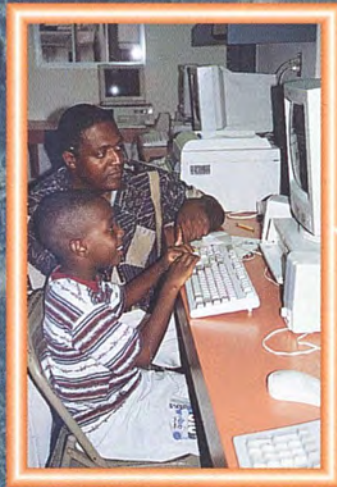


# 1997-1998 Graduate Catalog



University of  
**Central  
Florida**

*"Reach for the Stars"*



# 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.)



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# 1997-1998 GRADUATE CATALOG

# University of Central Florida



Orlando—Brevard—Daytona Beach—Downtown Academic Center  
Professional Development Center at South Orlando

A Member Institution of the State University System of Florida

*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)  
University of Central Florida  
P.O. Box 160112  
Orlando, FL 32816-0112  
(407) 823-2766

Office of Graduate Studies (AD 243)  
University of Central Florida  
P.O. Box 160212  
Orlando, FL 32816-0212  
(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, or
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 265 (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.



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## Admission Documents

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



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# Application Deadlines

## Fall Deadlines for Specific Programs

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

## Spring Deadlines for Specific Programs

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

## Summer Deadlines for Specific Programs

College of Business Administration (all master's programs)	March 15
Communicative Disorders	April 1
Public Administration	April 1
Post-Baccalaureate and all programs not specifically listed	April 15

Failure to meet these deadlines may prevent admission as a regular graduate student for the term.



# Academic Calendar 1997-1998

	Fall Semester 1997	Spring Semester 1998	Summer Term A 1998	Summer Term B 1998	Summer Term C 1998	Summer Term D 1998
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## Application Deadlines

For international students	March 1	Aug. 1	Dec. 1	Dec. 1	Dec. 1	Nov. 15
For U.S. post-baccalaureate students	July 15	Dec. 15	April 15	April 15	April 15	April 15
Readmission applications	July 15	Dec. 15	April 15	April 15	April 15	April 15

**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.

## Registration

Registration by appointment	Aug. 19-20	Jan. 2	May 6-7	June 22	May 11	May 2
Classes begin	Aug. 21	Jan. 5	May 12	June 23	May 12	May 12
Last day of late registration, Add/Drop*	Aug. 25-27	Jan. 7-9	May 16	June 24-26	May 13-15	May 9
Last day for refund of fees	Aug. 29	Jan. 9	May 15	June 26	May 15	May 8-9
Audit registration	Aug. 27	Jan. 9	May 16	June 26	May 15	May 9
Last day to apply for graduation	Aug. 4	Dec. 5	April 27	April 27	April 27	April 21
Deadline for withdrawal	Oct. 17	Feb. 27	May 29	July 10	May 15	May 30
Last day to remove an "I" (Incomplete)	Oct. 17	Feb. 27	June 30	July 10	June 19	May 30
Classes end	Dec. 6	April 25	June 22	Aug. 3	Aug. 3	July 7
Final exams and special exams	Dec. 8-13	April 27-May 2	—	—	—	—
Grades due	Dec. 16	May 5	June 25	Aug. 5	Aug. 5	July 9
Commencement	Dec. 20	May 9	Aug. 8	Aug. 8	Aug. 8	Aug. 8

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

## Graduate Studies Deadlines

	Fall 1997	Spring 1998	Summer 1998
Request thesis/dissertation defense	Oct. 24	Mar. 20	June 19
Announcement of thesis/dissertation defense: One week prior to defense			
Submit draft to thesis/dissertation editor	Oct. 31	Mar. 27	June 26
Thesis/dissertation defense deadline	Nov. 14	April 10	July 17
Submit final thesis/dissertation to thesis/dissertation editor	Dec. 5	April 24	July 31

## Holidays

Labor Day .....	September 1	Spring Holidays .....	February 23-28
Veterans' Day .....	November 11	Founders' Day .....	April 1 (No class 10:30-12:20)
Thanksgiving .....	November 27-29	Memorial Day .....	May 25
M. L. King Day .....	January 19	Independence Day .....	July 3

1997						
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1998						
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# Administration and Staff

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Bob Butterworth .....	Attorney General
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Assistant Vice President for University Relations and Director, Public Relations .....	Dean McFall
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 Associate Dean ..... Ben B. Morgan, Jr.  
 Associate Dean ..... Bruce A. Whisler  
 Associate Dean ..... M. Elliot Vitte  
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 Chair, Biology ..... David H. Vickers  
 Chair, Chemistry ..... Glenn N. Cunningham  
 Director, School of Communication ..... Milan D. Meeske  
 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. Silfvast  
 Chair, Political Science ..... Robert L. Bledsoe  
 Interim Chair, Psychology ..... John M. McGuire  
 Chair, Sociology and Anthropology ..... Harold J. Corzine  
 Interim Chair, Statistics ..... Lorrie L. Hoffman

**College of Business Administration**

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

**College of Education**

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 Associate Dean ..... John A. Middleton  
 Assistant Dean ..... Michael C. Hynes  
 Assistant Dean ..... Margaret G. Miller  
 Chair, Educational Foundations ..... Karen L. Biraimah  
 Interim Chair, Educational Services ..... Gary W. Orwig  
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 Physical Education ..... Jennifer M. Platt

**College of Engineering**

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 Associate Dean ..... Debra R. Reinhart  
 Associate Dean ..... Richard N. Miller  
 Director of Graduate Affairs ..... Jose A. Sepulveda  
 Director of Undergraduate Affairs ..... James K. Beck  
 Civil and Environmental Engineering ..... A. Essam Radwan  
 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 Health and Public Affairs**

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 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



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# 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.

## Mission Statement

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*.

## UCF Brevard Area Campus

Clark Maxwell, Jr., Lifelong Learning Center, 1519 Clearlake Road, Cocoa, FL 32922  
 Campus Director: ..... James A. Drake  
 (407) 632-1111, ext. 65567 • UCF ext. 506-5567  
 Assistant Campus Director: ..... Doyce Walter  
 (407) 632-1111, ext. 65563 • UCF ext. 506-5563  
 Financial Aid, Records, Registration, and  
 Undergraduate Admissions: ..... Charlene A. Stinard  
 (407) 632-1111, ext. 65609 • UCF ext. 506-5609

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:

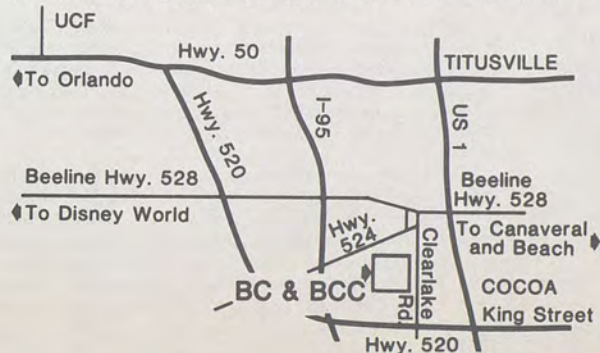
Business Administration (M.B.A.) [at BCC Melbourne]  
 Communicative Disorders (M.A.)  
 Educational Leadership (M.Ed.)  
 Elementary Education (M.A.)  
 Master of Arts in Varying Exceptionalities (M.A.) [partial]  
 Education - Varying Exceptionalities (M.Ed.) [partial]  
 Public Administration (M.P.A.)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

Associate Vice President and Campus Executive Officer: ..... Sarah H. Pappas  
 P.O. Box 2811, 1200 International Speedway Blvd., Daytona Beach, FL, 32120-2811  
 (904) 255-7423, ext. 4010  
 Associate Campus Director: ..... William J. Wetherell  
 (904) 255-7423, ext. 4025

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

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



## Division of Continuing Education

Interim Director: ..... Dale A. Badger  
 TR 547 • (407) 823-6115

### Center for Outreach Credit

Director: ..... Elizabeth Baab  
 TR 547 • (407) 823-6114

The Center for Outreach Credit serves as a facilitator for the academic colleges and provides 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 logistic 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 Stebbins  
TR 547 • (407) 823-0088  
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.



## Information Technologies and Resources

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

**Professional Staff:** Ellen P. Anderson, Joseph C. Andrews, R. Rochelle Ballard, Norris S. Bazemore Jr., Elba C. Grovdahl, Carole S. Hinshaw, Athena R. Holcomb, Suzanne E. Holler, Phyllis J. Hudson, Gary L. Hyslop, Selma K. Jaskowski, Patricia E. Kenly, Marcus D. Kilman, Cynthia M. Kisby, Chang C. Lee, Cheryl G. Mahan, Kimberly K. Montgomery, Jeanne M. Piascik, Peter C. Rossi, Margaret K. Scharf, Meredith C. Semones, Roger D. Simmons, Marilyn R. Snow, Peter Spyers-Duran II, Mem T. Staley, Linda J. Sutton, Linda Swartz, Jeannette A. Ward, Jack L. Webb, Andrea P. Winship, Ying Zhang.

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, IAC, 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 580, 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*.

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## 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 transmittal 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.

### Central Florida Research Park

The Central Florida Research Park, adjacent to the main UCF campus, is a university-related research park established by the Florida Legislature in 1978. 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 enterprise involved in pure or applied research, and state or federal governmental agency research."



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.

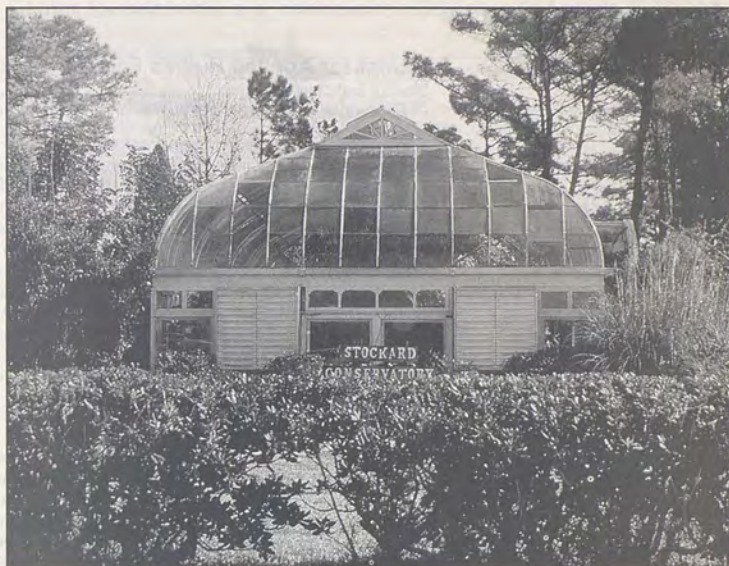
### Research Facilities

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 UCF Arboretum



### Sponsored Journals and Publications

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 Kesler, 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 applications 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) 823-2188

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. Shapek  
HPB 350D/E, PO Box 160155, Orlando, FL 32816-0155  
(407) 823-3647 • FAX: (407) 823-3649 • E-mail: shapek@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.

A machinist at work in the Florida Solar Energy Center (FSEC)





### **Institute for Simulation and Training (IST)**

**Executive Director:** ..... Dr. A. Louis Medin  
3280 Progress Drive, Orlando, FL 32826-0544 • (407) 658-5000 • FAX: (407) 658-5059

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) 823-2289

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) 823-2682

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. Haiitham 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

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# 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

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.

## Admission Classifications

Admission to graduate status can be in either of two categories: regular status or provisional status. (Post-baccalaureate status is considered non-degree-seeking.)

### 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.

Program	TOEFL
College of Arts and Sciences .....	550
Biology .....	550
Chemistry, Industrial .....	500
Communication .....	550
Computer Science .....	550
English .....	575
Foreign Languages and Literatures .....	550
History .....	575
Mathematical Science .....	550
Physics .....	550
Political Science .....	500
Psychology .....	500
Sociology, Applied .....	500
Statistical Computing .....	500
College of Business Administration .....	575
College of Education .....	550
College of Engineering .....	550
College of Health and Public Affairs .....	500
Public Administration .....	550
Molecular Biology and Microbiology .....	550

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.

Registration:	<a href="http://www.ucf.edu">http://www.ucf.edu</a>
Course Schedules:	<a href="http://pegasus.cc.ucf.edu/~wwwdata/tally2.html">http://pegasus.cc.ucf.edu/~wwwdata/tally2.html</a>

## 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.

Students relax on the benches outside the library



### **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 re-admission. 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.)

Category	Florida Resident		Non-Florida Resident	
	Undergraduate (0000-4999)	Graduate (5000-7999)	Undergraduate (0000-4999)	Graduate (5000-7999)
<b>Course Classifications</b>				
<b>Fees per Credit Hour:</b>				
Matriculation	\$40.75	\$93.66	\$ 40.75	\$ 93.66
Non-Resident Fee	-0-	-0-	166.52	257.85
Building Fee	2.32	2.32	2.32	2.32
Capital Improvement Fee	2.44	2.44	2.44	2.44
Undergraduate Financial Aid Fee	2.03	4.68	2.03	4.68
Non-Resident Financial Aid Fee	-0-	-0-	8.32	12.89
Activity and Service Fee	6.95	6.95	6.95	6.95
Athletic Fee (capped at 12 hrs)	6.50	6.50	6.50	6.50
<b>Total per Hour</b>	<b>\$ 60.99</b>	<b>\$116.55</b>	<b>\$ 235.83</b>	<b>\$ 387.29</b>

### 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
<b>Returned Check Fees:</b>	
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



<b>C. Room and Board (estimated)</b>	
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.

<b>D. Books and Supplies per semester (estimated)</b>	\$300.00
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**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.

<b>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.</b>	
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).

- 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.



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.

### Refund of Fees

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 60% 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: 407-823-6442

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.



### **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 (\$2500 in the fall term, \$2500 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.



## 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][10][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 and FUTA taxes, 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

Diane M. Jacobs, Ph.D. ....	Vice President for Research and Graduate Studies (407) 823-5538 • djacobs@adm.ucf.edu
Patricia Bishop, Ph.D. ....	Director of Graduate Studies (407) 823-6432 • pbishop@ucf.edu
Linda Putchinski .....	Associate Director of Graduate Studies (407) 823-2766, ext. 4 • lindap@ucf.edu
Debra Winter .....	Thesis and Publications Editor (407) 823-3567 • editor@ucf.edu
Angela Gian-Cursio .....	Fellowships and Financial Support Coordinator (407) 823-6497 • agian@ucf.edu
Joanne Muratori .....	Academic Coordinator (407) 823-6432 • jmuratori@ucf.edu
Esther Ngan .....	Data Analyst (407) 823-2846 • nsolan@ucf.edu
The Office of Research and Graduate Studies Website .....	<a href="http://www.orgs.ucf.edu">http://www.orgs.ucf.edu</a>

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.

The UCF Administration building



**College Graduate Coordinators**

Arts and Sciences:	Ben Morgan • HFA 518 • 823-0218 • morgan@pegasus.cc.ucf.edu
Business Administration:	Robert Pennington • BA 241 • 823-2184 • robertp@pegasus.cc.ucf.edu
Education:	Mike Hynes • ED 146 • 823-6076 • hynes@pegasus.cc.ucf.edu
Engineering:	Jose Sepulveda • ENGR 281 • 823-5307 • sepulved@pegasus.cc.ucf.edu
Health and Public Affairs:	Joyce Dornier • HPB 219 • 823-5233 • jdornier@pegasus.cc.ucf.edu

**Department Program Coordinators**

Degree	Program	Coordinator	Phone	Room	E-mail
M.S.	Biology	Dr. David Kuhn	823-2976	BIO 110	dkuhn@pegasus.cc.ucf.edu
M.S.	Chemistry, Industrial	Dr. Howard Miles	823-5728	CH 117	hmiles@pegasus.cc.ucf.edu
M.A.	Communication	Dr. Burt Pryor	823-2681	HFA 528-A	apryor@pegasus.cc.ucf.edu
M.S. & Ph.D.	Computer Science	Dr. Ronald Dutton	823-2779	CSB 201	dutton@cs.ucf.edu
M.A.	English	Dr. Gerald Schiffhorst	823-5254	HFA 302-B	gschiff@ucf1vm.cc.ucf.edu
M.A.	Foreign Languages: Spanish	Dr. Charles Micarelli	823-5935	FA 201-H	cmicarel@pegasus.cc.ucf.edu
M.A.	Foreign Languages: TESOL	Dr. Consuelo Stebbins	823-0088	TR 547	stebbins@ucf1vm.cc.ucf.edu
M.A.	History	Dr. Shirley Leckie	823-2224	HFA 551	sleckie@pegasus.cc.ucf.edu
M.S. & Ph.D.	Mathematics	Dr. David Rollins	823-2107	PH 403	drollins@pegasus.cc.ucf.edu
M.S. & Ph.D.	Physics	Dr. Olle Heinonen	823-0271	HPB 310	ogh@physics.ucf.edu
M.A.	Political Science	Dr. Dwight Kiel	823-2608	HFA 426	kield@pegasus.cc.ucf.edu
M.S.	Psychology, Clinical	Dr. Burton Blau	823-1011	PH 116-G	blau@pegasus.cc.ucf.edu
M.S.	Psychology, Industrial	Dr. Wayne Burroughs	823-1011	PH 302	wburroug@pegasus.cc.ucf.edu
Ph.D.	Psychology, Human Factors	Dr. Richard Gilson	823-1011	PH 302	gilson@pegasus.cc.ucf.edu
M.A.	Applied Sociology	Dr. Ida Cook	823-2227	HFA 402	cook@pegasus.cc.ucf.edu
M.S.	Statistical Computing	Dr. James Schott	823-2289	CCII 222	jschott@pegasus.cc.ucf.edu
M.B.A. & Ph.D.	Business Administration	Dr. Robert Pennington	823-2187	BA 240	robertp@pegasus.cc.ucf.edu
M.A.A.E.	Applied Economics	Dr. Thomas L. Martin	823-3266	BA 325	thomas.martin@bus.ucf.edu
M.S.A.	Accounting	Dr. Linda J. Savage	823-5661	BA 433	savage@pegasus.cc.ucf.edu
M.S.T.	Taxation	Dr. Dale Bandy	823-2964	BA 435	dbandy@pegasus.cc.ucf.edu
M.Ed. & M.A.	Elementary, Secondary and K-12	Dr. Michael Hynes	823-0036	ED 146	hynes@pegasus.cc.ucf.edu
M.Ed.	Instr. Tech.: Educational Media				
M.A.	Instr. Tech.: Instructional Systems				
M.S.	School Psychology				
Ed.S.	Educational Leadership or Curriculum and Instruction				
Ed.D.	Educational Leadership or Curriculum and Instruction				
M.S., M.S.C.E.	Civil and Environmental Engineering	Dr. Roger Wayson	823-2480	ENGR 115	wayson@pegasus.cc.ucf.edu
Ph.D., M.S., M.S.E.E., Cp.E.	Electrical and Computer Engineering, Optical Science and Engineering	Dr. Parveen Wahid	823-3027	ENGR 407	pfw@ece.engr.ucf.edu
Ph.D.	Industrial Engineering	Dr. Robert Armacost	823-2619	ENGR 307E	armacost@iems.engr.ucf.edu
M.S. & M.S.I.E.	Industrial Engineering, Engineering Management, Operations Research, Product Assurance Engineering, Human Engineering/Ergonomics, Manufacturing Engineering, Computer Integrated Manufacturing Engineering, Simulation Systems	Dr. Linda Malone	823-2833	ENGR 307D	malone@iems.engr.ucf.edu
M.S.M.E., Ph.D.	Mechanical Engineering, Aerospace Systems, Materials Sciences and Engineering, Mechanical Systems, Thermofluids	Dr. Alain Kassab	823-2019	ENGR 381	kassab@pegasus.cc.ucf.edu
M.A.	Communicative Disorders	Dr. Harold Utt	823-2121	HPB 207	hutt@pegasus.cc.ucf.edu
M.S.	Criminal Justice	Dr. Pamela Griset	823-5929	HPB 113	griset@pegasus.cc.ucf.edu
M.S.	Health Sciences	Dr. Greg Frazer	823-2359	TR 534	frazer@pegasus.cc.ucf.edu
M.S.	Molecular Biology and Microbiology	Dr. Rudy Wodzinski	823-5932	BIO 330	rudyw@pegasus.cc.ucf.edu
M.S.	Nursing	Dr. Mary Lou Sole	823-5133	HPB 410	msole@pegasus.cc.ucf.edu
M.P.A.	Public Administration	Dr. K. Tom Liou	823-2604	HPB 202	kliou@pegasus.cc.ucf.edu
M.S.W.	Social Work	Dr. Dennis Poole	823-2114	TR 542	dpoole@ucf1vm.cc.ucf.edu



**Graduate Council**

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 speciality 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.

