluation research.

CCJ 6730 HPA 3(3.0)
Planned Change and Innovation in Criminal Justice. This course will provide participants with an understanding of planned individual and organizational change so that they may become successful agents of such change.

CCJ 5938 HPA 3(3.0)
Special Topics in Criminal Justice. Students are exposed to in-depth coverage of a particular contemporary problem in criminal justice, for example, the death penalty or the influence of the media on crime and punishment.

CCJ 5946 HPA 3(3.0)
Criminal Justice Practicum. Students will undertake a significant research project in a criminal justice agency.

HSA 5198 HPA 3(3.0)
Information Systems and Computer Applications in Medicine. PR: C.I. Overview of health information systems with an emphasis on computer applications. Discussion of software and hardware requirements.

HSA 5107 HPA 3(3.0)
Health Care Organization and Management I. Study of health care organizations, including modern management, organizational structure, systems control, human performances, planning, and leadership.

HSA 5108 HPA 3(3.0)
Health Care Organization and Management II. PR: HSA 6107, HSA 5148, HSC 6911. Emphasis on planning, development, marketing approaches, and problem solving using computer methods.

HSA 5126 HPA 3(3.0)
Principles of Managed Care. The course will acquaint students with the components of managed care, contract stipulations, provider practice patterns, and financing aspects.

HSA 5508 HPA 3(3.0)
Principles of Practice Management. Studies the various models of practice organization and delivery. Emphasis is on risk management as it applies to medical practices.

HSA 5815 HPA 2-6(0,20)
Practicum in Health Care Management. PR: Graduate status or C.I. Supervised practicum in health care institution management.

HSC 5122 HPA 3(3.0)
Health Care Finance. 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 5245 HPA 3(3.0)
Community Health Education. Development and evaluation of community health education programs within voluntary health organizations. HMOs, hospitals, and academic institutions.

HSC 5247 HPA 3(3.0)
Health Science Curriculum Development. PR: Graduate status or C.I. Developing an instructional plan for health science curriculum including goal and task analysis, performance objectives, varied learning experiences, and student evaluation.

HSC 5306 HPA 3(3.0)
Organization and Management of Health Science Programs. PR: Graduate status or C.I. Management of professional health education programs in various institutional settings: university, community college, academic medical centers. Includes program planning, development, and evaluation.
COURSE OFFERINGS

HSC 6332 Issues and Trends in the Health Professions. 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. 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. 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. PR: Graduate status or C.I. A comprehensive survey of medicine.

HSC 6568 Issues in Geriatric Health Care. Identification of the health care needs of the elderly and the services required to meet them. Analysis of the current issues, problems, and trends in geriatric health.

HSC 6575 Principles of Preventive Medicine. Total concept of health care including methods of screening, diagnosis, treatment, rehabilitation, and promotion of health in diverse populations.

HSC 6605 Health and Society. PR: Graduate status or C.I. Understanding health and illness as defined by patients, providers, and other persons in the social system.


HSC 6815 Practicum in Health Science Education. PR: Graduate status or C.I. Supervised practicum in academic, clinical, or community instructional program.

HSC 6911 Scientific Inquiry in the Health Profession. PR: Graduate status or C.I. Research design and evaluation in health professions.

HSC 6911 Scientific Inquiry in the Health Professions. PR: STA 2014 or comparable course. The course will cover research design and evaluation, theory building, and biostatistics.

HUN 5937 Nutrition and Exercise Physiology. This course correlates human nutrition with exercise physiology. Nutritional concepts are related to human performance and fitness.

LIN 5705 Psycholinguistics. PR: Graduate status or C.I. 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.

MBB 5XXX Molecular Biology of Disease. PR: Graduate standing or C.I. An in-depth study of the molecular biological mechanisms of diseases in experimental animals and human populations.

MBB 5XXX Tumor Biology. PR: PCB 4524. This course provides an introduction and broad overview of the current knowledge and research in the field of cancer biology.

MBB 5XXX Signal Transduction Mechanics. PR: PCB 3523 and PCB 4524. A course emphasizing various signal transduction cascades used in mammalian cells to control growth and differentiation. Discussion of original research papers is required.