**6000-Level Courses.** These courses are designed for graduate students. Undergraduate registration in 6000-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



college prior to enrollment in the course. Under no circumstances should 3000-level courses be used in a doctoral program except as transfer credits as explained under "Transfer Credit" for doctoral students in this catalog.

#### Language Requirements

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

### 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.

The acceptance of courses from unaccredited agencies or institutions threatens the integrity and value of the graduate degrees awarded by UCF. Graduate-level course work demands the mastery of skills, theories, and concepts at a much higher level than undergraduate-level course work. Therefore, the university will not allow students to transfer course work from professional societies, independent agencies, employees, or companies unless they are ACE (American Council on Education) certified.

### 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.

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*.

### Certification for Degree

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.



<b>Academic Standards</b>	Academic standards for doctoral students will meet or exceed those previously stated for master's programs.
<b>Special Degree Requirements</b>	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.
<b>Residency Requirements</b>	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.
<b>Transfer Credit</b>	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.
<b>Time Limitation for Degree Completion</b>	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.
<b>Examination Committee</b>	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.
<b>Candidacy</b>	<p><b>Admission to Candidacy</b></p> <p>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.</p> <p><b>Candidacy Examination</b></p> <p>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.</p> <p><b>Enrollment in Dissertation Hours</b></p> <p>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.</p> <p><b>NOTE:</b> 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.</p>

## 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 160112, 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.

## International Visiting Scholars

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

Both Florida and Texas only participate at the graduate level. For further information, please contact Graduate Studies at 823-6432 (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. Henry Chen, UWF	904-474-2665
Florida-Costa Rica Institute	Dr. Erasmo Gerato, FSU 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 Dr. Eugene Scruggs, USF Dr. Robert Vitale, Miami Dade Community College	904-644-1414
Florida-Israel Institute	Dr. William B. Stronge, FAU Dr. Benjamin Popper, Broward Community College Nancy Q. Rosen, Assoc. Director	954-236-4150
Florida-Japan Institute	Dr. Mark Orr, USF Dr. Glen Goltrmann, UWF	813-974-4090
Florida-West Africa Institute	Dr. Harriett A. Paul, FAMU	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.

## Patent and Invention Policy for Graduate Students

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 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.")

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# Student Services and Organizations

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 (823-6432) 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>

The Pegasus symbol can be seen far from the new Student Union



### 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) 823-6440

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 823-6440.



## 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. Vitte .....	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. Koevenig, 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. Whittier, 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:

<b>Group A</b> (one course in any three of the four areas)	<b>12-14 Semester Hours</b>
1. PCB 5046C Advanced Ecology	5 hours
2. PCB 6675C Evolutionary Biology	4 hours
3. PCB 6585C Advanced Genetics	5 hours
4. PCB 6721 Comparative Animal Physiology <u>OR</u>	3 hours
PCB 6365 Environmental Physiology	3 hours
<b>Group B</b> (both courses)	<b>8 Semester Hours</b>
BSC 6938 Biology Seminar	2 hours
BSC 6971 Thesis	6 hours
<b>Group C</b>	<b>8-10 Semester Hours</b>
Restricted electives acceptable to the student's graduate committee.	
<b>Minimum Hours Required for M.S.</b>	<b>30 Semester Hours</b>

##### Non-Thesis Option

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

<b>Group A</b> (one course in any three of the four areas)	<b>12-14 Semester Hours</b>
1. PCB 5046C Advanced Ecology	5 hours
2. PCB 6675C Evolutionary Biology	4 hours
3. PCB 6585C Advanced Genetics	5 hours
4. PCB 6721 Comparative Animal Physiology <u>OR</u>	3 hours
PCB 6365 Environmental Physiology	3 hours
<b>Group B</b> (both courses)	<b>4 Semester Hours</b>
BSC 6909 Research Report	2 hours
BSC 6938 Biology Seminar	2 hours
<b>Group C</b>	<b>22-24 Semester Hours</b>
Restricted electives acceptable to the student's graduate advisor.	
<b>Minimum Hours Required for Non-Thesis M.S.</b>	<b>40 Semester Hours</b>



## 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 and Professor  
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. Elsheimer, 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

		12 Semester Hours
CHM	6440 Kinetics and Catalysis	2 hours
CHM	6710 Applied Analytical Chemistry	2 hours
CHM	6938 Seminar	2 hours
CHS	6240 Chemical Thermodynamics	2 hours
CHS	6251 Applied Organic Synthesis	2 hours
CHS	6260 Chemical Unit Operations and Separations	2 hours

#### Electives

12 Semester Hours

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.):

CHM	5225 Advanced Organic Chemistry I	3 hours
CHM	5226 Advanced Organic Chemistry II	3 hours
CHM	5235 Applied Molecular Spectroscopy	3 hours

CHM	5305	Applied Biological Chemistry	3 hours
CHM	5450	Polymer Chemistry	3 hours
CHM	5451	Polymer Chemistry Lab	2 hours
CHM	5580	Advanced Physical Chemistry	3 hours
CHM	5711	The Chemistry of Materials	2 hours
CHS	5262	Industrial Chemical Processes	2 hours
CHS	6261	Chemical Process and Product Development	2 hours

**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

**The Chemistry building**



## Nicholson School of Communication

B. Pryor ..... Program Coordinator  
Office: HFA 528A, Phone: (407) 823-5670 or 823-2681, e-mail: apryor@pegasus.cc.ucf.edu

### Communication Faculty

R. H. Davis, Ph.D. .... Professor  
F. E. Fedler, Ph.D. .... Professor  
M. D. Meeske, 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			21 Semester Hours
EDF	6401	Statistics for Educational Data <u>OR</u>	3 hours
STA	4163	Statistical Methods II <u>OR</u>	
STA	5206	Statistical Analysis <u>OR</u>	
SYA	4450	Data Analysis <u>OR</u>	
SPC	6219	Modern Communication Theory	3 hours
COM	6121	Communication Management <u>OR</u>	3 hours
COM	6468	Communication Conflict	
COM	6303	Communication Research I	3 hours
COM	6304	Communication Research II	3 hours
MMC	6603	Communication and Society	3 hours
SPC	6442	Small Group Communication	3 hours
<b>Electives</b>			<b>9 Semester Hours</b>
<b>Thesis</b>			<b>4 Semester Hours</b>
<b>Minimum Hours Required for M.A.</b>			<b>34 Semester Hours</b>

## 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. Bringham, 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. Moshell, 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 Vitoria Lobo, Ph.D. .... Assistant Professor  
M. Goudreau, Ph.D. .... Assistant Professor  
R. Parsons, Ph.D. .... Assistant Professor  
J. Rogers, Ph.D. .... Assistant Professor  
U. Vemulapati, 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

#### Required Courses

9 Semester Hours

(Students must receive an "A" or "B" grade in these courses.)

CDA	5106	Advanced Computer Architecture 1	3 hours
COT	5405	Design and Analysis of Algorithms	3 hours

#### Select One:

COP	5611	Operating Systems Design Principles	3 hours
COP	5021	Programming Languages II	3 hours
COT	5310	Formal Languages and Automata Theory	3 hours

### Restricted Electives

21-27 Semester Hours

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 1 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.

One of the many student computer labs on campus





**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. Stap, Ph.D. ....	Associate Professor
M. Flammia, 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.

Required Courses		21 Semester Hours
ENG	5009 Graduate Research in English	3 hours
ENG	5018 Literary Criticism	3 hours
LIN	5137 Linguistics (or an equivalent)*	3 hours
LIT	6009 Literary Genres	3 hours
LIT	6105 World Literature	3 hours
LIT	6365 Movements in Literature	3 hours
LIT	6506 Major Authors	3 hours

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

**Electives** 6 Semester Hours

**Comprehensive Examination**

**Specialization — Choose A or B** 6 Semester Hours

**A. Thesis Option**

The candidate will complete a formal thesis on a topic selected in consultation with an advisory committee and will meet both departmental and university requirements for the thesis. The student will also enroll in LIT 6971, Thesis.

**B. Extended Research and Oral Examination Option**

The candidate will enroll twice in LIT 6908, Directed Independent Study, and read extensively in an area of speciality—English romantic poetry, for example. The student will then complete a formal oral examination on the area of expertise.

**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.

Required Courses		12 Semester Hours
CRW	5004 Graduate Writing Workshop	3 hours
CRW	6009 Advanced Writing Workshop	3 hours
LIT	5039 Studies in Contemporary Poetry	3 hours
LIT	5097 Studies in Contemporary Fiction	3 hours

**Restricted Electives** 9 Semester Hours

LIT	6009 Literary Genres	3 hours
LIT	6105 World Literature	3 hours
LIT	6365 Movements in Literature	3 hours
LIT	6506 Major Authors	3 hours

**Open Electives** 6 Semester Hours  
(selected with assistance of advisor) 6 hours

**Thesis** 6 Semester Hours  
CRW 6971 Thesis 6 hours

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	3 hours	<b>15 Semester Hours</b>
ENC 6217	Technical Editing	3 hours	
ENC 6261	Technical Writing: Theory and Practice	3 hours	
ENC 6337	Modern Rhetorical Theory	3 hours	
ENG 5009	Research Methods	3 hours	

### Restricted Electives

ENC 5219	Graphics in Technical Writing	3 hours	<b>9 Semester Hours</b>
ENC 5344	Proposal Writing	3 hours	
ENC 6244	Teaching Technical Writing	3 hours	
ENC 6292	Project Management	3 hours	
ENC 6296	Computer Documentation	3 hours	
ENC 6306	Persuasive Writing	3 hours	

### Advised Electives

Two courses from outside the Department of English or other graduate-level English courses. **6 Semester Hours**

### Comprehensive Examination

#### Specialization—Choose A or B

**3 Semester Hours**

##### 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 Humanities/Fine Arts building houses the English department





## Department of Foreign Languages and Literatures

Charles N. Micarelli ..... Program Coordinator, Spanish Program  
Office: HFA 201, Phone: (407) 823-5935, e-mail: cmicarel@pegasus.cc.ucf.edu  
Consuelo E. Stebbins ..... Program Coordinator, TESOL Program  
Office: TR 547, Rm. 110, Phone: (407) 823-0088, e-mail: stebbins@ucf1vm.cc.ucf.edu

### Foreign Languages and Literatures Faculty

A. V. Cervone, Ph.D. .... Professor  
J. B. Fernández, Ph.D. .... Chair and Professor  
C. N. Micarelli, Ph.D. .... Professor  
M. Del-Río, Ph.D. .... Associate Professor  
H. López-Cruz, Ph.D. .... Assistant Professor  
N. Maier, Ph.D. .... Assistant Professor  
D. Martínez, Ph.D. .... Assistant Professor  
C. Stebbins, Ph.D. .... Assistant Professor

### Joint Appointees

Steve Sorg, Ph.D. .... Interim Chair, Instructional Programs  
John Schell, Ph.D. .... Chair, English Department

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	3 hours
Spanish Language Study	6 hours
Hispanic Culture and Civilization	6 hours
Hispanic Literature (at least one seminar)	9 hours
<b>Total</b>	<b>24 Semester Hours</b>

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

<b>Part I</b>			<b>3 Semester Hours</b>
SPW	5XXX	Research Methods	3 hours
<b>Part II - Spanish Language Study</b>			<b>6 Semester Hours</b>
SPN	5705	Introduction to Spanish Linguistics	3 hours
SPN	5825	Spanish Dialectology	3 hours
SPN	5845	History of the Spanish Language	3 hours
SPN	6805	Spanish Morphosyntax	3 hours
<b>Part III - Hispanic Culture and Civilization</b>			<b>6 Semester Hours</b>
SPN	5502	Hispanic Culture of the United States	3 hours
SPN	5505	Spanish Peninsular Culture and Civilization	3 hours
SPN	5506	Spanish American Culture and Civilization	3 hours
<b>Part IV - Hispanic Literature</b>			<b>9 Semester Hours</b>
*SPW	5825	Literary Theory Pro-Seminar (May be repeated for credit with different topics)	3 hours
SPW	6XXX	Medieval Spanish Literature	3 hours
SPW	6217	Spanish American Prose I	3 hours
SPW	6218	Spanish American Prose II	3 hours
SPW	6269	Nineteenth Century Spanish Novel	3 hours
SPW	6306	Spanish American Drama I	3 hours
SPW	6307	Spanish American Drama II	3 hours
SPW	6315	Golden Age Drama	3 hours
SPW	6XXX	Golden Age Prose	3 hours
SPW	6356	Spanish American Poetry	3 hours
SPW	6585	Contemporary Peninsular Literature	3 hours
SPW	6725	The Generation of 98	3 hours
SPW	6971	Thesis	6 hours
* Examples of Seminar Series Topics: Don Quixote, Spanish American Literature Written by Women, Gabriel García Márquez			
<b>Part V - Methodology (Electives)</b>			<b>6 Semester Hours</b>
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 of technology 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

			21 Semester Hours
EDF	6481	Fundamentals of Graduate Research in Education	3 hours
TSL	5345	Methods of ESOL Teaching	3 hours
TSL	5525	ESOL Cultural Diversity	3 hours
TSL	6142	Critical Approaches to ESOL	3 hours
TSL	6240	Applied Linguistics in ESOL	3 hours
TSL	6440	Problems in Evaluation in ESOL	3 hours
TSL	6540	Issues in Second Language Acquisition	3 hours

### Electives

6 Semester Hours

#### Linguistics:

LIN	5137	Linguistics	3 hours
LIN	6932	Problems in Linguistics	3 hours

**Multicultural Education:**

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6886	Multicultural Education	3 hours
FLE	5875	Computer Application in Teaching the Spanish Language	3 hours
SPN	5502	Hispanic Culture of the United States	3 hours
TSL	5141	ESOL Strategies	3 hours

**Research:**

EDF	6401	Statistics for Educational Data	3 hours
EDF	6486	Research Design in Education	3 hours
TSL	6640	Research in Second Language	3 hours
TSL	6971	Thesis	3 hours

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## History Department

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Shirley A. Leckie ..... Program Coordinator  
 Office: HFA 553, Phone: (407) 823-2225, e-mail: sleckie@pegasus.cc.ucf.edu

**Program in History**

The Master of Arts in History is designed to serve the needs of a variety of students. Some will one day seek admittance into a Ph.D. program at a doctoral-granting institution. Others enter the program to improve their proficiency as secondary school teachers. Still others are adults who wish to enrich their intellectual lives. These students will be served by departmental members whose areas of research include American cultural and social history, local history, the South, the American frontier, women and gender roles, twentieth-century mass movements, Nazism and anti-Semitism in Central Europe, Latin American history, British history, and Russian history, as well as other areas.

**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

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## Master of Arts in History

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**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

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

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.

<b>Minimum Hours Required for M.A.</b>	<b>36 Semester Hours</b>
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## 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. Sherwood, 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. Salzman, 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:

MAA	5210	Topics in Advanced Calculus	4 hours
MAA	5405	Complex Variables	3 hours
MAP	5336	Ordinary Differential Equations and Applications	3 hours
MAP	5385	Applied Numerical Mathematics	3 hours
MAP	5407	Applied Mathematics I	3 hours
MAS	5145	Advanced Linear Algebra and Matrix Theory	3 hours
		Electives	9 hours
MAP	6971	Thesis	3 hours
<b>Minimum Hours Required for M.S.</b>			<b>30 Semester Hours</b>

#### 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:

MAA	5210	Topics in Advanced Calculus	4 hours
MAA	5405	Complex Variables	3 hours
MAP	5336	Ordinary Differential Equations and Applications	3 hours
MAP	5385	Applied Numerical Mathematics	3 hours
MAP	5407	Applied Mathematics I	3 hours
MAS	5145	Advanced Linear Algebra and Matrix Theory	3 hours
		Electives	18 hours

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 Optics, 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.

<b>Core Courses</b>			<b>18 Semester Hours</b>
MAA	5210	Topics in Advanced Calculus	4 hours
MAA	5404	Complex Analysis	3 hours
MAA	6306	Real Analysis	3 hours
MAP	5145	Advanced Linear Algebra and Matrix Theory	3 hours
MAP	5336	Ordinary Differential Equations and Applications	3 hours
MAP	5407	Applied Mathematics I	3 hours
<b>Electives</b>			<b>42 Semester Hours</b>
<b>Dissertation</b>			<b>15 Semester Hours</b>
<b>Minimum Hours Required for Ph.D.</b>			<b>75 Semester Hours</b>

### 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**

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

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

### **Music Education**

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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.

## Physics Department

O. Heinonen ..... Program Coordinator  
Office: HPB 310, Phone: (407) 823-2325, e-mail: graduate@physics.ucf.edu

✓ M. Bass, Ph.D. ....	Professor
S. K. Bose, Ph.D. ....	Professor
J. J. Brennan, Ph.D. ....	Assistant Chair and Professor
C. D. Caldwell, Ph.D. ....	Professor
— B. Chai, Ph.D. ....	Professor
✓ L. Elias, Ph.D. ....	Professor
R. A. Llewellyn, Ph.D. ....	Professor
J. E. Neighbor, Ph.D. ....	Associate Vice President for Academic Affairs and Professor
✓ M. C. Richardson, Ph.D. ....	Professor
✓ W. T. Silfvast, Ph.D. ....	Chair and Professor
✓ G. Stegeman, Ph.D. ....	Cobb-Hooker Eminent Scholar Chair of Optical and Laser Sciences and Engineering
✓ E. W. Van Stryland, Ph.D. ....	Professor
✓ B. Zeldovich, Ph.D. ....	Professor
J. S. Bolemon, Ph.D. ....	Associate Professor
L. Chow, Ph.D. ....	Associate Professor
✓ D. Hagan, Ph.D. ....	Associate Professor
O. G. Heinonen, Ph.D. ....	Associate Professor
M. D. Johnson, Ph.D. ....	Associate Professor
✓ Weili Luo, Ph.D. ....	Associate Professor
✓ R. E. Peale, Ph.D. ....	Associate Professor
R. L. Renken, Ph.D. ....	Associate Professor
H. P. Saha, Ph.D. ....	Associate Professor
A. Schulte, Ph.D. ....	Associate Professor
Nadine Barlow, Ph.D. ....	Instructor of Astronomy
N. Baranova, Ph.D. ....	Adjunct Professor
M. Dogariu, Ph.D. ....	Adjunct Professor
I. Kimel, Ph.D. ....	Adjunct Professor
J. Noon, Ph.D. ....	Adjunct Professor
J. Shivamoggi, Ph.D. ....	Adjunct Professor
N. Ying, Ph.D. ....	Adjunct Professor

### Joint Appointees

M. J. Soileau, Ph.D. .... Director of CREOL and Professor of Electrical Engineering  
P. Delfyett, 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.

33 Semester Hours

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

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

### Electives

9 to 15 Semester Hours

### Thesis

6 Semester Hours

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 tracks 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

**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	3 hours
PHY	6353	Accelerator Physics	3 hours
PHY	6355	Physics of Free Electrons	3 hours
PHY	6434	Nonlinear Optics	3 hours
PHY	6435	Non-Linear Guided Wave Optics	3 hours
PHY	6448	Specific Laser Systems	3 hours
PHY	6667	Advanced Quantum Mechanics	3 hours
PHY	6918	Directed Research	3 hours
PHY	6938	Special Topics/Seminars	3 hours
PHY	7919	Ph.D. Research	3 hours
PHZ	5304	Nuclear Physics	3 hours
PHZ	5405	Condensed Matter Physics	3 hours
PHZ	5505	Plasma Physics	3 hours
PHZ	6115	Theoretical Methods	3 hours
PHZ	6156	Advanced Computational Physics	3 hours
PHZ	6204	Atomic and Molecular Spectroscopy	3 hours
PHZ	6234	Atomic Physics	3 hours
PHZ	6424	Optical Properties of Solids	3 hours
PHZ	6425	Advanced Condensed Matter Physics	3 hours

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.



## Political Science Department

Dwight Kiel ..... Program Coordinator  
Office: HFA 415, Phone: (407) 823-2608, e-mail: kield@pegasus.cc.ucf.edu

R. Bledsoe, Ph.D. .... Chair and Professor  
R. Handberg, Ph.D. .... Professor  
P. H. Pollock, Ph.D. .... Professor  
W. Q. Morales, Ph.D. .... Professor  
T. S. Fine, Ph.D. .... Associate Professor  
D. Kiel, Ph.D. .... Associate Professor  
J. R. Lillie, Ph.D. .... Associate Professor  
S. A. Lillie, Ph.D. .... Associate Professor  
M. E. Vitte, Ph.D. .... Associate Professor  
G. Hall, Ph.D. .... Assistant Professor  
K. Hammon, Ph.D. .... Assistant Professor  
A. Jewett, M.S. .... Assistant Professor  
D. McCoy, Ph.D. .... Assistant Professor  
H. Sadri, Ph.D. .... Assistant Professor

### 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		12 Semester Hours
POS	6746 Quantitative Methods in Political Research	3 hours
POS	6045 Seminar in American Politics	3 hours
POT	6007 Seminar in Political Theory <u>AND</u>	3 hours
INR	6007 Seminar in International Politics <u>OR</u>	
CPO	6091 Seminar in Comparative Politics	3 hours

#### Political Analysis Track

30 Semester Hours

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

Core Requirements <u>AND</u>		12 Semester Hours
Three special topics courses from:		9 Semester Hours
POS	6938 American Politics	3 hours
POS	6938 Political Theory	3 hours
POS	6938 International Relations	3 hours
POS	6938 Comparative Politics	3 hours
POS	6938 Political Analysis	3 hours
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:

<b>Core Requirements AND</b>	<b>15 Semester Hours</b>
PUP 6007 Public Policy Analysis	3 hours
<b>Two special topics courses from:</b>	<b>6 Semester Hours</b>
PUP 6938 Science Policy	3 hours
PUP 6938 Social Policy	3 hours
PUP 6938 Foreign and Defense Policy	3 hours
<b>Elective</b>	<b>3 Semester Hours</b>
<b>Thesis</b>	<b>6 Semester Hours</b>

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. ....	Director, CAHFA and Professor
J. M. McGuire, Ph.D. ....	Interim Chair 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. Smither, Ph.D. ....	Associate Professor
P. M. Tell, Ph.D. ....	Associate Professor
A. Y. Wang, Ph.D. ....	Associate Professor
W. Wooten, 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. Lavooy, 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:

Academic Course Work			34 Semester Hours
CLP	6441	Introduction to Individual Psychological Assessment*	3 hours
CLP	6445	Individual Psychological Assessment II*	3 hours
CLP	6456	Individual Counseling—Theory and Practice*	3 hours
CLP	6457	Group Psychotherapy*	3 hours
CLP	6459	Human Sexuality, Marriage, and Sex Therapies*	3 hours
CLP	6460	Introduction to Child, Adolescent, and Family Therapies*	3 hours
CLP	6932	Ethical and Professional Issues in Mental Health Practice**	3 hours
DEP	5057	Developmental Psychology	3 hours
PPE	5055	Personality Theories	3 hours
PSB	6446	Advanced Abnormal and Clinical Psychopharmacology	3 hours
PSY	6216	Advanced Research Methodology I	4 hours

\* Must co-register for the appropriate section of lab.

\*\* Must co-register with CYP 6948.

<b>Labs</b>		<b>6 Semester Hours</b>
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 6456L	Clinical Lab: Counseling	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
<b>Internship (See details of program)</b>		<b>6 Semester Hours</b>
CYP 6948	Psychology Internship	6 hours
<b>Treatise (Thesis)</b>		<b>8 Semester Hours</b>
PSY 6938	Research Planning	1 hour
PSY 6939	Research Planning II	1 hour
PSY 6971	Thesis	6 hours
<b>Minimum Hours Required for M.S.</b>		<b>54 Semester Hours</b>

#### 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:

<b>Academic Course Work</b>			<b>29 Semester Hours</b>
INP	6215	Assessment Centers and Leadership	3 hours
INP	6317	Organizational Psychology and Motivation	3 hours
INP	6605	Training and Performance Appraisal	3 hours
INP	6937	Applied Problems in Industrial/Organizational Psychology	3 hours
INP	6938	Job/Task Analysis	3 hours
INP	6939	Current Topics in Industrial/Organizational Psychology	3 hours
PSY	6216	Advanced Research Methods	4 hours
PSY	6308	Psychological Testing I	4 hours
PSY	6318	Applied Testing and Selection	3 hours
<b>Practicum</b>			<b>3 Semester Hours</b>
INP	6946	Industrial Psychology Practicum I	3 hours
<b>Thesis</b>			<b>8 Semester Hours</b>
PSY	6971	Thesis	8 hours
<b>Minimum Hours Required for M.S.</b>			<b>40 Semester Hours</b>

**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 6971)**

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.

<b>Fall (Year 1)</b>		<b>13 Semester Hours</b>
EXP 5256	Human Factors I	3 hours
PSY 6216	Advanced Research Methodology I	4 hours
EXP 6506	Human Cognition and Learning	3 hours
PSB 5005	Physiological Psychology	3 hours
<b>Spring (Year 1)</b>		<b>11 Semester Hours</b>
EXP 6257	Human Factors II	3 hours
PSY 6217	Advanced Research Methodology II	4 hours
EXP 5208	Sensation and Perception	3 hours
PSY 6938	Research Planning	1 hour
<b>Summer (Year 1)</b>		<b>6 Semester Hours</b>
EIN 5248C	Ergonomics	3 hours
PSY 6918	Directed Research	3 hours
<b>Fall (Year 2)</b>		<b>12 Semester Hours</b>
EXP 5255	Human Performance	3 hours
INP 6317	Organizational Psychology and Motivation	3 hours
PSY 6918	Directed Research	3 hours
	Elective*	3 hours
<b>Spring (Year 2)</b>		<b>12 Semester Hours</b>
EXP 6946	Internship	6 hours
PSY 6909	Research Report	3 hours
	Elective*	3 hours

<b>Fall (Year 3)</b>		<b>12 Semester Hours</b>
PSY 6909	Research Report	3 hours
EIN 6258C	Ergonomics in High Tech. Environments	3 hours
EXP 6258	Human Factors III	3 hours
	Elective*	3 hours
<b>Spring (Year 3)</b>		<b>12 Semester Hours</b>
EXP 6938	Teaching Seminar	3 hours
PSY 6908	Directed Independent Studies	3 hours
	Electives*	6 hours
<b>Fall (Year 4)</b>		<b>6 Semester Hours</b>
PSY 7980	Doctoral Dissertation	6 hours
<b>Spring (Year 4)</b>		<b>6 Semester Hours</b>
PSY 7980	Doctoral Dissertation	6 hours
<b>Minimum Hours Required for Ph.D.</b>		<b>90 Semester Hours</b>

**\* 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) 823-2227, e-mail: cook@pegasus.cc.ucf.edu

J. Corzine, Ph.D. ....	Chair and Professor
I. 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

SYA 5625	Proseminar	3 hours	12 Semester Hours
SYA 6126	Social Theory	3 hours	
SYA 6305	Social Research	3 hours	
SYA 6455	Research Analysis	3 hours	

#### 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

## Statistics Department

James R. Schott ..... Program Coordinator  
Office: CC II, Phone: (407) 823-2797, e-mail: jschott@pegasus.cc.ucf.edu

### Statistics Faculty

M. E. Johnson, Ph.D. .... Professor  
G. D. Richardson, Ph.D. .... Professor  
J. R. Schott, Ph.D. .... Professor  
P. N. Somerville, Ph.D. .... Professor  
L. L. Hoffman, Ph.D. .... Interim Chair and Associate Professor  
D. Nickerson, Ph.D. .... Associate Professor  
M. Wang, Ph.D. .... Associate Professor  
M. Jamshidian, Ph.D. .... Assistant Professor  
C. E. Cutchins, M.S. .... Instructor  
J. W. Pepe, M.S. .... Instructor  
S. C. Schott, M.S. .... Instructor

## 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	21 Semester Hours
STA 6236 Regression Analysis	3 hours
STA 5205 Experimental Design	3 hours
STA 6326 Theoretical Statistics I	3 hours
STA 6327 Theoretical Statistics II	3 hours
STA 6329 Statistical Applications of Matrix Algebra	3 hours
STA 6106 Statistical Computing I	3 hours
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 Colloquium in U.S. Colonial History	AS 3(3,0)
AMH 5137 Colloquium in U.S. Revolutionary Period	AS 3(3,0)
AMH 5149 Colloquium in Early U.S. History, 1789-1815	AS 3(3,0)
AMH 5169 Colloquium in the Age of Jackson	AS 3(3,0)
AMH 5176 Colloquium in Civil War and Reconstruction	AS 3(3,0)
AMH 5219 Colloquium in Late 19th Century U.S.	AS 3(3,0)
AMH 5296 Colloquium in 20th Century U.S.	AS 3(3,0)
AMH 5391 Colloquium in U.S. Cultural History	AS 3(3,0)
AMH 5407 Colloquium in the American South	AS 3(3,0)
AMH 5446 Colloquium in U.S. Frontier	AS 3(3,0)
AMH 5508 Colloquium in Women in American History	AS 3(3,0)
AMH 5515 Colloquium in U.S. Diplomatic History. May be repeated for credit when content is different.	AS 3(3,0)
AMH 6939 Seminar in U.S. History. May be repeated for credit when content is different.	AS 3(3,0)
AML 5156 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.	AS 3(3,0)
ANT 5479 Comparative Cultural Analysis. The dynamics of cultural processes in a multi-ethnic setting.	AS 3(3,0)
ARE 5251 Art for Exceptionalities. Concepts, principles, and methods of integrating art processes into the education of the physically, emotionally, and mentally handicapped.	ED 3(2,1)
ARE 5358 Found Arts. PR: ARE 4440 and ARE 4443 or C.I. Materials available for instruction in the public schools will be explored	ED 3(3,0)

in depth in relation to their appropriateness and productive qualities.

ARE 5648 Contemporary Visual Arts Education. PR: ARE 4443 or C.I. Continued study of current programs and innovations in public school visual arts programs.	ED 3(3,0)
ARE 6195 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).	ED 3(2,1)
ARE 6666 Arts Advocacy. The study and development of plans to produce arts advocacy programs for the public school system.	ED 3(2,1)
ARH 5451 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.	AS 3(3,0)
ARH 5454 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.	AS 3(3,0)
ARH 5478 Contemporary Women Artists. PR: Six credits of art courses or C.I. An in-depth study of contemporary women artists from a feminist perspective.	AS 3(3,0)
ARH 5893 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.	AS 3(3,0)
ARH 5933 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.	AS 3(3,0)
ART 5109C Crafts Design. Crafts design and production, including the use of rigid, flexible, and linear materials.	ED 3(2,1)
ART 5109C Multi-Cultural Crafts Design. Includes an appreciation for and the production of Western and non-Western art forms.	AS 3(3,0)
BOT 5495C 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.	AS 3(2,3)
BOT 5623C 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.	AS 4(3,3)
BOT 5705C Plant Biosystematics. PR: Graduate standing or C.I. Evolutionary processes among plant taxa and populations utilizing	AS 4(3,2)



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 AS1,(0,4)**

**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(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 5415 AS 3(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 5610 AS 3(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; symbolic role of humans and computers.

**CAP 5636 AS 3(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 5725 AS 3(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 6411 AS 3(3,0)**

**Computer Vision Systems.** PR: CAP 5410. Recent systems contributing toward recognition, reasoning, knowledge representation, navigation, and dynamic scene analysis. Comparisons, enhancements, and integrations of such systems.

**CAP 6412 AS 3(3,0)**

**Advanced Computer Vision.** PR: CAP 5410. Computational theories of perception, shape from IX<sup>3</sup> techniques, multi-resolution image analysis, 3-D model based vision, perceptual organization, spatiotemporal model, knowledge-based vision systems.

**CAP 6613 ED 3(0)**

**Utilizing Microcomputers in Education.** Instruction in microcomputers emphasizing applications of software in the classroom and for school recordkeeping.

**CAP 6640 AS 3(3,0)**

**Computer Understanding of Natural Language.** PR: CAP 5601. A study of the different approaches to build programs to "understand" natural language. The theory of parsing, knowledge representation, memory, and inference will be studied.

**CAP 6671 AS 3(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(3,0)**

**Knowledge Representation.** PR: CAP 5636. 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(3,0)**

**Computer Graphic 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(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(3,0)**

**Parallel Architecture and Algorithms.** PR: COT 4210, CDA 5106. General-purpose vs. special-purpose parallel computers; arrays; message passing; shared-memory; taxonomy; paralyzation techniques; communication, synchronization, and granularity; parallel data structures; and automatic program restructuring.

**CDA 5215 AS 3(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(3,0)**

**Computer Communications Networks Architecture.** PR: CDA 5106. Computer networks, layers, protocols and interfaces, local area networks internet working.

**CDA 6107 AS 3(3,0)**

**Advanced Computer Architecture II.** PR: CDA 5106. Multiprocessor systems; interconnection network; stack architectures; high-level language architecture; design languages; performance evaluation.

**CDA 6108 AS 3(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 6211 AS 3(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(3,0)**

**Computer Networks Design and Distributive Processing.** PR: CDA 6501 and COP 5611. Computer communications networks



design considerations, network operating system, distributed processing.

**CEN 5016** AS 3(3,0)

**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 5225** AS 3(3,0)

**Advanced Organic Chemistry I.** PR: CHM 3211. Theoretical and physical organic concepts of organic systems from the perspective of modern structural theory, thermodynamics, and kinetics.

**CHM 5226** AS 3(3,0)

**Advanced Organic Chemistry II.** PR: CHM 3211. A survey of organic reaction mechanisms and their application to synthetic chemistry.

**CHM 5235** AS 3(3,0)

**Applied Molecular Spectroscopy.** PR: CHM 3120C and CHM 3211. Determination of chemical structure through interpretation of UV, IR, NMR, and Mass Spectra.

**CHM 5305** AS 3(3,0)

**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** AS 3(3,0)

**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** AS 2(0,6)

**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 5580** AS 3(3,0)

**Advanced Physical Chemistry.** PR: MAC 3313. CR: CHM 3411. Selected topics of thermodynamics, kinetics, quantum mechanics, and structure.

**CHM 5711** AS 2(2,0)

**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 6440** AS 2(2,0)

**Kinetics and Catalysis.** PR: CHM 3411 or equivalent. Classical kinetics with an emphasis on industrial applications and current catalysis methodologies.

**CHM 6710** AS 2(2,0)

**Applied Analytical Chemistry.** PR: CHM 3211, CHM 4130C, and CHM 3411 or equivalent. Concepts in molecular structure that integrate structural, physical, and chemical properties with aspects of industrial and analytical chemistry.

**CHM 6938** AS 1(1,0)

**Graduate Chemistry Seminar.** A topic of current chemical interest will be presented by students at a regularly scheduled departmental seminar.

**CHS 5262** AS 2(2,0)

**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** AS 2(2,0)

**Chemical Thermodynamics.** PR: CHM 3411 or equivalent. Classical and statistical thermodynamics with emphasis on industrial applications and estimation methods.

**CHS 6251** AS 2(2,0)

**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 6260** AS 2(2,0)

**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.

**CHS 6261** AS 2(2,0)

**Chemical Process and Product Development.** PR: C.I. Development of chemical products and processes including the determination of technical economic feasibility; use of experiment design in the optimization of variables and scale-up methods.

**CLP 5004** AS 3(3,0)

**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 5166** AS 3(3,0)

**Advanced Abnormal Psychology.** PR: C.I. Consideration of classification, causation, management, and treatment of emotional disorders. Review of theories and research in the field.

**CLP 6441** AS 3(3,0)

**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** AS 1(0,2)

**Clinical Lab - Individual Assessment.** PR: C.I. Practice in specific techniques in individual assessment. To be taken concurrently with CLP 6441.

**CLP 6445** AS 3(3,0)

**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.



- 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 6456 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 6932 AS 3(3,0)  
**Ethical and Professional Issues in Mental Health Practices.** 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)  
**Communication Management.** Analysis and development with reference to particular media. Organizational theory, structure, and behavior. Management principles and operations.
- 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 6468 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 COT 4210. 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: COT 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 5611. Techniques in the design and implementation of operating systems. Case studies of several experimental and commercial operating systems.
- COP 6615 AS 3(3,0)  
**Operating Systems Theory.** PR: COP 5611. Scheduling and queuing theory, simulation, and performance evaluation of computer systems.
- COP 6621 AS 3(3,0)  
**Compiler Construction.** PR: COP 5021, COT 5310. Techniques in the design and implementation of compilers. Optimization, code generation, error recovery, attributed grammars. A project is required.