MBB 5205 Infectious Processes. PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.

MBB 5487 Variable Current Topics in Molecular Biology. PR: Graduate standing or C.I. Selected current research topics from the primary literature reflecting recent advances in molecular biology. May be repeated for credit when content is different.

MBB 5505 Virology. PR: MCB 3013C and BCH 4054. Nature of viruses and other intracellular parasites, including descriptions of structure, propagation, isolation, and identification methods.

MBB 5554 Applied Microbiology. PR: MCB 3013C or C.I. Biochemistry of industrial processes including economics, screening, scale up, quality control, and applied genetics.

MBB 5407C Laboratory Methods in Molecular Biology. PR: PCB 4524 and MCB 4404, or C.I. Experimental techniques and design in laboratory biological research.

MBB 5417C Microbial Metabolism. PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and synthesis.

NCR 5002C Advanced Health Assessment. PR: Basic Health Assessment course; current RN license in FL; Bac. Degree in Neg. Concepts and skills of advance physical/behavior health assessment over the life-span.

NCR 5110 Theoretical Bases in Nursing. PR: Bac. Degree in Neg. Exploration and analysis of the philosophical, conceptual, and theoretical bases of nursing.

NCR 5141 Pathophysiological Bases for Advanced Nursing Practice. PR: Bac. Degree in Neg. Critical examination of the physiological and pathophysiological mechanisms affecting individuals.

NCR 5155 Health Promotion Across the Lifespan. PR: Bac. Degree in Neg. Application of theories and models of health promotion, education, motivation, assessment and planning. Promotion and maintenance of health from conception to death.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisite(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGR 5195</td>
<td>Issues in Nursing and Health Care Policy. PR: Bac. Degree in Nsg.</td>
<td></td>
<td>Study of selected legal, ethical, sociocultural, and policy issues related to advanced nursing practice and health care delivery systems.</td>
</tr>
<tr>
<td>NGR 5720</td>
<td>Organizational Dynamics. PR: Bac. Degree in Nsg. Analysis of theories and models of health care organizational systems. Emphasis on nursing administration roles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 5721</td>
<td>Dimensions of Nursing Administration. PR: Bac. Degree in Nsg. Basic principles and organization theory for nursing administration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 5810</td>
<td>Research Methods in Nursing. PR: Undergraduate statistics course; Bac. Degree in Nsg. Study of research designs, qualitative and quantitative methods commonly used in nursing research. Proposal development and research utilization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6192</td>
<td>Pharmacology for Advanced Nursing Practice. PR: NGR 5141.</td>
<td></td>
<td>Comprehensive study of medications used in the promotion and maintenance of health across the lifespan. Examination of the implications for advanced nursing practice.</td>
</tr>
<tr>
<td>NGR 6600C</td>
<td>Family Nurse Practitioner I. PR: NGR 5110, NGR 5141, NGR 5002C, and admission to MSN program. Foundation of the specialized role of the family nurse practitioner. Application of principles of case management with selected individuals and groups.</td>
<td></td>
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</tr>
<tr>
<td>NGR 6601C</td>
<td>Family Nurse Practitioner II. PR: NGR 5810, NGR 6192, NGR 6600C, and NGR 5155. Theoretical and clinical bases for early diagnosis and therapeutic intervention of health care problems of individuals and families throughout the lifespan.</td>
<td></td>
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</tr>
<tr>
<td>NGR 6602C</td>
<td>Family Nurse Practitioner III. PR: NGR 6601C, NGR 5195. Theoretical and clinical bases for management of high-risk problems within families and target populations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6603L</td>
<td>Family Nurse Practitioner Practicum. PR: NGR 6602C. Supervised advanced clinical practice in the role of the family nurse practitioner in a variety of clinical settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6722</td>
<td>Financial Management and Resource Development. PR: Admission to MSN program, NGR 5720. Comprehensive overview of health care economics for the nurse executive, financial management, resource development and impact on nursing and health care services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6723</td>
<td>Nursing Administration I. PR: Admission to MSN program, NGR 5110, NGR 5720. Theories and principles of nursing administration: Nursing care delivery systems, program evaluation, staffing, personnel management, issues and trends.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6724</td>
<td>Nursing Administration II. PR: NGR 6723, NGR 6722. Continuation of Nursing Administration I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR 6813</td>
<td>Research Utilization Project. PR: NGR 5840. Development of a project which evaluates nursing research findings for applicability to practice.</td>
<td></td>
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</tr>
<tr>
<td>PAD 5041</td>
<td>Ethics and Values in Public Administration. Issues of ethics in the public sector—the basis for public concern, past practice, present patterns of response; individual/social aspects of ethical behavior.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAD 5336</td>
<td>Introduction to Urban Planning. PR: C.I. Issues of urbanization, regional development, land use and comprehensive planning, environmental planning, and social planning.</td>
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</tr>
<tr>
<td>PAD 5337</td>
<td>Urban Design. PR: C.I. Planning techniques such as planned unit developments, capital improvements planning, growth management, and planning methods including needs assessment and graphic design.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAD 5338</td>
<td>Land Use and Planning Law. Review of national and local aspects of the legal underpinnings of urban planning aspects such as zoning, growth management, and environmental regulation.</td>
<td></td>
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</tr>
<tr>
<td>PAD 5425</td>
<td>Dispute Resolution in the Public Sector. An examination of the skills needed to resolve disputes in the public sector through facilitation, mediation, and alternative methods.</td>
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</tr>
<tr>
<td>PAD 5506</td>
<td>Local Government Operations. Operational functions of municipal and county governments and the role of the chief executive officer.</td>
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<td></td>
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<tr>
<td>PAD 5807</td>
<td>Administrative Practice in the Public Sector. Application of various theoretical concepts to the real world of public administration. Policy formulation and execution is examined through the case study model.</td>
<td></td>
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</tr>
<tr>
<td>PAD 5850</td>
<td>Grant and Contract Management. PR: PAD 3003 or C.I. Study of government or public nonprofit agency grant and contract administration and management responding to funding assistance solicitations and grant and contract preparation.</td>
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</tr>
<tr>
<td>PAD 6035</td>
<td>Public Administration in the Policy Process. Analysis of the role of the public administrator in the analysis, formulation, implementation, and evaluation of public policies, especially at the state and local levels.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COURSE OFFERINGS