- COP 6730** AS 3(3,0)  
**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.
- COP 6731** AS 3(3,0)  
**Advanced Database Systems.** PR: COP 5711. Selected topics concerning object-oriented databases, multimedia databases, active databases, temporal databases, spatial databases, and information systems.
- COT 5310** AS 3(3,0)  
**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.
- COT 5405** AS 3(3,0)  
**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.
- COT 5507** AS 3(3,0)  
**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.
- COT 5510** AS 3(3,0)  
**Computational Methods/Linear Systems.** PR: COT 4500 and MAS 3113. Mathematical models for linear systems, linear programming, the simplex method, integer and mixed-integer programming, introduction to nonlinear optimization and linearization.
- COT 5520** AS 3(3,0)  
**Computational Geometry.** PR: COT 5405. Geometric searching, point location, convex hulls, proximity problems, Voronoi diagrams, spanning trees, triangulation, intersections arrangements applications.
- COT 6300** AS 3(3,0)  
**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.
- COT 6410** AS 3(3,0)  
**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.
- COT 6415** AS 3(3,0)  
**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.
- COT 6505** AS 3(3,0)  
**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.
- CPO 6091** AS 3(3,0)  
**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.
- CRW 5004** AS 3(3,0)  
**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.
- CRW 5932** AS 3(2,1)  
**Teaching Creative Writing.** Creative writing practicum. May be repeated for credit.
- CRW 6009** AS 3(3,0)  
**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.
- CYP 6948** AS 3(2,20)  
**Psychology Internship.** PR: Graduate admission, second-year status, and C.I. Supervised placement in community setting for 8-20 hours per week. (May be repeated for credit.)
- DEP 5057** AS 3(2,2)  
**Developmental Psychology.** PR: Graduate admission or C.I. Psychological aspects of development including intellectual, social, and personality factors.
- EAB 5765** AS 3(3,0)  
**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.
- ELD 6944** AS 1(0,1)  
**Diagnostic Learning-Disabilities Laboratory.** A laboratory designed for individual competence measurement of testing-evaluation skills. Must be scheduled concurrently with ELD 6112, Foundations and Diagnosis of LD.
- ENC 5214** AS 3(3,0)  
**Production and Publication Methods.** Theory and practice of production and publication methods for technical writers.
- ENC 5219** AS 3(3,0)  
**Graphics in Technical Writing.** A study of the creation and editing of graphics in technical documents.
- ENC 5267** AS 3(3,0)  
**Styles in Technical Writing.** This course focuses on all of the strategies necessary to write effective technical prose.
- ENC 5306** AS 3(3,0)  
**Persuasive Writing.** Theory and practice of writing persuasively.
- ENC 5337** AS 3(3,0)  
**Modern Rhetorical Theory.** With special attention to the rhetor-audience relationship, the course studies history and practice of modern rhetorical theory.



ENC 5344	AS 3(3,0)	EUH 5237	AS 3(3,0)
Proposal Writing. Theory and practice of writing proposals.		Colloquium in Europe from 1815-1848	
ENC 5372	AS 3(2,1)	EUH 5238	AS 3(3,0)
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.		Colloquium in Europe from 1848-1914	
ENC 6217	AS 3(3,0)	EUH 5247	AS 3(3,0)
Technical Writing. Study of language, style, mechanics, graphics, and management necessary for technical editing.		Colloquium in Europe from 1919-1939	
ENC 6244	AS 3(3,0)	EUH 5285	AS 3(3,0)
Teaching Technical Writing. The techniques and theories of teaching technical writing.		Colloquium in Europe Since World War II	
ENC 6261	AS 3(3,0)	EUH 5371	AS 3(3,0)
Technical Writing, Theory and Practice. Study of major trends in technical communication theory and the practices this theory generates.		Colloquium in Spanish History	
ENC 6292	AS 3(3,0)	EUH 5546	AS 3(3,0)
Project Management for Technical Writers. Managing a writing project from inception to production: planning, budgeting, personnel, writing, and editing.		Colloquium: British History. PR: Open to graduate students only. Selected topics in British history. May be repeated for credit when content is different.	
ENC 6296	AS 3(3,0)	EUH 5579	AS 3(3,0)
Computer Documentation. The theory and practice of producing software documentation from planning through production.		Colloquium in Soviet Russia	
ENG 5009	AS 3	EUH 5595	AS 3(3,0)
Graduate Research in English. A study of the aims and methods of literary scholarship and research.		Colloquium in Czarist Russia	
ENG 5018	AS 3(3,0)	EUH 5608	AS 3(3,0)
Literary Criticism. Historical survey of major critics from classical antiquity to the modern era.		Colloquium in European Intellectual History	
ENL 5237	AS 3(3,0)	EUH 6939	AS 3(3,0)
Eighteenth-century Studies. Reading, analysis, and discussion of literature in English: 1660-1800.		Seminar in European History. May be repeated for credit when content is different.	
ENL 5250	AS 3(3,0)	EXP 5208	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.		Sensation and Perception. PR: C.I. A study involving the human information processing with regard to physical and psychological variables in sensory and perceptual phenomena.	
ENL 5269	AS 3(3,0)	EXP 5256	AS 3(3,0)
Nineteenth-century Essays. PR: Graduate standing or C.I. English nonfiction prose of the nineteenth century.		Human Factors I. PR: None. Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems.	
ENL 5335	AS 3(3,0)	EXP 5257	AS 3(3,0)
Studies in Shakespeare. Representative plays with emphasis on Shakespeare's development as an artist: aesthetics of dramatic literature.		Human Factors II. PR: EXP 5256 (HF1). The second in the series of basic human factors courses involving an in-depth examination of issues.	
ENL 5347	AS 3(3,0)	EXP 5258	AS 3(3,0)
The Age of Milton. Emphasis on the non-dramatic works of John Milton. Selections from the non-dramatic works of other seventeenth-century figures.		Human Factors III. PR: EXP 5256, EXP 6257. The third in the series of basic human factors courses. Current topics in human factors, exchange of information on practical field experience in human factors.	
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.		EXP 6126	AS 3(3,0)
		Psychoacoustics. 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)
		Human Cognition and Learning. PR: EXP 3404 and EXP 3513. Research and theory relating to attention, memory, problem solving and reasoning.	



EXP 6938	AS 3(3,0)	INR 6007	AS 3(3,0)
Teaching Seminar. PR: C.I. Orientation to and supervision in teaching assigned courses.		Seminar in International Politics. Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods.	
EXP 6946	AS 8(0,12)	INR 6086	AS 3(3,0)
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.		International Public Policy. PR: Graduate standing. Examines endogenous and exogenous variables involved in selected issues in the arena of international public policy.	
FLE 5870	AS 3(3,0)	LAE 5367	AS 3(3,0)
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.		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.	
FLE 5875	AS 3(3,0)	LAH 5713	AS 3(3,0)
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.		Colloquium in U.S.-Latin American Relations	
HIS 5158	AS 3(3,0)	LAH 6938	AS 3(3,0)
Classic and Contemporary Historical Thought. Explores work of important historians influenced by social theory to gain an understanding of their main concepts.		Seminar in Latin American History: May be repeated for credit when content is different.	
HIS 6159	AS 3(3,0)	LIN 5137	AS 3(3,0)
Historiography. Selected topics in the study of history. May be repeated for credit with consent of instructor.		Linguistics. Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.	
HIS 6946	AS 3(3,0)	LIN 6932	AS 3(3,0)
Teaching Practicum. Student observation, participation, direction, and leadership in a college survey course.		Problems in Linguistics. PR: LIN 5137. Study of the application of linguistics to various aspects of teaching and communication.	
INP 6215	AS 3(3,0)	LIT 5039	AS 3(3,0)
Assessment Centers and Leadership. PR: Graduate admission and C.I. Survey of assessment center technology and application with emphasis on leadership theory and practice.		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.	
INP 6317	AS 3(3,0)	LIT 5097	AS 3(3,0)
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.		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.	
INP 6605	AS 3(3,0)	LIT 5309	AS 3(3,0)
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.		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.	
INP 6939	AS 3(3,0)	LIT 5366	AS 3(3,0)
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.		The Romantic Revolt (Nineteenth-century Literature). The romantic revolt in poetry and prose; English, American, and Continental literature, 1798-1832.	
INP 6946	AS 3(1,6)	LIT 6009	AS 3(3,0)
Industrial Psychology Practicum I. PR: Graduate admission and C.I. Supervised placement in an applied setting.		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.	
INP 6947	AS 3(3,0)	LIT 6105	AS 3(3,0)
Industrial Psychology Practicum II. PR: Graduate admission and C.I. Supervised research in industry. (May be repeated for credit.)		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.	
		LIT 6365	AS 3(3,0)
		Movements in Literature. PR: Graduate standing. Study of a movement such as naturalism, romanticism, or classicism.	



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 biography, bibliography, and style. May be repeated for credit when content is 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)  
**Real Analysis.** PR: MAA 5210. Sets, function spaces, Lebesgue measure, Lebesgue-Stieltjes measure, measurable functions, convergence notions, general measure and integration, Radon-Nikodym theorem.

**MAA 6508** AS 3(3,0)  
**Hilbert Spaces with Applications.** PR: MAP 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.

**MAD 5205** AS 3(3,0)  
**Combinatorics and Graph Theory II.** PR: MAD 4203 or C.I. Polya's theory of counting; Latin squares and rectangles; block designs; coding theory; probabilistic methods; hypergraphs; applications.

**MAD 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.

**MAD 6608** AS 3(3,0)  
**Finite Fields and Coding Theory.** PR: MAP 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)  
**Ordinary Differential Equations and Applications.** PR: MAP 3302 or C.I. Existence and uniqueness of solutions of differential equations, systems of ordinary differential equations, autonomous systems, phase plane analysis, stability, bifurcations.

**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 3106, 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)  
**Applied Mathematics I.** PR: MAP 3302 or C.I. Calculus of variations, Hamilton's principle, Rayleigh-Ritz method, Sturm-Liouville theory, Green's functions for ordinary differential equations, introduction to integral equations.

**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 inviscid 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.



- MAP 6111** AS 3(3,0)  
**Mathematical Statistics.** PR: 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.
- MAP 6112** AS 3(3,0)  
**Asymptotic Methods in Mathematical Statistics.** PR: 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.
- MAP 6118** AS 3(3,0)  
**Introduction to Nonlinear Dynamics.** PR: 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.
- MAP 6207** AS 3(3,0)  
**Optimization Theory.** PR: 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.
- MAP 6356** AS 3(3,0)  
**Partial Differential Equations.** PR: 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.
- MAP 6385** AS 3(3,0)  
**Numerical Solutions of PDE.** PR: MAP 6456, 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.
- MAP 6408** AS 3(3,0)  
**Applied Mathematics II.** PR: MAP 3302, MAA 5405 or equivalent. Asymptotic series, asymptotic expansion of integrals, regular and singular perturbation expansions, boundary layer, multiple scales, WKB theory.
- MAP 6419** AS 3(3,0)  
**Advanced Transform Methods.** PR: 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.
- MAP 6420** AS 3(3,0)  
**Generalized Functions.** PR: 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.
- MAP 6421** AS 3(3,0)  
**Integral Equations.** PR: MAA 5405; C.I. Successive approximations, Volterra equations, Fredholm theory, Hilbert-Schmidt theory, Neumann series, singular integral equations, the Riemann-Hilbert problem.
- MAP 6424** AS 3(3,0)  
**Transform Methods.** PR: MAA 5405 or C.I. Laplace, Fourier, Hankel, and other integral transforms, inversion theorems; the Z transform; applications to physical problems.
- MAP 6425** AS 3(3,0)  
**Advanced Complex Analysis and Applications.** PR: 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.
- MAP 6445** AS 3(3,0)  
**Approximation Techniques.** PR: 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.
- MAP 6455** AS 3(3,0)  
**Orthogonal Polynomials and Digital Signal Processing.** PR: MAP 6110 Real Analysis, MAA 5404, or C.I. Orthogonal polynomials, Szego's orthogonal polynomials, Toeplitz matrix, Caratheodory functions and Schur functions, Levinson algorithm, associated Szego polynomials.
- MAP 6465** AS 3(3,0)  
**Wavelets and Their Applications.** PR: 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.
- MAP 6506** AS 3(3,0)  
**Functional Analysis.** PR: 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, Gateaux and Frechet.
- MAP 6515** AS 3(3,0)  
**Linear and Nonlinear Waves II.** PR: 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.
- MAP 6520** AS 3(3,0)  
**Fractal Image Compression.** PR: MTG 4302, MAA 5416, or MAP 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.
- MAP 6938** AS 3(3,0)  
**Multivariate Splines and Surface Fitting.** PR: MAP 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.
- MAP 7119** AS 3(3,0)  
**Advanced Nonlinear Dynamics.** PR: MAP 6118 or C.I. Solitons, inverse scattering transform, breakdown or integrability, analytic structure of dynamical systems, fractal aspects of turbulence.
- MAP 7357** AS 3(3,0)  
**Advanced Topics in Partial Differential Equations.** PR: MAP 6356 or C.I. Variational techniques, perturbation and asymptotic methods, hyperbolic systems, Lie group methods, parabolic, elliptic, or free boundary value problems, spectral analysis.



MAS 5145	AS 3(3,0)	MVS 5451	AS 2(1,0)
Advanced Linear Algebra and Matrix Theory. PR: MAS 3105. LU and LDU decompositions, linear spaces, inner product spaces, systems of linear equations, eigenvalues and canonical forms, variational principles and applications.		Violin V	
MAS 5311	AS 3(3,0)	MVS 5452	AS 2(1,0)
Abstract Algebra with Applications. PR: MAS 4301 or undergraduate abstract algebra. Group actions, the class equation, Sylow Theorems, polynomial rings, Euclidian domains, principal ideal domains, field extensions, modules and semi-simple rings.		Viola V	
MAS 6463	AS 3(3,0)	MVS 5453	AS 2(1,0)
Doubly Stochastic Measures. PR: MAP 6506, MAP 5416, MAP 6111, MAP 6110, or C.I. Doubly stochastic matrices, Birkhoff's theorem, double stochastic measures, Douglas-Lindentrauss theorem, copulas, Frechet bounds, dependence of random variables, Markov operators.		Cello V	
MMC 6603	AS 3(3,0)	MVS 5454	AS 2(1,0)
Communication and Society. The importance of the mass media, their structure, role, and problems.		Bass V	
MMC 6612	AS 3(3,0)	MVS 5455	AS 2(1,0)
Communication and Government. A study of the relationship between the media and government.		Harp V	
MUS 5526	AS 3 (3,0)	MVS 5456	AS 2(1,0)
Music and Technology. PR: Graduate status. The emergence of technology in music including MIDI, CDROM, and the high-tech music classroom.		Guitar V	
MUT 5325	AS 3(3,0)	MVV 5451	AS 2(1,0)
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.		Voice V	
MVB 5451	AS 2(1,0)	MVW 5451	AS 2(1,0)
Trumpet V		Flute V	
MVB 5452	AS 2(1,0)	MVW 5452	AS 2(1,0)
French Horn V		Oboe V	
MVB 5453	AS 2(1,0)	MVW 5453	AS 2(1,0)
Trombone V		Clarinet V	
MVB 5454	AS 2(1,0)	MVW 5454	AS 2(1,0)
Baritone V		Bassoon V	
MVB 5455	AS 2(1,0)	MVW 5455	AS 2(1,0)
Tuba V		Saxophone V	
MVK 5451	AS 2(1,0)	PCB 5045C	AS 4(3,2)
Piano V		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.	
MVK 5453	AS 2(1,0)	PCB 5046C	AS 5(3,4)
Organ V		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.	
MVO 5250	AS 1(1,0)	PCB 5326C	AS 5(3,2)
Advanced Secondary Instruction. PR: Graduate standing and C.I. Advanced instructional techniques on a secondary instrument or in voice. May be repeated for credit.		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.	
MVP 5451	AS 2(1,0)	PCB 5485	AS 3(3,0)
Percussion V		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.	
		PCB 6049	AS 2(2,0)
		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.	
		PCB 6365	AS 3(3,0)
		Environmental Physiology. PR: Physiology and ecology or C.I. The effects of major environmental factors on the physiology of plants and animals.	

- PCB 6585C** AS 5(3,6)  
Advanced Genetics. PR: PCB 3063 or C.I. Recent advances in genetics, stressing molecular and developmental trends.
- PCB 6675C** AS 4(3,2)  
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.
- PCB 6721** AS 3(3,0)  
Comparative Animal Physiology. PR: An undergraduate course in animal physiology or equivalent. Comparison of structural and functional adaptations of animal organ systems. Emphasis upon maximization of fitness under given environmental conditions.
- PHY 5015C** AS 3(2,2)  
Physics For Teachers. PR: C.I. Hands-on lecture-lab course. Dynamics, electricity, magnetism, optics, nuclear radiation.
- PHY 5081C** AS 1(0.5,1.5)  
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.
- PHY 5100** AS 1(1,0)  
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.
- PHY 5200C** AS 1(0.5,1.5)  
Newtonian Mechanics for Teachers. PR: C.I. A lab, lecture, demonstration course studying selected topics in classical mechanics.
- PHY 5300C** AS 1(0.5,1.5)  
Electricity for Teachers. PR: C.I. Circuits, multimeters, oscilloscopes, circuit elements.
- PHY 5302C** AS 1(0.5,1.5)  
Electromagnetism for Teachers. PR: C.I. Gauss' Law, Biot-Savart Law, Ampere's Law, Faraday's Law, Lenz's Law; motors, generators, AC circuits, and Maxwell's equations.
- PHY 5346** AS 3(3,0)  
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.
- PHY 5401C** AS 1(0.5,1.5)  
Optics for Teachers. PR: C.I. Geometrical and physical optics, spectrometers and lasers.
- PHY 5431** AS 3(3,0)  
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.
- PHY 5446** AS 3(3,0)  
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.
- PHY 5455** AS 3(3,0)  
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.
- PHY 5465C** AS 1(0.5,1.5)  
Wave Motion for Teachers. PR: C.I. Water waves, waves on strings, sound and vibrations.
- PHY 5500C** AS 1(0.5,1.5)  
Thermal Physics for Teachers. PR: C.I. Engines, heat pumps, kinetic theory, phase changes, radiation, weather.
- PHY 5524** AS 3(3,0)  
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 finite temperature. Ensemble theory, partition functions. Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics.
- PHY 5601** AS 1(1,0)  
Quantum Physics for Teachers. PR: C.I. Hydrogen atom, diatomic molecules, heat capacity transition rates.
- PHY 5606** AS 3(3,0)  
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.
- PHY 5933** AS 3(3,0)  
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.
- PHY 6246** AS 3(3,0)  
Classical Mechanics. PR: PHY 5240 or C.I. Variational principles. Lagrange, Hamiltonian, and Poisson bracket formulations of mechanics. Hamilton's principle of least action. Hamilton-Jacobi theory. Perturbation theory. Continuous systems. Chaos.
- PHY 6347** AS 3(3,0)  
Electrodynamics II. PR: PHY 5346 or C.I. Dynamics of charged particles in electromagnetic fields. Antennas; radiation by moving charges; magnetohydrodynamics; multipole radiation and electrostatics of materials.
- PHY 6353** AS 3(3,0)  
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.
- PHY 6355** AS 3(3,0)  
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.