PAD 6037  
Public Organization Management. Structure, functioning, performance of public organizations; behavior of individuals and groups; application for public management, includes both macro and micro approaches to organizational behavior.

PAD 6053  
Public Administrators in the Governance Process. An examination of the political, social, economic, and moral context of modern public administration, with special attention to the ethical dimensions of the administrator's role.

PAD 6062  
Advanced Concepts and Applications in Public Administration. PR: Completion of all core requirements. An integrative course applying the skills, knowledge, and values considered in the program to selected public problems.

PAD 6227  
Public Budgeting and Financial Management. Budgets as planning documents, stressing the relationships of policy and budgetary decisions, problems in grantmanship and revenue decision making, program budgeting, PPBS, and incrementalism.

PAD 6307  
Policy Implementation. Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.

PAD 6327  
Public Program Evaluation Techniques. Techniques and skills utilized in the evaluation of public programs.

PAD 6335  
Strategic Planning and Management. PR: PAD 6007, PAD 6053, PAD 6700 (may be taken concurrently), or C.I. An examination of analysis of planning, goal setting, and strategic management in public sector organizations.

PAD 6353  
Environmental Program Management Research. Research of environmental programs, problems, issues, and policies to prepare persons working for or entering government service for environmental program staff or management responsibilities.

PAD 6417  
Human Resource Management. Administrator as manager and motivator of public employees with particular emphasis on organizational behavior and contemporary public service legislation.

PAD 6700  
Analytic Techniques for Public Administration I. Statistical methodology and use of computers as a tool for decision making in the public sector.

PAD 6701  
Analytic Techniques for Public Administration II. PR: Completion of PAD 6700. Applied analytical tools for administrators in the public sector. Practical use of computers in policy and decision making.