- PHY 6434** AS 3(2.5, 0.5)  
**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.
- PHY 6435** AS 3(3,0)  
**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 and solutions.
- PHY 6447** AS 3(3,0)  
**Quantum Optics.** PR: PHY 5606, PHY 5346, PHY 5446. Semiclassical treatment of light/matter interactions (quantized atomic states plus Maxwell's equations). Density matrix theory, coherent optical transients, pulse propagation.
- PHY 6448** AS 3(3,0)  
**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.
- PHY 6624** AS 3(3,0)  
**Quantum Mechanics II.** PR: PHY 5606 or C.I. Time dependent perturbation theory, exchange symmetry, Dirac Equation, second quantization, and scattering theory.
- PHY 6667** AS 3(3,0)  
**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.
- PSY 6939** AS 1(0,1)  
**Research Planning Seminar II.** PR: PSY 6938. Clinical graduate student continued progress on thesis proposal formulation under faculty supervision.
- PHZ 5150C** AS 1(0.5,1.5)  
**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.
- PHZ 5301C** AS 1(0.5,1.5)  
**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.
- PHZ 5304** AS 3(3,0)  
**Nuclear and Particle Physics.** PR: PHY 4604 or C.I. Particles and nuclei, symmetries and conservation laws, interactions, models.
- PHZ 5405** AS 3(3,0)  
**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.
- PHZ 5505** AS 3(3,0)  
**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.
- PHZ 5600** AS 1(1,0)  
**Special Relativity for Teachers.** PR: C.I. Length contraction, time dilation, simultaneity, conservation of mass-energy, conservation of momentum, Compton scattering.
- PHZ 6115** AS 3(3,0)  
**Theoretical Methods.** Basic mathematical methods applicable to all branches of physics.
- PHZ 6156** AS 3(3,0)  
**Advanced Computational Physics.** PR: PHZ 3151 or C.I. Computational methods applied to the solution of advanced problems in many branches of physics.
- PHZ 6204** AS 3(3,0)  
**Atomic and Molecular Spectroscopy.** PR: PHY 6624 or 6447. Atomic structure, LS and jj coupling, diatomic molecular spectra, anharmonic oscillator, polyatomic molecular spectra, normal modes of vibration, dipole selection rules, Franck-Condon principle, spectroscopic techniques.
- PHZ 6234** AS 3(3,0)  
**Atomic Physics.** PR: PHY 6624 or 6447. Brief review of spectroscopy, photoionization, inner shell processes, Auger effect, atom-atom collisions, electron-atom collisions, spin polarization.
- PHZ 6424** AS 3(3,0)  
**Optical Properties of Solids.** PR: PHY 5431, PHY 5606, PHY 5346. Interband transitions, free carriers, excitons, plasmas in metals and semiconductors; k.p. theory, low dimensional structures, dynamic nonlinear interactions, multiphoton absorption.
- PHZ 6425** AS 3(3,0)  
**Advanced Condensed Matter Physics.** PR: PHY 6624, PHZ 5405. Many-body techniques in condensed matter physics.
- POS 6045** AS 3(3,0)  
**Seminar in American National Politics.** Examines major aspects of the American system, including mass behavior, public opinion, and political institutions.
- POS 6324** AS 3(3,0)  
**Women and Public Policy.** PR: Graduate standing. Analyzes U.S. public policies with differential impact on women, including policies regarding employment, family, health, reproduction, and sexuality. Strong theoretical emphasis.
- POS 6746** AS 3(3,0)  
**Quantitative Methods in Political Research.** PR: C.I. Methods of model building and research design, including conceptualization and measurement of political variables; techniques of data collection and quantitative analysis; and computer usage.
- POS 6938** AS 3(3,0)  
**Special Topics/Political Analysis.** This course title covers all political analysis special topics courses which are not listed in the catalog with a course number. May be repeated for credit when content is different.
- POT 6007** AS 3(3,0)  
**Seminar in Political Theory.** An examination of analytic and normative theories of politics and society, using selected topics as a substantive focus.



- 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 or technical report.
- PSY 6938** AS 1(1,0)  
**Research Planning Seminar I.** PR: Enrollment in graduate program. Clinical graduate student initiation of thesis proposal formulation under faculty supervision.
- 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 6007** 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.
- PUP 6938** 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 5506** 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.



- SPS 6175** AS 2(2,1)  
**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.
- SPW 5825** AS 3(3,0)  
**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.
- SPW 6XXX** AS 3(3,0)  
**Medieval Spanish Literature.** An intensive study of the major genres of the period. Emphasis on selected works by major writers.
- SPW 6XXX** AS 3(3,0)  
**Golden Age Prose.** A study of the major prose works of the Spanish Golden Age.
- SPW 6217** AS 3(3,0)  
**Spanish American Prose I.** A study of the principal characteristics of Spanish American prose from Colonial times to post-independence.
- SPW 6218** AS 3(3,0)  
**Spanish American Prose II.** A study of the principal characteristics of Spanish American prose from modernism to the present.
- SPW 6269** AS 3(3,0)  
**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, Clarin, and Pardo Bazan.
- SPW 6306** AS 3(3,0)  
**Spanish American Drama I.** An analysis of dramatic texts from Pre-Columbian times to the end of the nineteenth century.
- SPW 6307** AS 3(3,0)  
**Spanish American Drama II.** An analysis of Spanish American drama from modernism to the present.
- SPW 6315** AS 3(3,0)  
**Golden Age Drama.** An analysis of the meaning and artistic values of selected theatrical works of the Spanish Golden Age.
- SPW 6356** AS 3(3,0)  
**Spanish American Poetry.** A study of the different movements and their contribution to Spanish American poetry.
- SPW 6585** AS 3(3,0)  
**Contemporary Peninsular Literature.** A study of the major writers and literary movements from the Generation of 1927 to the present.
- SPW 6725** AS 3(3,0)  
**The Generation of 98.** An analysis of the major works of writers of the Generation of 98 such as Ganimet, Unamuno, Baroja, Azorin, and Machado.
- STA 5205** AS 3(3,0)  
**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.
- STA 5206** AS 3(3,0)  
**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.
- STA 5505** AS 3(3,0)  
**Categorical Data Methods.** PR: STA 4163 or STA 5206. Considers discrete probability distributions, contingency tables, measures of association and advanced methods including loglinear modeling, logistic regression, McNemar's Test, Mantel-Haenszel tests.
- STA 5825** AS 3(3,0)  
**Stochastic Processes and Applied Probability Theory.** PR: STA 4321. Conditional probability and conditional expectations, sequences of random variables, branching processes, random walks, Markov chains, recurrent events, renewal theory, queueing theory, and simple stochastic processes.
- STA 5940** AS 1(1,0)  
**Statistical Advice for Researchers.** PR: C.I. Discussion of student-supplied statistical problem, data sources, sampling techniques, computer package usage, analysis, interpretation.
- STA 6106** AS 3(3,0)  
**Statistical Computing I.** Computer systems, approximating probabilities/percentiles, random number generation, linear model computations, density estimation.
- STA 6107** AS 3(3,0)  
**Statistical Computing II.** PR: STA 6329 (or knowledge of matrix algebra), STA 6236 (or knowledge of linear regression). Linear regression: stepwise regression, Gauss-Jordan pivots, stand-up regression, residual analysis. Nonlinear regression: Gauss-Newton algorithm, derivative-free methods, constraints, iteratively reweighted least squares. General maximum likelihood methods: Newton-Raphson and Fisher-scoring, conjugate gradient and quasi-Newton methods, EM algorithm.
- STA 6207** AS 3(3,0)  
**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.
- STA 6226** AS 3(3,0)  
**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.
- STA 6236** AS 3(3,0)  
**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.
- STA 6246** AS 3(3,0)  
**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.



- STA 6326** AS 3(3,0)  
**Theoretical Statistics I.** PR: MAC 3313. Distribution of random variables, conditional probability and independence, some special distributions, distributions of functions of random variables, limiting distributions.
- STA 6327** AS 3(3,0)  
**Theoretical Statistics II.** PR: STA 6326. Point estimation, sufficient statistics, completeness, exponential family, maximum likelihood estimators, statistical hypotheses, best tests, likelihood ratio tests, noncentral distributions.
- STA 6329** AS 3(3,0)  
**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.
- STA 6507** AS 3(3,0)  
**Nonparametric Statistics.** PR: STA 4321. Theory and methods for one and two sample problems; one and two way layouts; independence problems; regression problems.
- STA 6662** AS 3(3,0)  
**Statistical Methods for Industrial Practice.** Variance components, PCRs, autocorrelation structures, charting, EVOP, design strategies, calibration, standards, and associated awards.
- STA 6707** AS 3(3,0)  
**Multivariate Statistical Methods.** PR: MAS 3105, STA 4163, and STA 4322. Concepts of statistical relationships among several variables and methods for inference. Multivariate normal, Hotelling's  $T^2$ , multivariate analysis of variance, canonical correlations and principal components.
- STA 6857** AS 3(3,0)  
**Applied Time Series Analysis.** PR: STA 4322, MAS 3105. Stationarity, autocorrelation, moving averages and autoregressive processes. Non-stationary time series. Identification and estimation. Forecasting.
- SYA 5625** AS 3(3,0)  
**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.
- SYA 5937** AS 3(3,0)  
**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.
- SYA 6126** AS 3(3,0)  
**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.
- SYA 6305** AS 3(3,0)  
**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.
- SYA 6455** AS 3(2,2)  
**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.
- SYA 6656** AS 3(3,0)  
**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.
- SYA 6657** AS 3(3,0)  
**Program Design and Evaluation.** PR: C.I. Techniques of system and policy assessment, evaluation, and design. Determination of consequences and implications of policies and practices in applied settings.
- SYO 6515** AS 3(3,0)  
**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.
- SYP 5526** AS 3(3,0)  
**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.
- SYP 6515** AS 3(3,0)  
**Deviant Behavior Issues.** PR: C.I. An examination and evaluation of the forms of social deviance, and the organizations designed to respond to them.
- SYP 6546** AS 3(3,0)  
**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.
- TSL 5345** ED 3(3,0)  
**Methods of ESOL Teaching.** Designed to develop understanding, knowledge, and skills of the current methods used in the teaching of ESOL.
- TSL 5525** ED 3(3,0)  
**ESOL Cultural Diversity.** Identifies major cultural groups represented by the LEP population in Florida schools and an understanding of their special needs.
- TSL 6142** AS 3(3,0)  
**Critical Approaches to ESOL.** Emphasis on current research in second language acquisition as it relates to the development of ESOL curriculum and materials.
- TSL 6240** AS 3(3,0)  
**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.
- TSL 6440** AS 3(3,0)  
**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.



- TSL 6540** AS 3(3,0)  
**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.
- TSL 6640** AS 3(3,0)  
**Research in Second Language.** Focuses on research into language learning processes which serves as a knowledge base for effective teaching of language-minority students.
- ZOO 5456C** AS 4(2,6)  
**Ichthyology.** PR: ZOO 3303C or C.I. Introduction to the biology of the fishes, their classification, evolution, and life histories.
- ZOO 5463C** AS 4(2,6)  
**Herpetology.** PR: 6 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution, and life histories.

- ZOO 5475C** AS 4(2,6)  
**Ornithology.** PR: 6 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution, and life histories.
- ZOO 5486C** AS 4(2,6)  
**Mammalogy.** PR: 6 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution, and life histories.
- ZOO 5815** AS 3(3,0)  
**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.

# 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 Phone: (407) 632-0098
J. H. Potts	Daytona Campus Coordinator Phone: (904) 255-7423, ext. 4071

## 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. Salter 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. Kelliher, 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. Zarzeski, Ph.D.	Assistant Professor

### Economics

R. A. Hofler, Ph.D.	Chair and Professor
W. W. McHone, Ph.D.	Professor
F. A. Raffa, Ph.D.	Professor
B. Rungeling, Ph.D.	Professor
B. M. Braun, Ph.D.	Associate Professor



A. E. Day, Ph.D.	Associate Professor
W. E. Gibbs, Ph.D.	Associate Professor
D. A. Hosni, Ph.D.	Associate Professor
T. L. Martin, Ph.D.	Associate Professor
R. L. Pennington, Ph.D.	Assistant Dean and Associate Professor
M. Soskin, Ph.D.	Associate Professor
K. R. White, Ph.D.	Associate Professor
J. A. Xander, Ph.D.	Associate Professor
R. Agarwal, Ph.D.	Assistant Professor
C. Co, Ph.D.	Assistant Professor
C. Gallett, Ph.D.	Assistant Professor
J. List, Ph.D.	Assistant 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. Modani, 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, D.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

M. Arnold, Ph.D. ....	Assistant Professor
K. L. Ellis-Reynolds, Ph.D. ....	Assistant Professor
J. I. Ganesh, Ph.D. ....	Assistant Professor
M. Luckett, Ph.D. ....	Assistant Professor
R. Pimentel, Ph.D. ....	Assistant Professor

## Admission to Master's Programs

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.

## Academic Standards

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			33 Semester Hours
ACG	5005	Financial and Managerial Accounting Concepts	3 hours
BUL	5125	Legal and Social Environment of Business	3 hours
ECO	5005	Economic Concepts	3 hours
ECO	5415	Statistics for Business and Economics	3 hours
FIN	5405	Financial Concepts	3 hours
ISM	5021	Introduction to Management Information Systems	3 hours
MAC	3233	Concepts of Calculus	3 hours
MAN	5050	Management Concepts	2 hours
MAN	5501	Introduction to Production/Operations Management	2 hours
MAR	5055	Marketing Concepts	3 hours

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			24 Semester Hours
ACG	6425	Managerial Accounting Analysis	3 hours
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
MAN	6721	Business Policy and Responsibility	3 hours
MAR	6816	Marketing Policy	3 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

9 Semester Hours

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:

FIN	6475	Business Evaluation
GEB	6115	Entrepreneurship
MAN	6299	Creative and Innovative Management
MAR	5941	Small Business Consulting

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.

FIN	6425	Asset Management
FIN	6475	Business Valuation
FIN	6506	Investments
FIN	6507	Seminar in Investments
FIN	6627	International Financial Management

#### Hospitality Management

An M.B.A. specialization in hospitality management requires a minimum of nine hours of graduate electives chosen from the list below.

FSS	6365	Management of Food Service Operations
HFT	6240	Managing Hospitality and Guest Services Organizations
HFT	6251	The Management of Lodging Operations
HFT	6710	International Tourism Management

#### 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.

ACG	6255	International and Multinational Accounting
ECO	6705	Seminar in International Economics
FIN	6627	International Financial Management
INR	6007	Seminar in International Politics



**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.

MAR	6077	Contemporary Marketing Problems
MAR	6406	Sales Management and Control
MAR	6456	Advanced Industrial Marketing Management
MAR	6616	Marketing Research Methods
MAR	6845	Services Marketing

**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.

ECP	6605	Economics of Urban and Regional Problems
FIN	6314	Management of Financial Institutions
FIN	6425	Asset Management
FIN	6475	Business Valuation
FIN	6506	Investments

**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 that 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			30 Semester Hours
Required Courses			15 Semester Hours
ACG	5346	Cost Accounting II	3 hours
ACG	5636	Advanced Auditing Topics	3 hours
ACG	6405	Accounting Information Systems II	3 hours
ACG	6805	Seminar in Accounting Theory	3 hours
TAX	5015	Federal Income Tax II	3 hours

**Restricted Electives**

Electives from the categories below must be selected with advisor approval.

Two courses from the following:			6 Semester Hours
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:			9 Semester Hours
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** **58 Semester Hours**

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.

ACG	3101	Intermediate Financial Accounting I	3 hours
ACG	3111	Intermediate Financial Accounting II	3 hours
ACG	3361	Cost Accounting I	3 hours
ACG	3501	Financial Accounting for Governmental and Nonprofit Organizations	3 hours
ACG	4203	Advanced Accounting	3 hours
ACG	4401	Accounting Systems	3 hours
ACG	4651	Auditing	3 hours
ACG	5005*	Financial and Managerial Accounting Concepts	3 hours
BUL	3320	Business Law I	3 hours
BUL	3321	Business Law II	3 hours
CGS	3000	Computer Fundamentals for Business Applications	3 hours
ECO	3401	Mathematical Economics	3 hours
ECO	3411	Quantitative Methods and Business Decision Analysis	3 hours
ECO	5005*	Economic Concepts	3 hours
ECO	5415*	Statistics for Business and Economics	3 hours
FIN	5405*	Financial Concepts	3 hours
MAN	4720	Business Policy	3 hours



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-2964 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

Required Courses			18 Semester Hours
TAX	5015	Federal Income Tax II	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 Taxation of Estates, Gifts, and Trusts	3 hours
TAX	6845	Seminar in Tax Planning	3 hours

#### Restricted Elective Courses

12 Semester Hours

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

58 Semester Hours

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** **30 Semester Hours**  
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** **12 Semester Hours**  
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** **9 Semester Hours**

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** **12-21 Semester Hours**  
A minimum of twelve additional hours of economics electives is required.

**Non-Economics Electives** **0-9 Semester Hours**  
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** **6 Semester Hours**  
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

INR	6007	Seminar in International Politics
PUP	6058	Issues in International Public Policy

#### 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	6417	Human Resource Management

### Doctor of Philosophy in Business Administration

Contact ..... Assistant Dean's Office  
BA 240, Phone: (407) UCF-2987

**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**

**30 Semester Hours**

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**

**15 or 16 Semester Hours**

Students must select a major concentration from Accounting with a 16-hour minimum or Finance with a 15-hour minimum.

**Accounting Major**

**16 Semester Hours**

ACG	7157	Seminar in Financial Accounting Research	3 hours
ACG	7887	Accounting Research Forum (Workshop, 1 hour credit per semester)	4 hours
ACG	7915	Directed Research in Accounting	3 hours
Two other seminars from the following (3 hours each):			6 hours
ACG	7399	Seminar in Management Accounting Research	
ACG	7699	Seminar in Auditing Research	
TAX	7066	Seminar in Doctoral Tax Research	

**Finance Major**

**15 Semester Hours**

FIN	7811	Corporate Finance Theory	3 hours
FIN	7813	Seminar in Financial Institutions and Markets	3 hours
FIN	7816	Investment Theory	3 hours
FIN	7915	Directed Research in Finance	3 hours
FIN	7930	Seminar in Finance	3 hours

**Minor Concentration**

**9 Semester Hours**

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**

**15 Semester Hours**

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):

FIN	7807	Corporate Finance Theory
GEB	7910	Research Methods in Business
QMB	7565	Applied Business Statistics

The remaining nine semester hours (in addition to the minor concentration) typically are selected from offerings in the following disciplines:

Accounting	Mathematics
Computer Science	Psychology
Economics	Sociology
Engineering	Statistics
Management Science	

#### 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.

6-24 Semester Hours

75-94 Semester Hours

#### 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, EOQ analysis, decentralization, and quantitative decision analysis.
- ACG 5506** 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 5346, 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)  
**Seminar in Behavioral Accounting Research.** PR: Admission to doctoral program, ACG 7157, and C.I. Extensive study of the theoretical aspects and empirical literature related to accounting-based judgement/decision processes and the behavioral implications of accounting.
- 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)  
**Accounting 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.