PAD 6716  
MIS for Public Managers. PR: C.I. Use of systems concept and computers in contemporary public sector management information systems.

PAD 6934  
Special Issues in Public Administration. Substantive and theoretical issues confronting the broad spectrum of contemporary public administration. May be repeated for credit when content is different.

PAD 6946  
Internship. PR: C.I.

PCB 5235  
Immunopathology. PR: PCB 3235. In-depth overview of diseases due to deficiencies or over-reactivity of the immune system.

PCB 5805  
Endocrinology. PR: PCB 4723 and BCH 4053 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.

PET 5355  
Exercise Physiology and Health. In-depth study of adaptations of cardiovascular and respiratory systems during varying degrees of exercise.

PHC 6000  
Epidemiology. PR: HSC 6011 or equivalent. A study of the distribution and determination of diseases and injuries in human populations.

PHC 6010  
Quantitative Methods in Epidemiology. PR: Admission to PHC graduate program and HSC 6000. Principles of managerial epidemiology, quantitative methods, application of prostatics, use of personal computers to handle data and solve problems.

PHC 6145  
Health Planning and Policy. Review of the determinants of the revolution of the health care system in the United States; analysis of public health, preventive medicine, and therapeutic medicine in terms of quality, access, and cost; methodologies and issues in comprehensive health planning; and trends in health policy development.

PHC 6180  
Health Care Finance. The identification of resources available to health care institutions, allocation of resources, and control of resource expenditures.

PHC 6411  
Health and Society. Understanding health and illness as defined by patients, providers, and other persons in the social system.

PHC 6420  

RET 6910  
Research Methods in Cardiopulmonary Physiology. Introduction to methods used in scientific and medical research in cardiopulmonary physiology. Literature review, experimentation, and analysis of data.

RET 6555  
Cardiac Rehabilitation. PR: HSC 6566. Lecture course emphasizing the principles underlying the formulation and implementation of a comprehensive cardiac rehabilitation and prevention program.
HEALTH AND PUBLIC AFFAIRS

SOW 5105 Human Behavior and Social Environment I. CR: SOW 5305. Individual and study of human development and psychosocial functioning of individuals at various life stages with particular attention to implications of human diversity.

SOW 5106 Human Behavior and Social Environment II: Social Systems. CR: SOW 5306. Study of the patterns and dynamics of families, groups, organizations, and communities from a social system perspective.

SOW 5122 Social Welfare Policies and Services. CR: SOW 5322. Study of social policies to human needs; forces shaping social welfare systems; introductions frameworks for analyzing social policies and services.

SOW 5235 Social Work Practice I: Generalist Practice. CR: SOW 5305. Study of social work functions, knowledge, values, roles and skills; the use of a generalist model of practice.

SOW 5305 Social Work Practice I: Generalist Practice. CR: SOW 5305. Study of social work functions, knowledge, values, roles and skills; the use of a generalist model of practice.

SOW 5306 Social Work Practice II: Intervention Approaches. CR: SOW 5305. Study of selected social work theories, strategies, and techniques for helping people and improving system responsiveness to human needs.

SOW 5355 Studies in Urban Social Work Practice. CR: SOW 5305. Analysis of one or more urban practice issues and approaches. May be repeated for credit.

SOW 5360 Social Work Research. CR: SOW 5305. Study of group research designs in social work; quantitative analyses; and related ethical issues.


SOW 5432 Evaluating Social Work. CR: SOW 5305. Study of single case designs in social work; recording methods; behavioral and standardized measures; applications to individuals, families, groups, programs, communities.

SOW 5532 Field Education I: Generalist Practice. CR: SOW 5305. Supervised practice of social work in an agency for 224 clock hours.

SOW 5533 Field Education II: Interventions. CR: SOW 5305. Continuation of SOW 5332. Field Education I, in the same field agency for 224 clock hours.


SOW 5555 Child Abuse: Treatment and Prevention. CR: SOW 5305. The social worker's role and interventions with victims of child abuse and their family members.

SOW 5552 Strategies in Employee Assistance Programs. CR: SOW 5305. Techniques for establishing, providing, and evaluating services to employees and their families.

SOW 5712 Policy Analysis and Social Change. CR: SOW 5305. Techniques for analyzing social policies and systems; introduction frameworks for analyzing social policies and services.

SOW 6233 Social Welfare Policy and Analysis. CR: SOW 5305. Study of social policies to human needs; forces shaping social welfare systems; introduction frameworks for analyzing social policies and services.

SOW 6246 Social Welfare Policy and Analysis. CR: SOW 5305. Study of social policies to human needs; forces shaping social welfare systems; introduction frameworks for analyzing social policies and services.

SOW 6324 Clinical Practice with Groups. CR: SOW 5305. Group therapy and support approaches to clinical practice with groups.


SOW 6535 Field Education III: Clinical Practice-Individuals. CR: SOW 5305. Field Education III, in the same field agency for 304 additional clock hours.

SOW 6536 Field Education IV: Clinical Practice-Groups. CR: SOW 5305. Field Education IV, in the same field agency for 304 additional clock hours.


SOW 6639 Sex Therapy. CR: SOW 5305. Sex therapy.

SOW 6914 Advanced Research Project in Clinical Practice. CR: SOW 5305. Advanced research project in clinical practice; continuation of SOW 5305. Field Education I, in the same field agency for 224 additional clock hours.

SPA 5120  HPA (4,3)
Physiological Acoustics. PR: SPA 4032, Graduate status or C.I. Lectures, readings, and experiments pertaining to the subjective reception of sound.

SPA 5225  HPA 3(3,0)
Fluency Disorders. 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  HPA 1(0,2)
Fluency Disorders Laboratory. PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.

SPA 5236  HPA 3(3,0)
Speech Problems in Adults: Motor Speech Disorders. PR: Graduate status or C.I., SPA 4251. A study of dysarthrias, apraxias, and other motor speech disorders in adults associated with neurological problems, brain injury, systemic disease, and aging.

SPA 5307  HPA 3(3,0)
Differential Diagnosis of Auditory Disorders. PR: SPA 4032, graduate status, or C.I. Clinical techniques in pure tone speech, acoustic impedance, and electrophysiologic response audiometry.

SPA 5327  HPA 4(4,0)
Aural Habilitation/Rehabilitation. 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 5404  HPA 3(3,0)
Language Disorders: Preschool. PR: Graduate status or C.I., LIN 4710, SPA 4402. Graduate students will apply their knowledge of the normal processes of language development to the diagnosis and intervention of communicative impairments of infants and toddlers.

SPA 5553L  HPA 1(0,4)
Differential Diagnosis in Speech and Language Laboratory. PR: SPA 6204, SPA 6403, SPA 6211, SPA 5805. 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  HPA 3(3,0)
Administration and Management of Communicative Disorders Programs. PR: SPA 3002. 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  HPA 3(3,0)
Research in Communicative Disorders. 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 6132  HPA 3(1,4)
Measurements in Speech Science. 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  HPA 3(3,0)
Advanced Studies in Communicative Disorders. PR: Graduate status or C.I. Articulation: PR: SPA 3112, SPA 3112L, SPA 4201. Advanced theory, diagnostic techniques, and therapeutic procedures for articulation disorders. May be repeated for credit.

SPA 6204L  HPA 1(0,2)
Advanced Studies in Communicative Disorders: Articulation Laboratory. PR: SPA 3112, SPA 3112L, SPA 4201. Practical application of clinical skills in articulation disorders. May be repeated for credit.

SPA 6211  HPA 3(3,0)
Voice Disorders. PR: SPA 3101. Basic principles and practices in the treatment of organic voice pathologies including laryngeal, cleft palate, and other disorders of the vocal mechanisms.

SPA 6211L  HPA 1(0,2)
Voice Disorders Laboratory. PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.

SPA 6306  HPA 4(4,0)
Auditory Evaluation and Assessment Procedures for Special Populations. PR: Graduate status or C.I. Audiometric testing and functional communicative assessment procedures for geriatric, pediatric, and other special populations.