<b>ACG 7915</b>	<b>BA 3(3,0)</b>	<b>Directed Research in Accounting.</b> 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.
<b>ACG 7917</b>	<b>BA 3(3,0)</b>	<b>Seminar in Research Methods in Accounting.</b> PR: Admission to doctoral program or C.I. Extensive coverage and critical analysis of accounting theory literature and research methods in accounting.
<b>BUL 5125</b>	<b>BA 3(3,0)</b>	<b>Legal and Social Environment of Business.</b> 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.
<b>ECO 5005</b>	<b>BA 3(3,0)</b>	<b>Economic Concepts.</b> PR: Acceptance into the graduate program. Introduction to micro- and macro-economic analysis.
<b>ECO 5415</b>	<b>BA 3(3,0)</b>	<b>Statistics for Business and Economics.</b> 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.
<b>ECO 6115</b>	<b>BA 3(3,0)</b>	<b>Economic Analysis of the Firm.</b> 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.
<b>ECO 6206</b>	<b>BA 3(3,0)</b>	<b>Aggregate Economic Conditions and Analysis.</b> PR: Graduate standing and ECO 5005 or equivalent. An analysis of aggregate economic conditions including the determination of output, employment, and income levels.
<b>ECO 6226</b>	<b>BA 3(3,0)</b>	<b>Seminar in Money, Banking, and Monetary Policy.</b> PR: Graduate standing and ECO 5005 or equivalent. Study of the structural foundation and policy-making activities of the monetary authorities.
<b>ECO 6266</b>	<b>BA 3(3,0)</b>	<b>Business Cycles and Forecasting.</b> 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.
<b>ECO 6305</b>	<b>BA 3(3,0)</b>	<b>History of Economic Thought.</b> PR: Graduate standing and ECO 5005 or equivalent. A study of the leading ideas of the major contributors to the development of economic thought.
<b>ECO 6416</b>	<b>BA 3(3,0)</b>	<b>Statistical Methods for Business Decisions.</b> 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.
<b>ECO 6424</b>	<b>BA 3(3,0)</b>	<b>Econometrics.</b> 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.
<b>ECO 6505</b>	<b>BA 3(3,0)</b>	<b>Public Finance and Fiscal Policy.</b> 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.
<b>ECO 6705</b>	<b>BA 3(3,0)</b>	<b>Seminar in International Economics.</b> PR: Graduate standing and ECO 6115 or equivalent. An inquiry into the theory of international trade and finance, commercial policy, and economic integration.
<b>ECP 6205</b>	<b>BA 3(3,0)</b>	<b>Labor Economics.</b> PR: Graduate standing and ECO 6115 or equivalent. An investigation into the nature and function of the labor markets, with specific concern for both institutional and noninstitutional imbalance.
<b>ECP 6405</b>	<b>BA 3(3,0)</b>	<b>Industrial Organization and Performance.</b> PR: Graduate standing and ECO 6115. A study of the performance of various types of market structure and practice relative to price and efficiency.
<b>ECP 6605</b>	<b>BA 3(3,0)</b>	<b>Economics of Urban and Regional Problems.</b> PR: Graduate standing and ECO 6115. Economic analysis of the problems arising from and associated with the growth and development of cities and regions.
<b>ECP 6705</b>	<b>BA 3(3,0)</b>	<b>Managerial Economics.</b> 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.
<b>ECS 6006</b>	<b>BA 3(3,0)</b>	<b>Seminar in Comparative Economic Systems.</b> 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.
<b>ECO 6015</b>	<b>BA 3(3,0)</b>	<b>Economic Development.</b> 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.
<b>FIN 5405</b>	<b>BA 3(3,0)</b>	<b>Financial Concepts.</b> 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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**Asset Management and Financial Decisions.** PR: Graduate standing and FIN 6406. Considers the interrelated decision-making process of asset allocations, corporate fundraising, dividend policies, and market maximization.
- FIN 6475** BA 3(3,0)  
**Business Valuation.** PR: Graduate standing and FIN 6406. Theory and practice of estimating the value of small, closely held businesses.
- FIN 6506** BA 3(3,0)  
**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** BA 3(3,0)  
**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 6627** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**Seminar in Finance.** PR: FIN 7813, FIN 7816, and C.I. Study of private sector financial theory, policy, empires, and decision making.
- FSS 6365** BA 3(3,0)  
**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** BA 3(3,0)  
**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 6365** BA 3(3,0)  
**International Business Environment.** PR: Graduate standing, MAN 5050, MAR 5055, ACG 5005, FIN 5405, and ECO 5005. Extensive coverage of international business environment with emphasis on the functional operation of multinational firms.
- GEB 7910** BA 3(3,0)  
**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.
- GEB 7932** BA 3(3,0)  
**Business Ph.D. Foundations.** PR: Admission to the Ph.D. Program. A multidisciplinary introduction to doctoral-level study of business administration.
- GEB 7937** BA 3(3,0)  
**Seminar in Accounting, Economics, and Finance I.** PR: Admission to Ph.D. program, Ph.D. Foundation. An integrative Ph.D. introductory seminar in accounting, economics, and finance.
- GEB 7938** BA 3(3,0)  
**Seminar in Accounting, Economics, and Finance II.** PR: GEB 7937. An integrative Ph.D. introductory seminar in accounting, economics, and finance.
- HFT 6240** BA 3(3,0)  
**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** BA 3(3,0)  
**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.



- HFT 6710** BA 3(3,0)  
**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.
- ISM 5021** BA 3(3,0)  
**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.
- ISM 6121** BA 3(3,0)  
**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.
- ISM 6305** BA 3(3,0)  
**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.
- ISM 6395** BA 3(3,0)  
**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.
- MAN 5050** AS 2(2,0)  
**Management Concepts.** PR: Acceptance into the graduate program. Theory and practice of managing organizations to include planning, organizational theory, human behavior, and control.
- MAN 5501** AS 2(2,0)  
**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.
- MAN 6055** BA 3(3,0)  
**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.
- MAN 6075** BA 3(3,0)  
**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.
- MAN 6121** BA 3(3,0)  
**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.
- MAN 6156** BA 3(3,0)  
**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.
- MAN 6158** BA 3(3,0)  
**Human Resources Management Issues.** PR: MAN 6156 or C.I. A course providing advanced study in selected topics of current interest in human resource management.
- MAN 6245** BA 3(3,0)  
**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.
- MAN 6296** BA 3(3,0)  
**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.
- MAN 6299** BA 3(3,0)  
**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.
- MAN 6305** BA 3(3,0)  
**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.
- MAN 6515** BA 3(3,0)  
**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.
- MAN 6546** BA 3(3,0)  
**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.
- MAN 6547** BA 3(3,0)  
**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.
- MAN 6565** BA 3(3,0)  
**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.
- MAN 6721** BA 3(3,0)  
**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-



rection of a business firm from the integrated viewpoint of a CEO.

**MAN 7776** MA 3(3,0)  
**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** MA 3(3,0)  
**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** BA 3(3,0)  
**Marketing Concepts.** PR: Acceptance into the graduate program. Study of functions, institutions, and basic marketing of goods in the U.S. economy.

**MAR 5941** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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 6456** BA 3(3,0)  
**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 6616** BA 3(3,0)  
**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 6816** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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** BA 3(3,0)  
**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 5015** BA 3(3,0)  
**Federal Income Tax II.** PR: ACG 3111, TAX 4001, and meet School admission requirements. Concepts and methods of determining taxable income for partnerships and corporations and selected topics.

**TAX 6065** BA 3(3,0)  
**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** BA 3(3,0)  
**Seminar in the Taxation of Corporations and Shareholders.** PR: TAX 5015, graduate standing, and all foundation courses for the accounting program. Federal taxation relating to corporate organization, distributions, liquidations, accumulations, and reorganizations.

**TAX 6205** BA 3(3,0)  
**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 6405** BA 3(3,0)  
**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; taxation of gifts and trusts.

**TAX 6845** BA 3(3,0)  
**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** BA 3(3,0)  
**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. Lange, 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. Sciortino, 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. Mealor, Ph.D.	Professor
G. W. Orwig, Ed.D.	Interim Chair and Professor
R. A. Rothberg, Ed.D.	Professor
C. R. Balado, 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. Creamer, Ed.D.	Assistant Professor
G. Gunter, Ph.D.	Assistant Professor
J. R. Lee, Ed.D.	Assistant Professor
D. Shepard-Tew, Ph.D.	Assistant Professor



**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. ....	Associate Professor
W. Taylor, M.D. ....	Associate 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

**Instructional Systems**

- Mathematics Education
- Music Education
- Physical Education
- Reading Education
- Science Education
- Social Science Education
- Vocational Education

**Doctoral Degrees**

- Educational Leadership
- Curriculum and Instruction

## 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.



**Program of Study**

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.

**Performance Standards**

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.

**Culminating Experience**

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.

**Thesis, Research Report, and Non-thesis Options**

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.

<b>Area A: Core</b> (some programs may vary slightly)		<b>15 Semester Hours</b>
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 <u>OR</u>	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

The Education building





## 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.

<b>Area A: Core</b>		<b>15 or 21 Semester Hours</b>
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.

<b>Area A: Core</b>		<b>15 Semester Hours</b>
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 6236	Principles of Instruction and Learning	3 hours

**Select One:**

EDF 6608	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)**

<b>Area C: Studio</b>		<b>6 Semester Hours</b>
Two studio courses (4000- or 5000-level ART courses approved by advisor)		
<b>Area D: Internship</b>		<b>9 Semester Hours</b>
ARE 6946	Graduate Internship	3 hours
ARE 6946	Graduate Internship	6 hours
<b>Corequisites:</b>		
ARE 4351	Methodology of Teaching K-12 Art Education I	3 hours
ARE 4352	Methodology of Teaching K-12 Art Education II	3 hours

Minimum undergraduate specialization requirements must be completed as pre- or co-requisites. 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

**Area A: Core**

9 or 12 Semester Hours

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EGC	6909	Research Report or 2 electives	2, 1 or 6 hours

**Area B: Specialization**

30 Semester Hours

MHS	5005	Introduction to the Counseling Profession	3 hours
MHS	6220	Individual Psychoeducational Testing I	3 hours
SDS	6330	Career Development	3 hours
MHS	6400	Theories of Counseling and Personality	3 hours
MHS	6401	Techniques of Counseling	3 hours
SDS	6411	Counseling with Children and Adolescents	3 hours
SDS	6620	Organization and Administration of School Counseling Programs	3 hours
MHS	6500	Group Procedures and Theories in Counseling	3 hours
MHS	6780	Consultation, Staffing, and Case Management/Ethical Legal Issues	3 hours
MHS	6420	Counseling Special Populations	3 hours

**Area C: Professional Clinical Experience**

9 Semester Hours

MHS	6800	Counseling Practicum	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, School Counseling

Minimum hours required for M.A.

60 Semester Hours

**Area A: Core**

9 or 12 Semester Hours

EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EGC	6909	Research Report or 2 approved electives	2, 1 or 6 hours

**Area B: Specialization**

30 Semester Hours

MHS	5005	Introduction to the Counseling Profession	3 hours
MHS	6220	Individual Psychoeducational Testing I	3 hours
SDS	6330	Career Development	3 hours
MHS	6400	Theories of Counseling and Personality	3 hours
MHS	6401	Techniques of Counseling	3 hours
SDS	6411	Counseling with Children and Adolescents	3 hours
SDS	6620	Organization and Administration of School Counseling Programs	3 hours
MHS	6500	Group Procedures and Theories in Counseling	3 hours
MHS	6780	Consultation, Staffing, and Case Management/Ethical and Legal Issues	3 hours
MHS	6420	Counseling Special Populations	3 hours

**Area C: Professional Clinical Experience**

9 Semester Hours

MHS	6800	Counseling Practicum	3 hours
MHS	6830	Counseling Internship I	3 hours
MHS	6830	Counseling Internship II	3 hours

<b>Area D: Required DOE Certification</b>	<b>9 Semester Hours</b>
<b>Foundations: Select one of the following:</b>	
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
<b>General Methods (Approved by advisor)</b>	<b>3 Semester Hours</b>

### 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.

<b>Area A: Core</b>	<b>9 or 12 Semester Hours</b>
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 6 hours

<b>Area B: Specialization</b>	<b>36 Semester Hours</b>
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**

<b>Area D: Professional Clinical Experiences</b>	<b>12 Semester Hours</b>
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**

<b>Area A: Core</b>	<b>9 or 12 Semester Hours</b>
EDF 6481 Fundamentals of Graduate Research in Education	3 hours
<b>Select One Option:</b>	
<b>Option A - Research Report</b>	
EDF 6401 Statistics for Educational Data OR	
EDH 6065 History and Philosophy of Higher Education	3 hours
EGC 6909 Research Report	2,1 hours
<b>Option B - Non-Thesis (3 hours of elective approved by advisor)</b>	
EDF 6401 Statistics for Educational Data	3 hours
EDH 6065 History and Philosophy of Higher Education	3 hours



<b>Area B: Specialization</b>			<b>24 Semester Hours</b>
SDS	6040	Student Personnel Services in Higher Education	3 hours
SDS	6624	College Community Student	3 hours
EDA	6540	Organization and Administration of Higher Education	3 hours
EDH	6505	Finance in Higher Education	3 hours
MHS	6780	Ethical and Legal Issues	3 hours
SDS	6330	Career Development	3 hours
MHS	6400	Theories of Individual Counseling	3 hours
MHS	6401	Techniques of Counseling	3 hours

**Area C: Electives (Approved by advisor)** **6 or 9 Semester Hours**

**Area D: Professional Field Experience** **9 Semester Hours**

**Option A:**

MHS	6800	Counseling Practicum	3 hours
MHS	6800	Student Affairs Practicum	3 hours
MHS	6830	Student Affairs Internship	3 hours

**Option B: Student Affairs Emphasis**

MHS	6800	Counseling Practicum	3 hours
MHS	6800	Student Affairs Practicum	3 hours
MHS	6830	Student Affairs Internship	3 hours

**NOTE:** Courses should be taken in the following sequence: SDS 6040, MHS 6400, 6401, 6800, 6500, 6800, and 6830.

## Educational Leadership

Master's Program Coordinator: ..... M. A. Lynn  
RP 215-D, Phone: (407) 384-2193, e-mail: malynn@ucf1vm.cc.ucf.edu

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. **39 Semester Hours**

**Area A: Core**

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 American Education	3 hours
EDF	6608	Social Factors in American Education	3 hours
EDF	6886	Multicultural Education	3 hours

**Non-Thesis Option:**

EDA	6946	Graduate Internship*	2,1 hours
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**Area B: Specialization** 21 Semester Hours

It is recommended that these courses be taken in the following sequence:

EDA	6061	Organization and Administration of Schools	3 hours
EDA	6260	Educational Systems Planning and Management	3 hours
EDS	6123	Educational Supervisory Practices I	3 hours
EDS	6130	Educational Supervisory Practices II	3 hours
EDA	6232	Legal Aspects of School Operation	3 hours
EDA	6240	Educational Financial Affairs	3 hours
EDA	6931	Contemporary Issues in Educational Leadership	3 hours

**Area C: Program Emphasis** 6 Semester Hours

EDG	6223	Curriculum Theory and Organization**	3 hours
EDG	6253	Curriculum Inquiry**	3 hours

\* Students must have teaching experience to complete the internship.

\*\* Both curriculum courses must be taken at one level (e.g., elementary, middle, high school, or exceptional education). The level must be indicated on the program.

**Master of Arts in Educational Leadership****Minimum hours required for M.A.** 42 Semester Hours**Area A: Core** 15 Semester Hours

EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6155	Lifespan Human Development and Learning	3 hours
EDF	6517	History and Philosophy of American Education <u>OR</u>	3 hours
EDF	6608	Social Factors in American Education	3 hours
EDF	6401	Statistics for Educational Data <u>OR</u>	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EDA	6909	Research Report	2,1 hours

**Area B: Specialization (Approved by advisor)** 9 Semester Hours**Area C: Administration** 18 Semester Hours

It is recommended that these courses be taken in the following sequence:

EDA	6061	Organization and Administration of Schools (required)	3 hours
EDA	6260	Educational Systems Planning and Management	3 hours
EDA	6123	Educational Supervisory Practices I <u>OR</u>	3 hours
EDA	6130	Educational Supervisory Practices II	3 hours
EDA	6232	Legal Aspects of School Operation	3 hours
EDA	6240	Educational Financial Affairs	3 hours
EDA	6931	Contemporary Issues in Educational Leadership (required)	3 hours
EDA		Elective	3 hours

**Master of Education in  
Educational Leadership, Curriculum and Instruction****Minimum hours required for M.Ed.** 33 Semester Hours**Area A: Core** 18 or 21 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 Instruction and Learning	3 hours
EDG	6223	Curriculum Theory and Organization	3 hours
EDF	6517	History and Philosophy of American Education	3 hours
EDG	6909	Research Report or 2 approved electives	2,1 or 6 hours

**Area B: Specialization** 12 Semester Hours

EDG	6046	Contemporary Issues in Education	3 hours
EDS/	6123	Educational Supervisory Practices I	3 hours
EDF	6233	Analysis of Classroom Teaching	3 hours
EDG	6946	Practicum	3 hours

**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.

<b>Area A: Core</b>			<b>15 Semester Hours</b>
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

<b>Area B: Specialization</b>			<b>18 Semester Hours</b>
EDE	6938	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
LAE	6616	Trends in Language Arts Education	3 hours

Select One:

LAE	5415	Children's Literature Elementary Education (If no previous children's literature course)	3 hours
LAE	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:

MAE	6641	Problem Solving and Critical Thinking Skills	3 hours
MAE	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.

<b>Area A: Core</b>			<b>12 or 15 Semester Hours</b>
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
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**Area B: Specialization****24 Semester Hours**

EEC	6406	Guiding and Facilitating Social Competence	3 hours
EEC	5205	Programs in Early Childhood Education	3 hours
EEC	5206	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****15 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
MAE	6909	Research Report or 2 electives	2,1 or 6 hours

**Area B: Specialization****12 Semester Hours**

MAE	4634	Programs in Teaching Mathematics	3 hours
MAE	6517	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)****9 Semester Hours**

MAE	5318	Current Methods in Elementary School Mathematics	3 hours
MAE	6145	Mathematics Curriculum, K-12	3 hours
MAE	6641	Problem Solving and Critical Thinking Skills in Mathematics, K-12	3 hours



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

3 Semester Hours

EDE	6938	Elementary Education Seminar	2 hours
EDE	6938	Elementary Education Seminar	1 hour

#### Area B:

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	6236	Principles of Teaching and Learning	3 hours
		One elective from EDF 6608, EDF 6517, or EDF 6886	3 hours

#### Area C: PR or CR EDE 6938 (2 SH course)

21 Semester Hours

LAE	5319	Methods of Elementary School Language Arts	3 hours
LAE	5415	Children's Literature in Elementary Education	3 hours
MAE	5318	Methods of Elementary School Math	3 hours
SCE	5716	Methods of Elementary School Science	3 hours
RED	5147	Developmental Reading	3 hours
RED	5514	Classroom Diagnosis and Development of Reading Proficiencies (PR: RED 5147)	3 hours
SSE	5113	Methods of Elementary School Social Science	3 hours

#### Area D: Internship

6 Semester Hours

EDE	6946	Graduate Internship	6 hours
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#### Corequisites:

ARE	4313	Art in Elementary Schools	3 hours
HLP	4722	Teaching Elementary School Health and Physical Education	3 hours
MUE	3210	Music in Elementary Schools	3 hours

## 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

12 or 15 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	2,1or 6 hours
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**Area B: Specialization (Approved by advisor)** **21 Semester Hours**

### 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** **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	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	2,1or 6 hours

**Area B: Specialization (Approved by advisor)** **15 or 18 Semester Hours**

**Area C: Internship** **9 Semester Hours**

LAE	6946	Graduate Internship	3 hours
LAE	6946	Graduate Internship	6 hours

## Corequisites:

LAE	4360	English Instructional Analysis	4 hours
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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** **9-12 Semester Hours**

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*	2,1or 6 hours



Area B: Specialization			24 Semester Hours
EEX	6107	Teaching Spoken and Written Language	3 hours
EEX	6612	Methods of Behavioral Management	3 hours
EEX	6226	Assessment and Curriculum Prescriptions for the Exceptional Population	3 hours
EEX	6342	Seminar: Critical Issues in Special Education	3 hours
EEX	6061	Instructional Strategies PreK-6	3 hours
EEX	6065	Instructional Strategies 6-12	3 hours
EEX	6524	Organization and Collaboration in Special Education	3 hours
EEX	6863	Supervised Teaching Practicum or Elective (Approved by Advisor)	3 hours

\* Suggested electives include ELD 6248, EMR 6365, EED 6226, courses in Pre-K Exceptional Education, Gifted Education, or Elementary Education.