SPA 6345  HPA 4(4,0)
Amplification. PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electroacoustic measurements, coupling techniques, and orientation and counseling.

SPA 6353  HPA 4(4,0)
Hearing Conservation. PR: SPA 4032, SPA 5120. Industrial audiometry, community noise abatement, and public school hearing conservation.

SPA 6403  HPA 3(3,0)
Language Disorders: School Age. PR: LIN 4710, SPA 4402, and 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 school-age children.

SPA 6407  HPA 2(2,0)
Seminar in Language. PR: Graduate status or C.I. Examines innovative and disorder-specific evaluation and treatment in adult and pediatric language disorders.

SPA 6410  HPA 3(3,0)
Language Problems in Adults: Aphasia and Other Symbolic Disorders. PR: SPA 4251, graduate status, or C.I. A study of the symbolic disorders in adults associated with neurological problems, brain injury, systemic disease, and aging.

SPA 6505  HPA 3(0,6)
Clinical Practicum in Speech Pathology-Language. PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated for credit when content is different.

SPA 6506  HPA 3(0,6)
Clinical Practicum in Audiology. PR: SPA 4032. Advanced clinical practice in communicative disorders. May be repeated for credit when content is different.
SPA 6526 HPA 2(2.0)
Seminar in Speech Pathology. PR: Graduate status or C.I. Examination of innovative and disorder-specific evaluation and treatment procedures. Topics will be in the area of adult and pediatric speech disorders.

SPA 6553 HPA 3(3,0)
Differential Diagnosis in Speech and Language. PR: SPA 6204, SPA 6403, SPA 6211, SPA 5805. Students assigned to diagnostic teams will demonstrate test administration, interviewing, report writing. Oral presentations with staffings required.

SPA 6626 HPA 2(2.0)
Seminar in Research. PR: Graduate status or C.I. Examination of major issues in research of clinical or theoretical importance.

SPA 6936 HPA 1-6
Special Topics/Seminars: May be repeated for credit.

ZOO 5745C HPA 4(3,3)
Essentials of Neuroanatomy. PR: Human/Comparative Anatomy, Human/Animal Physiology or C.I. Fundamental concepts of both morphological and functional organization of the nervous system. Primary emphasis on human structure.
Course Descriptions

Classification of Courses

3000-4999  Junior- and senior-level courses 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 the college.

5000-5999  Beginning graduate-level courses; may be taken by seniors with college permission.

6000-6999  Courses open only to graduate students. (Seniors, within nine hours of graduation that have a minimum 3.0 GPA, and do not register for more than twelve hours may request college permission to take a 6000-level class.)

7000-7999  Doctoral-level courses.

Florida's Statewide Course Numbering System

Courses in this catalog are identified by prefixes and numbers that were assigned by Florida's Statewide Course Numbering System. This common numbering system is used by all public post-secondary institutions in Florida and by two participating private institutions. The major purpose of this system is to facilitate the transfer of courses between participating institutions.

Each participating institution controls the title, credit, and content of its own courses and assigns the first digit of the course number to indicate the level at which students normally take the course. Course prefixes and the last three digits of the course numbers are assigned by members of faculty discipline committees appointed for that purpose by the Florida Department of Education in Tallahassee. Individuals nominated to serve on these committees are selected to maintain a representative balance as to type of institution and discipline field or specialization.

The course prefix and each digit in the course number have meaning in the Statewide Course Numbering System (SCNS). The list of course prefixes and numbers, along with their generic titles, is referred to as the "SCNS taxonomy." Descriptions of the content of courses are referred to as "course equivalency profiles."

Example of Course Identifier

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Level Code (first digit)</th>
<th>Century Digit (second digit)</th>
<th>Decade Digit (third digit)</th>
<th>Unit Digit (fourth digit)</th>
<th>Lab Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYG</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>Social Problems</td>
</tr>
<tr>
<td>Sociology, General</td>
<td>Freshman level at this institution</td>
<td>Entry-level General Sociology</td>
<td>Survey Course</td>
<td>No laboratory component in this course</td>
<td></td>
</tr>
</tbody>
</table>

General Rule for Course Equivalencies

Equivalent courses at different institutions are identified by the same prefixes and same last three digits of the course number and are guaranteed to be transferable between participating regionally accredited post-secondary institution that offer the course, with few exceptions. (Exceptions are listed below.)