## Master of Arts in Exceptional Student Education

Minimum hours required for M.A.

36 Semester Hours

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.

Area A: Core			9-12 Semester Hours
EDF	6481	Fundamentals of Graduate Research in Education	3 hours
EDF	6432	Measurement and Evaluation in Education	3 hours
EEX	6909	Research Report or 2 approved electives	2,1 or 6 hours

Area B: Specialization			27 Semester Hours
EEX	6107	Teaching Spoken and Written Language	3 hours
EEX	6612	Methods of Behavioral Management	3 hours
EEX	6266	Assessment and Curriculum Prescriptions for the Exceptional Population	3 hours
EEX	6342	Seminar: Critical Issues in Special Education	3 hours
EEX	6061	Instructional Strategies PreK-6	3 hours
EEX	6065	Instructional Strategies 6-12	3 hours
EEX	6524	Organization and Collaboration in Special Education	3 hours
EEX	6946	Internship	6 hours

**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

## Instructional Technology

**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 308, 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.

<b>Area A: Core</b>		<b>12 or 15 Semester Hours</b>
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6401	Statistics for Educational Data OR	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
<b>Option A - Research Report</b>		
EME 6909	Research Report	2,1 hours
<b>Option B - Non-Thesis Option</b>		
EME 6062	Research in Instructional Technology	3 hours
EME	Elective	3 hours
<b>Area B: Specialization</b>		<b>24 Semester Hours</b>
EME 5208	Production Techniques for Instructional Settings	3 hours
EME 5051	Techniques of Instruction & Information Management	3 hours
EME 5225	Media for Children and Young Adults	3 hours
EME 6605	Role of the Media Specialist in Curriculum and Instruction	3 hours
EME 6805	Organization of Media and Information	3 hours
EME 6105	Collection Development Policies and Procedures	3 hours
EME 6807	Information Sources and Services	3 hours
EME 6706	Administrative Principles in Media Centers	3 hours



<b>Area C: Elective</b>		<b>3 Semester Hours</b>
EME 6209	Multimedia Systems	3 hours
EME 6058	Current Trends in Educational Media	3 hours
EME 5408	Computer Applications in Instructional Technology	3 hours
LAE 4464	Literature for Adolescents	3 hours
LAE 5415	Children's Literature in Elementary Education	3 hours
EME	Elective	
<b>Area D: Internship</b>		
EME 6946	Graduate Internship (Required if no media center experience)	3 hours

### 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.

<b>Area A: Core</b>		<b>9-12 Semester Hours</b>
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
<b>Option A - Research Report</b>		
EME 6909	Research Report	2,1 hours
<b>Option B - Non-thesis Option</b>		
EME 6062	Research in Instructional Technology Elective	3 hours 3 hours
<b>Area B: Specialization</b>		<b>18 Semester Hours</b>
EME 5051	Techniques of Instruction and Information Management	3 hours
EME 5052	Electronic Resources for Education	3 hours
EME 6405	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
<b>Area C: Extension</b>		<b>6 Semester Hours</b>
	Electives in current certification area or other as approved by advisor	3 hours
	Elective	3 hours

<b>Area D: Practicum</b>			<b>3 Semester Hours</b>
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	<u>OR</u>	3 hours
EDF 6608	Social Factors in American Education	<u>OR</u>	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 2,1 hours

**Option B**

EME 6971 Thesis 3 hours

**Option C**

EME 6062 Research in Instructional Technology 3 hours  
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 3 hours

**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 146, 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.

<b>Area A: Core</b>		<b>12 or 15 Semester Hours</b>
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
<b>Select One:</b>		
EDF 6401	Statistics for Educational Data <u>OR</u>	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
<b>Select One:</b>		
EDF 6155	Lifespan Human Development and Learning <u>OR</u>	3 hours
EDF 6517	History and Philosophy of American Education <u>OR</u>	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.

<b>Area A: Core</b>		<b>18 or 21 Semester Hours</b>
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

<b>Area C: Internship</b>	<b>9 Semester Hours</b>
MAE 6946 Graduate Internship	3 hours
MAE 6946 Graduate Internship	6 hours

<b>Corequisites:</b>	
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.

<b>Area A: Core</b>	<b>12/15 Semester Hours</b>
EDF 6481 Fundamentals of Graduate Research in Education	3 hours
EDF 6401 Statistics for Educational Data OR	
EDF 6432 Measurement and Evaluation in Education	3 hours
<b>Select One:</b>	
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
MUE 6909 Research Report	2,1 hours

<b>Area B: Specialization (Approved by advisor)</b>	<b>12 Semester Hours</b>
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<b>Area C: Curriculum</b>	<b>12 Semester Hours*</b>
MUE 6155 Teaching Performance	3 hours
MUE 6349 Advanced General Music	3 hours
MUE 6946 Practicum in Music Education	3 hours
MUE Directed Elective	3 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.

**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.

<b>Area A: Core</b>		<b>16 or 19 Semester Hours</b>
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6236	Principles of Instruction and Learning	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
<b>Select One:</b>		
EDF 6517	History and Philosophy of American Education <u>OR</u>	3 hours
EDF 6608	Social Factors in American Education <u>OR</u>	3 hours
EDF 6886	Multicultural Education	3 hours
MUE 6909	Research Report or 2 approved electives	2,1 or 6 hours

**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.

<b>Area C: Internship</b>		<b>9 Semester Hours</b>
MUE 6946	Graduate Internship (or equivalent)	3 hours
MUE 6946	Graduate Internship	6 hours

**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 hours
MUE 4360	Secondary School Music Instructional analysis	2 hours

**Other Requirements** - A placement examination in music history, music theory, and sight singing (or completion of equivalent courses).

MUH 4218	Review Music History	1 hour
MUT 4031	Review Music Theory	1 hour
MUT 4275	Sight Singing and Ear Training <u>OR</u>	2 hours
	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

<b>Area A: Core</b>		<b>9 or 12 Semester Hours</b>
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

<b>Research Report Option</b>		<b>3/6 Semester Hours</b>
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.

<b>Area A: Core</b>		<b>15 Semester Hours</b>
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:**

<b>Option A: Thesis</b>		
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

<b>Option C: Extended Specialization</b>		<b>6 Semester Hours</b>
(Electives pre-approved by advisor)		



<b>Area B: Specialization</b>		<b>21 Semester Hours</b>
RED 6845	Advanced Evaluation and Instruction in Reading	3 hours
RED 6846	Reading Practicum (PR: RED 6845)	6 hours
RED 6116	Trends in Reading Education	3 hours
RED 6746	Management of Reading Programs	3 hours
RED 6336	Reading in the Content Areas	3 hours
RED 6337	Reading in the Secondary Schools PR:6336	3 hours

**Prerequisites:** Prescribed by College of Education to meet state certification requirements or as support for degree program.

RED 5147	Developmental Reading <u>OR</u>	3 hours
RED 3012	Basic Foundations of Reading Proficiencies	3 hours
RED 5514	Classroom Diagnosis and Development of Reading Proficiencies <u>OR</u>	3 hours
RED 4519	Diagnostic and Corrective Reading Strategies	3 hours
LAE 3414	Literature for Children <u>OR</u>	3 hours
LAE 5415	Children's Literature Elementary Education <u>OR</u>	3 hours
LAE 4464	Literature for Adolescents	3 hours
LAE 4314	Language Arts in Elementary School <u>OR</u>	3 hours
LAE 4342	Teaching Language and Composition	3 hours

## Science Education

Program Coordinator: ..... J. A. Johnson  
ED 146, Phone: (407) UCF-2950, e-mail: jjohnson@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.

<b>Area A: Core</b>		<b>9 Semester Hours</b>
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
EDF 6401	Statistics for Educational Data <u>OR</u>	3 hours
EDF 6432	Measurement and Evaluation in Education	3 hours
<b>Select One:</b>		
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 (Approved by advisor) 9 Semester Hours**

**Area C: Curriculum (Approved by advisor) 12 Semester Hours**  
SCE 6238 Inquiry in the Sciences 3 hours

### 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.

<b>Area A: Core</b>		<b>18 or 23 Semester Hours</b>
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**

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 6909 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\* 9 hours

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 6636 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.

Area A: Core		18/21 Semester Hours
EDF	6481 Fundamentals of Graduate Research in Education	3 hours
EDF	6155 Lifespan Human Development and Learning	3 hours
EDF	6432 Measurement and Evaluation in Education	3 hours
EDF	6236 Principles of Teaching and Learning	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)*		12/15 Semester Hours
EDG	6253 Curriculum Inquiry	3 hours

Area C: Internship		9 Semester Hours
SSE	6946 Graduate Internship	3 hours
SSE	6946 Graduate Internship	6 hours

Corequisites: Students must meet required courses for 30 hour rule in Social Science.

SSE	4361 Social Science Instructional Analysis	4 hours
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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

Area A: Core		12 or 15 Semester Hours
EDF	6432 Measurement and Evaluation in Education	3 hours
EDF	6481 Fundamentals of Graduate Research in Education	3 hours
Select One:		
EDF	6155 Lifespan Human Development and Learning	3 hours
EDG	6517 History and Philosophy of Higher Education	3 hours
EDF	6608 Social Factors in American Education	3 hours
Select One Option:		
EVT	6909 Research Report	2,1 hours
EVT	6946 Graduate Internship or Electives (approved by advisor)	6 hours



<b>Area B: Vocational Education Core</b>		<b>9 Semester Hours</b>
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) **18 Semester Hours**  
 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. **33 Semester Hours**

<b>Area A: Core</b>		<b>12 or 15 Semester Hours</b>
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

<b>Area B: Vocational Education Core</b>		<b>9 Semester Hours</b>
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) **21 Semester Hours**  
 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**

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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 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.

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**

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Program Coordinator: ..... D. Mealor  
ED 308, Phone: (407) UCF-2465, e-mail: mealor@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.

<b>Area A: Core</b>		<b>15 Semester Hours</b>
EEX 5051	Exceptional Children in the Schools	3 hours
EDF 6155	Lifespan Human Development and Learning	3 hours
EDF 6236	Principles of Teaching and Learning	3 hours
EDF 6401	Statistics for Educational Data	3 hours
EDF 6481	Fundamentals of Graduate Research in Education	3 hours
<b>Area B: Specialization</b>		<b>68 Semester Hours</b>
SPS 6225	Behavior and Observational Analysis	3 hours
SPS 6601	Introduction to Psychological Services in Schools	3 hours
SPS 6608	Seminar in School Psychology	3 hours
MHS 6400	Theories of Individual Counseling	3 hours
MHS 6401	Techniques of Counseling	3 hours
MHS 6500	Group Procedures and Theories in Counseling	3 hours
SPS 6191	Psychoeducational Diagnosis I	4 hours
SPS 6192	Psychoeducational Diagnosis II	4 hours
SPS 6606	School Consultation Techniques	3 hours
SPS 6175	Cultural Diversity and Unbiased Assessment	3 hours
SPS 6125	Infant Developmental Assessment	3 hours
SPS 6206	Psychoeducational Interventions	3 hours
SPS 6194	Assessment of Special Needs	3 hours
SPS 6931	Ethical and Legal Issues in School Psychological Services	3 hours
SPS 6909	Research Report I and II	6 hours
SPS 6946	Practicum in School Psychology I	3 hours
SPS 6946	Practicum in School Psychology II	3 hours
SPS 6949	School Psychology Internship	12 hours
<b>Total Minimum Semester Hours Required</b>		<b>83 Semester Hours</b>



**Pre- or Corequisites: (DOE Certification)**

EDA	6061	Organization and Administration of Schools	3 hours
EDF	6517	History and Philosophy of American Education <u>OR</u>	3 hours
EDF	6608	Social Factors in American Education	3 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);  
AND
- A master's degree from an accredited institution;  
AND
- Minimum score of 1000 on the General Graduate Record Examination (verbal/ quantitative scores combined);  
AND
- Recommended for admission by the appropriate major program area committee;  
AND
- 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

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Program Coordinator: ..... M. L. Kysilka  
 ED 355, 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

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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)
- Educational Leadership Core Courses 16 semester hours
- Cognate Courses Minimum 6 semester hours
- Area of Specialization Minimum 15 semester hours
- Research and Data Analysis Minimum 12 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).
- ARE 6666** ED 3(2,1)  
**Arts Advocacy.** The study and development of plans to produce arts advocacy programs for the public school system.
- ART 5109C** 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 6946** 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.



- EDA 7101** ED 3(3,0)  
**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.
- EDA 7192** ED 4(4,0)  
**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.
- EDA 7195** ED 4(4,0)  
**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.
- EDA 7205** ED 4(4,0)  
**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.
- EDA 7225** ED 4(4,0)  
**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.
- EDA 7235** ED 3(3,0)  
**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.
- EDA 7236** ED 3(3,0)  
**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.
- EDA 7260** ED 3(3,0)  
**Educational Facilities:** PR: C.I. Administration of educational facilities such as surveys, finance plans and specifications, equipment, contracts, construction procedures, maintenance and custodial services.
- EDA 7274** ED 3(4,0)  
**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.
- EDA 7919** ED 1-6  
**Dissertation Research:** PR: C.I.
- EDA 7930** ED 3(3,0)  
**Seminar in School Administration:** PR: C.I. Discussion of problems in school administration, patterns of curriculum organization, and research projects.
- EDA 7943** ED 3(3,0)  
**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.
- EDA 7980** ED 1-20  
**Dissertation:** PR: Admission to candidacy.
- EDE 6205** ED 3(3,0)  
**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.
- EDF 5245** ED 3(3,0)  
**Preparation and Management of Classroom Instruction:** PR: C.I. Study of strategies for instructional planning and classroom management that result in optimum learning.
- EDF 5259** ED 3(3,0)  
**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.
- EDF 6155** ED 3(3,0)  
**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.
- EDF 6233** ED 3(3,0)  
**Analysis of Classroom Teaching:** PR: EDF 6481 or C.I. Analyses of effective teaching practices and their effect on classroom instruction and learning.
- EDF 6236** ED 3(3,0)  
**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.
- EDF 6259** ED 3(3,0)  
**Strategies of Classroom Management:** Study of strategies of classroom management that result in optimum learning and a minimum of behavior problems.
- EDF 6401** ED 3(3,0)  
**Statistics for Educational Data:** PR: EDF 6481 or C.I. Design of educational evaluation; analysis of data, descriptive and inferential statistics, interpretation of results.
- EDF 6432** ED 3(3,0)  
**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.
- EDF 6447** ED 3(3,0)  
**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.



EDF 6481	ED 3(3,0)	EDG 5941	ED 2-8(0,11)
Fundamentals of Graduate Research in Education: 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.		Clinical Practice: 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.	
EDF 6486	ED 3(3,0)	EDG 6046	ED 3(3,0)
Research Design in Education: 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.		Contemporary Issues in Education: An analysis of current trends in education and their impact on educational programs.	
EDF 6517	ED 3(3,0)	EDG 6223	ED 3(3,0)
History and Philosophy of American Education: PR: C.I. A critical analysis of the conceptual and operative educational systems developed in the United States.		Curriculum Theory and Organization: An exploration and examination of the foundations, design, development, and organization of curriculum in K-Plus settings and professionals' roles in curriculum decision making.	
EDF 6608	ED 3(3,0)	EDG 6253	ED 3(3,0)
Social Factors in American Education: Analysis of general and specific aspects of American education as they relate to social and behavioral sciences.		Curriculum Inquiry: 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.	
EDF 6886	ED 3(3,0)	EDG 6285	ED 3(3,0)
Multicultural Education: A survey of multicultural education; analysis of the relationship between cultural transmission, cultural pluralism, and the learning process within American schools.		Evaluation of School Programs: PR: Graduate standing. History of program evaluation, systems approaches to program evaluation, concepts of stakeholder and qualitative approaches to program evaluation, the role of evaluator and administrator.	
EDF 7232	ED 3(3,0)	EDG 6327	ED 3(3,0)
Analysis of Learning Theories in Instruction: PR: Advanced graduate standing or C.I. Analysis of theories and research relevant to understanding learning in educational settings.		Techniques of Game Use in Education: Analysis, development, and use of educational games as an approach to classroom teaching.	
EDF 7403	ED 3(3,0)	EDG 6940	ED 1-8(0,1-8)
Quantitative Foundations of Educational Research: 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.		Graduate Internship: PR: Approval of Student Internship Office. Internship in an appropriate educational setting under the direction of a qualified field supervisor and/or a university supervisor. (May be repeated for credit.)	
EDF 7463	ED 3(3,0)	EDG 6946	ED 1-2
Analysis of Survey, Record, and Other Qualitative Data: PR: EDF 6401. Applications of summative evaluation for education: interpretation of impact data, measurement scales, survey and record data.		Practicum, Clinical Practice: PR: C.I.	
EDF 7475	ED 3(3,0)	EDG 7221	ED 3(3,0)
Qualitative Research in Education: 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.		Advanced Curriculum Theory: PR: EDG 6223 or C.I. An analysis of the research base which supports the various dimensions of the curriculum field.	
EDG 5325	ED 3(3,0)	EDG 7356	ED 3(3,0)
Techniques for the Developing Professional in Education: PR: C.I. Analysis, study, development, and use of techniques for enhanced instruction in the educational setting.		Models of Teaching and Instructional Theory: 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.	
EDG 5337	ED 3(3,0)	EDG 7692	ED 3(3,0)
Teaching Individuals, Small and Large Groups: Study of teaching skills for effectively instructing individuals in various educational groups, with consideration of developmental and behavioral characteristics of students.		Issues in Curriculum: PR: EDG 7221; EDG 7356; EDF 7232 or C.I. Examination of the relationships between the research bases of instructional and curriculum theories with emphasis on current issues and concerns.	
EDG 5745	ED 3(3,0)	EDG 7919	ED 1-6
Teaching the Non-English Student: PR: FLE 3063 or bilingual and non-linguistic instruction in curriculum areas and in English as a second language.		Dissertation Research: PR: C.I.	
		EDG 7939	ED 1-6
		Special Topics/Seminars: PR: Doctoral level.	
		EDG 7980	ED 1-20
		Dissertation: PR: Admission to Candidacy.	