For example, a survey course in social problems is offered by 31 different post-secondary institutions. Each institution uses "SYG_010" to identify its social problems course. The level code is the first digit and represents the year in which students normally take this course at a specific institution. In the SCNS taxonomy, "SYG" means "Sociology, General," the century digit "0" represent "Entry-Level General Sociology," the decade digit "1" represents "Survey Course,: and the unit digit "0" represents "Social Problems."
In science and other areas, a "C" or "L" after the course number is known as a lab indicator. The "C" represents a combined lecture and laboratory course that meets in the same place at the same time. The "L" represents a laboratory course or the laboratory part of a course, having the same prefix and course number without a lab indicator, which meets at different times or place.

Transfer of any successfully completed course from one participating regionally accredited post-secondary institution to another is guaranteed in cases where the course to be transferred is offered by the receiving institution and is identified by the same prefix and last three digits at both institutions. For example, SYG 1010 is offered at a community college. The same course is offered at a state university as SYG 2010. A student who has successfully completed SYG 1010 at the community college is guaranteed to receive transfer credit for SYG 2010 at the state university if the student transfers. The student cannot be required to take SYG 2010 again since SYG 1010 is equivalent to SYG 2010. Transfer credit must be awarded for successfully completed equivalent courses and used by the receiving institution to determine satisfaction of requirements by transfer students on the same basis as credit awarded native students. It is the prerogative of the receiving institution, however, to offer transfer credit for courses successfully completed which have not been designated as equivalent.

Sometimes, as in Chemistry, a sequence of one or more courses must be completed at the same institution in order for the courses to be transferable to another institution, even if the course prefix and numbers are the same. The information is contained in the individual SCNS course equivalency profiles for each course in the sequence.

The Course Prefix
The course prefix is a three-letter designator for a major division of an academic discipline, subject matter area, or subcategory of knowledge. The prefix is not intended to identify the department in which a course is offered. Rather, the content of a course determines the assigned prefix used to identify the course.

Authority for Acceptance of Equivalent Courses
State Board of Education Rule 6A-10.024(17), Florida Administrative Code, reads:
When a student transfers among regionally accredited post-secondary institutions that participate in the common course designation and numbering system, the receiving institution shall award credit for courses satisfactorily completed at the previous participating institutions when the courses are judged by the appropriate common course designation and numbering system faculty task forces to be equivalent to courses offered at the receiving institution and are entered in the course numbering system. Credit so awarded can be used by transfer students to satisfy requirements in these institutions on the same basis as native students.

Exceptions to the General Rule for Equivalency
The following courses are exceptions to the general rule for course equivalencies and may not be transferable. Transferability is at the discretion of the receiving institution:

A. Courses in the _900-_999 series (e.g., ART 2905)
B. Internships, practica, clinical experiences, and study abroad courses
C. Performance or studio courses in Art, Dance, Theater, and Music
D. Skills courses in Criminal Justice
E. Graduate courses

College preparatory, vocational preparatory courses may not be used to meet degree requirements and are not transferable.

Questions about the Statewide Course Numbering System and appeals regarding course credit transfer decisions should be directed to Dr. David Dees in the Office of Enrollment and Academic Services, AD 210, Phone (407) 823-2691 or the Florida Department of Education, Office of Post-secondary Education Coordination, 1101 Florida Education Center, Tallahassee, Florida 32399-0400. Special reports and technical information may be requested by calling telephone number (904) 488-6402 or Suncom 278-6402.
Special Courses
In addition to the regular courses listed in this catalog, special courses may be available. Consult an academic advisor for details. Only admitted graduate students may take special courses except the Special Topics/Seminars (5937 and 6938) which are open to eligible students with instructor permission.

In order to register for any of the special numbers below, a student must present a signed authorization form (GS-10) obtained from the Department.

<table>
<thead>
<tr>
<th>Special Grad</th>
<th>Grad and Prof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directed Independent Studies</td>
<td>5907</td>
</tr>
<tr>
<td>Directed Research</td>
<td>5917</td>
</tr>
<tr>
<td>Special Topics/Seminars</td>
<td>5937</td>
</tr>
<tr>
<td>Internships, Practicums, Clinical Practice</td>
<td>5944</td>
</tr>
<tr>
<td>Study Abroad</td>
<td>5957</td>
</tr>
<tr>
<td>Research Report</td>
<td>6900</td>
</tr>
<tr>
<td>Treatise (Thesis or Research Report)</td>
<td>6971</td>
</tr>
<tr>
<td>Thesis—Specialist</td>
<td>6973</td>
</tr>
<tr>
<td>Doctoral Research</td>
<td>7919</td>
</tr>
<tr>
<td>Doctoral Special Topics/Seminars</td>
<td>7939</td>
</tr>
<tr>
<td>Doctoral Dissertation</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 taken and passed 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
ECI 5215C is offered by the College of Engineering (EN), carries 3 hours of credit, but requires 5 contact hours which consist of 2 hours in class and 3 hours laboratory or field work.

Availability of Courses
The University does not offer all of the courses listed in the catalog each year. The Schedule of Classes should be consulted for those courses offered each semester.

Please Note: At the time the catalog went to press, the Statewide Course Numbering System was still in the process of renumbering courses as a result of Senate Bill (SB) 2330. Some courses listed in this catalog may have changed. The appropriate academic department should be consulted.
### Alphabetical Listing of Prefixes

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG</td>
<td>Accounting General</td>
</tr>
<tr>
<td>ACO</td>
<td>Accounting: Occupational Technical</td>
</tr>
<tr>
<td>ADE</td>
<td>Adult Education</td>
</tr>
<tr>
<td>ADV</td>
<td>Advertising</td>
</tr>
<tr>
<td>AFH</td>
<td>African History</td>
</tr>
<tr>
<td>AFR</td>
<td>Air Force ROTC</td>
</tr>
<tr>
<td>AMH</td>
<td>American History</td>
</tr>
<tr>
<td>AML</td>
<td>American Literature</td>
</tr>
<tr>
<td>ANT</td>
<td>Anthropology</td>
</tr>
<tr>
<td>APA</td>
<td>Applied Accounting</td>
</tr>
<tr>
<td>APB</td>
<td>Applied Biology</td>
</tr>
<tr>
<td>ARE</td>
<td>Art Education</td>
</tr>
<tr>
<td>ART</td>
<td>Art</td>
</tr>
<tr>
<td>ASH</td>
<td>Asian History</td>
</tr>
<tr>
<td>AST</td>
<td>Astronomy</td>
</tr>
<tr>
<td>AVM</td>
<td>Aviation Management</td>
</tr>
<tr>
<td>BCI</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>BCT</td>
<td>Building Construction</td>
</tr>
<tr>
<td>BOT</td>
<td>Botany</td>
</tr>
<tr>
<td>BSC</td>
<td>Introductory Biology</td>
</tr>
<tr>
<td>BTE</td>
<td>Business Teacher Education</td>
</tr>
<tr>
<td>BUL</td>
<td>Business Law</td>
</tr>
<tr>
<td>CAP</td>
<td>Computer Applications</td>
</tr>
<tr>
<td>CBH</td>
<td>Comparative Psychology and Animal Behavior</td>
</tr>
<tr>
<td>CCE</td>
<td>Civil Construction Engineering</td>
</tr>
<tr>
<td>CCI</td>
<td>Criminology and Criminal Justice</td>
</tr>
<tr>
<td>CDA</td>
<td>Computer Design/Architecture</td>
</tr>
<tr>
<td>CEG</td>
<td>Civil Geotechnical Structures</td>
</tr>
<tr>
<td>CES</td>
<td>Civil Engineering Structure</td>
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