- EDH 6053** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**Community College Curriculum:** PR: C.I. Examination of the background, development, function, and goals of the curriculum of the community college.
- EDH 6305** ED 3(3,0)  
**Teaching and Learning in the Community College:** PR: EDF 7232. Focuses on teaching effectiveness in the community college.
- EDH 6505** ED 3(3,0)  
**Finance in Higher Education:** PR: Completion of Phase II of Education Professional Preparation or C.I. Fundamental considerations in the finance of institutions of higher education.
- EDM 5235** ED 3(3,0)  
**Teaching in the Middle School:** Methods of middle school teaching; team planning and teaching; developmental and learning patterns of the emerging adolescent; use of alternative teaching strategies.
- EDS 5356** ED 3(2,1)  
**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** ED 3(3,0)  
**Supervision of Instruction:** Effective supervisory principles and practices which can be used for instructional improvement.
- EDS 6053** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**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.
- EDS 7111** ED 3(2,1)  
**Administration and Supervision of Staff Development:** PR: Basic Teacher Certificate or C.I. Role and procedures for the supervisor or administrator in staff development. Assessment of staff development needs and delivery systems are stressed.
- EEC 5205** ED 3(3,0)  
**Programs and Trends in Early Childhood Education:** PR: Basic Teacher Certificate or C.I. Philosophy, content, facilities, instructional materials and activities appropriate for children three to eight years of age; current research; issues and trends. Concurrent laboratory experiences.
- EEC 5206** ED 3(3,0)  
**Organization of Instruction in Early Childhood Education:** PR: Basic Teacher Certificate or C.I. Organization and techniques in instruction relating to language arts, social sciences, science, mathematics, health and physical education; problems relating to reading readiness perception and cognition (K-3). Concurrent laboratory experience.
- EEC 5208** ED 3(3,0)  
**Creative Activities in Early Childhood:** PR: Basic Teacher Certificate or C.I. Organization of instruction and methods for creative activities involving music, art, literature, and educational toys. Integration of activities and basic skills curriculum (K-3). Concurrent laboratory experience.
- EEC 6268** ED 3(3,0)  
**Play Development, Intervention, and Assessment:** Explores play development, facilitation, intervention, and assessment.
- EEC 6406** ED 3(3,0)  
**Guiding and Facilitating Social Competence:** Provides students with techniques to facilitate and guide the behavior and emotional growth of young children.
- EED 6071** ED 3(3,0)  
**Behavior Disorders in Schools:** PR: Basic Teacher Certificate or C.I. Assessment analysis of behavior disorders, cause and effects, identification and theories.
- EED 6226** ED 3(3,0)  
**Theory and Application for EH:** PR: C.I. Study of various approaches to use in teaching emotionally handicapped children interpersonal and cognitive skills with special emphasis on the severe and moderate populations.
- EEX 5051** ED 3(3,0)  
**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** ED 3(3,0)  
**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.



EEX 5750	ED 3(3,0)	EGC 5036	ED 3(3,0)
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.		Guiding Human Relationships: PR: Senior standing or Basic Teacher Certificate. Human relationship skills which will enhance intra- and interpersonal relating skills in classrooms.	
EEX 6017	ED 3(3,0)	EGC 6437	ED 3(3,0)
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.		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.	
EEX 6061	ED 3(3,0)	EGI 6246	ED 3(3,0)
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.		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.	
EEX 6065	ED 3(3,0)	EGI 6051	ED 3(3,0)
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.		Understanding the Gifted/Talented Student: A study of characteristics of the gifted/talented students; theories and research; identification procedures; special problems; educational forces.	
EEX 6107	ED 3(3,0)	EGI 6245	ED 4(4,0)
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.		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.	
EEX 6224	ED 3(3,0)	ELD 6248	ED 3(3,0)
Observation and Assessment of Young Children: Study of formal and informal observation and assessment.		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.	
EEX 6266	ED 3(3,0)	EME 5051	ED 3(3,0)
Assessment and Curriculum Prescriptions for the Exceptional Population: Addresses contemporary assessments and models for assessing exceptional children. Also addresses curriculum and prescription.		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.	
EEX 6342	ED 3(3,0)	EME 5052	ED 3(3,0)
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.		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.	
EEX 6524	ED 3(3,0)	EME 5054	ED 3(3,0)
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.		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.	
EEX 6612	ED 3(3,0)	EME 5056	ED 3(3,0)
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.		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.	
EEX 6863	ED 2-7(12-40)	EME 5057	ED 3(3,0)
Supervised Teaching Practicum with Exceptional Children: PR: Bachelor's degree, approved program, and C.I. Supervised observation and teaching of an exceptional student.		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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**Computer Applications in Instructional Technology:** Techniques and skills for the use of computers for productivity and instruction by the instructional technologist.

**EME 5810** ED 1(1,3)  
**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** ED 3(3,0)  
**Current Trends in Instructional Technology:** PR: EME 6613. Survey of current trends and issues of importance to the field of instructional technology.

**EME 6058** ED 3(3,0)  
**Current Trends in Educational Media:** PR: C.I. Survey of current trends and issues of importance to the field of educational media.

**EME 6062** ED 3(3,0)  
**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** ED 3(3,0)  
**Collection Development Policies and Procedures:** PR: EME 5051. Principles of collection development for the school library media center. Acquisition, weeding, inventory, and maintenance procedures. Emphasis on intellectual freedom and evaluation of the collection.

**EME 6208** ED 3(3,0)  
**Multimedia Instructional Systems I:** PR: EME 5408, EME 6613. Entry-level skills in computer-based graphic, audio, and video production. Development of multimedia components for instructional applications. Discussion of copyright, content, media attributes for either issues.

**EME 6209** ED 3(3,0)  
**Multimedia Instructional Systems II:** PR: EME 6208. Advanced skills in computer-based graphic, audio, and video production. Integration of media into instructional packages. Application of instructional development skills and working with clients.

**EME 6313** ED 3(3,0)  
**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** ED 3(3,0)  
**Application Software for Educational Settings:** PR: 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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**Integrating Technology into the Curriculum:** PR: EME 5051; 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** ED 3(3,0)  
**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** ED 3(3,0)  
**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** ED 3(3,0)  
**Instructional System Design:** PR: EME 5054. 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** ED 3(3,0)  
**Administration of Instructional Systems:** PR: EME 5408, EME 6613. Provides opportunities for students to examine parameters, problems, and areas of importance in the management of instructional systems.

**EME 6706** ED 3(3,0)  
**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.



- EME 6707** ED 3(3,0)  
**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.
- EME 6805** ED 3(3,0)  
**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.
- EME 6807** ED 3(3,0)  
**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.
- EME 6809** ED 3(3,0)  
**Information Retrieval Systems:** PR: EME 5408. Examines applications of information retrieval that are appropriate for instructional technologists. Includes elements of search strategy construction, database and index structure, and online search procedures.
- EME 6940** ED 3(3,0)  
**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.
- EMR 6362** ED 3(3,0)  
**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.
- ESE 5214** ED 3(3,0)  
**Secondary School Curriculum Improvement:** PR: Basic Teacher Certificate or C.I. Secondary school self-studies for curriculum projects, accreditation reports, or staff development.
- ESE 6235** ED 3(3,0)  
**Curriculum Design:** PR: Basic Teacher Certificate or C.I. Goal analysis, task analysis, needs assessment, and writing performance objectives for developing courses of study.
- ESE 6416** ED 3(3,0)  
**Curriculum Evaluation:** PR: ESE 6235 or an equivalent curriculum course.
- EVT 5260** ED 2-4(2-4,0)  
**Cooperative Programs in Vocational Education:** PR: Basic Teacher Certificate or C.I. Study of cooperative vocational programs and achievement of competencies needed to establish, manage, and coordinate co-op program activities in all vocational areas.
- EVT 5315** ED 2-3(2-3,0)  
**Applied Clinical Teaching Techniques in Vocational Education:** PR: Basic Teacher Certificate or C.I. Study and practice of clinical teaching methods, development of student performance assessment instruments, planning clinical learning experiences, and recordkeeping.
- EVT 5561** ED 2-3(2-3,0)  
**Student Guidance in the Vocational Program:** PR: Basic Teacher Certificate or C.I. Achievement of skills used by teachers as they gather student data, confer with students, and help students plan for employment or further education.
- EVT 5817** ED 2-4(2-4,0)  
**Management of Vocational Programs:** PR: Basic Teacher Certificate or C.I. Study and achievement of selected competencies needed by vocational teachers, supervisors, and local administrators in the management of vocational education programs in the schools.
- EVT 6264** ED 3(3,0)  
**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.
- EVT 6265** ED 3(3,0)  
**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.
- EVT 6267** ED 2-4(2-4,0)  
**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.
- EVT 6664** ED 2-4(2-4,0)  
**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.
- EXP 5445** ED 3(3,0)  
**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.
- IDS 6933** ED 3(3,0)  
**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.)
- IDS 6934** ED 3(2,1)  
**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.
- IDS 6937** ED 3(3,0)  
**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.



- 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 6296** 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 6467** 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 6616** 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 6637** 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 6714** 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)  
**Teaching General Mathematics in the Secondary School:** PR: MAE 3330 or C.I. Addresses specific techniques for developing general mathematics skills and concepts beginning in grade 6. Explores problem solving, motivation, and innovative methods.
- 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 6338** 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 6517** 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.



- MAE 6641** 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 6656** ED 3(3,0)  
**Using Technology in the Instruction of K-12 Mathematics:** PR: CAP 6613 or C.I. The application of computer technology to mathematics instruction including calculators, CAI, CMI, application software, simulators, and video disc technology.
- MAE 6899** 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 illicit and licit 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 6600** 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 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.)
- MHS 6930** ED 3(3,0)  
**Current Trends in Counselor Education:** PR: MHS 5005 or 6500 or C.I. Current trends affecting the rapid changes in the counseling field.



- MUE 5695** ED 3(3,0)  
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.
- MUE 6155** ED 3(3,0)  
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.
- MUE 6349** ED 3(3,0)  
Advanced General Music: PR: Basic Teacher Certificate or C.I. Analysis of current materials, new programs, and teaching techniques in general music, K-12. Emphasis on practical applications. Examinations of psychological foundations of music education.
- MUE 6946** ED 3(0,14)  
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.)
- PET 6086** ED 3(3,0)  
Exercise Intervention and Risk Hazards: Prevention of select major risk hazards through exercise intervention.
- PET 6088** ED 3(3,0)  
Wellness Development in Children: An analysis of wellness characteristics and concepts as they affect the wellness of children.
- PET 6089** ED 3(3,0)  
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.
- PET 6238C** ED 3(2,1)  
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.
- PET 6357C** ED 3(3,2)  
Environmental Exercise Physiology: A study of physiological adaptation resulting from prescribed physical activity programs.
- PET 6367** ED 3(3,0)  
Physical Performance and Energy Supplies: The relation of nutrients to aerobic performance.
- PET 6381** ED 3(3,0)  
Physiology of Neuromuscular Mechanisms: Human body morphology and function critical in producing motion, strength, power, and endurance.
- PET 6388** ED 3(3,0)  
Exercise Physiology and Cardiovascular Disease Prevention: The physiology of exercise as it affects the onset of cardiovascular diseases.
- PET 6416** ED 3(3,0)  
Administration of Corporate Wellness Programs: Administrative implications for the development of a corporate wellness program.
- PET 6615** AS 2(2,1)  
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.
- PET 6615C** ED 3(3,0)  
Measurement in Kinesiology and Physical Education: Techniques of measurement and evaluation of human performance and their applications to physical education.
- PET 6645** ED 3(3,1)  
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.
- PET 6646** ED 4(3,1)  
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.
- PET 6647** ED 3(3,1)  
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.
- PET 6655** ED 3(3,1)  
Developmental Aspects of Motor Disabilities: PR: C.I. Addresses developmental aspects of motor and health disabilities. A developmental focus is presented. Observation required.
- PET 6910** ED 3(3,0)  
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.)
- PET 6946 - Practicum, Clinical Practice** ED 3(3,0)
- RED 5147** ED 3(3,0)  
Developmental Reading: PR: EDG 4321. Principles, procedures, organization, and current practices in the elementary reading program. Materials and methods of instruction.
- RED 5514** ED 3(3,1)  
Classroom Diagnosis and Development of Reading Proficiencies: PR: RED 5147 or equivalent. Classroom diagnosis and corrective teaching in reading; instructional materials. Case study required.
- RED 6116** ED 3(3,0)  
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.
- RED 6336** ED 3(3,0)  
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.



- 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 6746** **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 6845** **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 6846** **ED 6(0,6)**  
**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 6946 - Practicum, Clinical Practice**
- SCE 5716** **ED 3(3,0)**  
**Methods in Elementary School Science:** PR: EDG 4321. Organization of instruction in elementary school science including methods, evaluation, materials, strategies, and current practices.
- 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)**  
**Science Programs in Secondary School:** PR: Basic Teacher Certificate or C.I. Study of historical development and current trends; analysis of science curricula, materials.
- 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 6616** **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 5005 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.
- SDS 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.
- SDS 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.
- SDS 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.
- SDS 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.
- SDS 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 6175** **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)**  
**Individual Psychoeducational Diagnosis I:** PR: Graduate admission and C.I. CR: SPS 6206. Measurement of intellectual and cognitive functioning of children and adults. Administration, scoring and interpretation of Wechsler scales and selected psychometric instruments.
- SPS 6192** **ED 4(4,0)**  
**Individual Psychoeducational Diagnosis II:** PR: Graduate admission and C.I. CR: SPS 6949. Measurement of intellectual and cognitive functioning of children and adults. Administration, scoring, and interpretation of Binet IV, K-ABC, Woodcock-Johnson, and other psychometric instruments.
- SPS 6194** **ED 3(3,0)**  
**Assessment of Special Needs:** PR: SPS 6191, SPS 6192. Measurement of social, behavioral, and emotional functioning in children and adolescents.
- 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.



- SPS 6225** ED 3(3,0)  
**Behavioral and Observational Analysis of Classroom Interactions in Schools:** 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.
- SPS 6601** ED 3(3,1)  
**Introduction to Psychological Services in Schools:** PR: Graduate admission and C.I. A course presenting an overview of the philosophy, organization, programs, and operation of school psychological services.
- SPS 6606** ED 3(3,0)  
**School Consultation Techniques:** PR: C.I. Theories and models of school consultation and clinical practice in the consultative role.
- SPS 6608** ED 3(3,0)  
**Seminar in School Psychology:** PR: C.I. Diagnostic, instructional, and prescriptive intervention techniques.
- SPS 6931** ED 3(3,0)  
**Ethical and Legal Issues in School Psychological Services:** PR: Graduate admission. Introduction to ethical codes, professional standards, ethical-legal decision-making models and case studies impacting the delivery of school psychological services.
- SPS 6946** ED 3(0,3)  
**Practicum in School Psychology:** 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.
- SPS 6949** ED 6(0,6)  
**School Psychology Internship:** PR: Graduate admission and C.I. Supervised placement in school setting.
- SSE 5113** ED 3(3,0)  
**Methods in Elementary School Social Science:** PR: EDG 4321. Study of instructional programs in the social sciences; objectives; materials; techniques; current research; and their application in elementary school setting.
- SSE 6617** ED 3(3,0)  
**Trends in Elementary School Social Studies Education:** PR: Basic Teacher Certificate or C.I. Historical development and current trends, strategies for inquiry instruction, intellectual, social, and personal dimensions of social studies.
- SSE 6636** ED 3(3,0)  
**Contemporary Social Science Education:** PR: Basic Teacher Certificate of C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.
- TSL 5141** ED 3(3,0)  
**ESOL Strategies:** Surveys cross-cultural communication and understanding, testing and evaluation, curriculum and methods of teaching ESOL to meet the needs of limited English proficient students.
- TSL 5345** ED 3(3,0)  
**Methods of ESOL Teaching:** This course is designed to develop understanding, knowledge, and skills of the current methods used in the teaching of ESOL.
- TSL 5525** ED 3(3,0)  
**ESOL Cultural Diversity:** This course is designed to identify major cultural groups represented by the LEP population in Florida schools and to understand their special needs.

# College of Engineering

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. Reinhart, 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

## College Admission Requirements

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.

**College Degree Requirements**

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.

The Engineering building





## 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. Wanilesta, 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
D. R. Reinhart, Ph.D., P.E. ....	Associate Dean and 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. Onyemelukwe, 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

15 Semester Hours

Take any three of the following courses:

CES	5325	Bridge Engineering	3 hours
CES	5606	Advanced Steel Structures	3 hours
CES	5706	Advanced Reinforced Concrete	3 hours
CES	6715	Prestressed Concrete Structures	3 hours
CES	6840	Composite Steel Concrete Structures	3 hours
CEG	6115	Foundation Engineering	3 hours
CEG	5015	Geotechnical Engineering II	3 hours
CEG	5700	Geo-Environmental Engineering	3 hours

Take two courses from among:

TTE	5204	Traffic Engineering OR	3 hours
TTE	5805	Geometric Design of Transportation Systems	3 hours
CWR	5205	Hydraulic Engineering OR	3 hours
CWR	5545	Water Resources Engineering OR	3 hours
CWR	6125	Groundwater Hydrology OR	3 hours
CWR	6235	Open Channel Hydraulics	3 hours

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

9 or 21 Semester Hours

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
CEG	6065	Soil Dynamics	3 hours
CEG	6317	Advanced Geotechnical Engineering	3 hours
CES	5821	Masonry and Timber Design	3 hours
CES	5325	Bridge Engineering	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	6170	Boundary Elements in Civil Engineering	3 hours
CES	6209	Dynamics of Structures	3 hours
CES	6220	Wind and Earthquake Engineering	3 hours
CES	6910	Research in Structural Engineering	3 hours
TTE	5835	Pavement Design	3 hours
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	5325	Bridge Engineering	3 hours
CES	5606	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

CES	6220	Wind and Earthquake Engineering	3 hours
CES	6910	Research in Structural Engineering	3 hours

**Thesis**

6 Semester Hours

Total Hours Required for M.S.

30 or 36 Semester 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**

12 Semester Hours

TTE	5204	Traffic Engineering	3 hours
TTE	5805	Geometric Design of Transportation Systems	3 hours
TTE	6256	Traffic Operations	3 hours
TTE	6270	Intelligent Transportation Systems	3 hours

**Elective Courses**

12 or 24 Semester Hours

CGN	6655	Regional Planning, Design, and Development	3 hours
ENV	5071	Environmental Analysis of Transportation Systems	3 hours
STA	5156	Probability and Statistics for Engineers	3 hours
TTE	5315	Transportation Safety Analysis	3 hours
TTE	5205	Highway Capacity	3 hours
TTE	5700	Railroad Engineering	3 hours
TTE	5835	Pavement Design	3 hours
TTE	6526	Planning and Design of Airports	3 hours
TTE	6625	Mass Transportation Systems	3 hours

**Thesis**

6 Semester Hours

Total Hours Required for M.S.

30 or 36 Semester Hours



## 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 3613)

### Required Courses

		15 Semester Hours
CWR 5205	Hydraulic Engineering	3 hours
CWR 5545	Water Resources Engineering	3 hours
CWR 6125	Groundwater Hydrology	3 hours
CWR 6235	Open Channel Hydraulics	3 hours
CWR 6126	Groundwater Modeling <u>OR</u>	3 hours
CWR 6535	Modeling Water Resources Systems	3 hours

### Elective Courses

		15 or 21 Semester Hours
CWR 6126 or CWR 6535	if not taken as required	3 hours
CWR 6236	River Engineering and Sediment Transport	3 hours
CWR 6102	Advanced Hydrology	3 hours
Other courses with advisor's consent		3 hours each

### Thesis

	6 Semester Hours
<b>Total Hours Required for M.S.</b>	<b>30 or 36 Semester Hours</b>

## 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

		15 Semester Hours
CWR 5545	Water Resources Engineering <u>OR</u>	3 hours
CWR 6125	Groundwater Hydrology <u>OR</u>	3 hours
CWR 6235	Open Channel Hydraulics	3 hours
ENV 6015	Physical/Chemical Treatment Systems	3 hours
ENV 6016	Biological Treatment Systems	3 hours
ENV 6558	Industrial Waste Treatment <u>OR</u>	3 hours
ENV 6347	Hazardous Waste Treatment	3 hours
ENV 6106	Atmospheric Dispersion Modeling <u>OR</u>	3 hours
ENV 6126	Design of Air Pollution Controls	3 hours

### Elective Courses

**9 or 15 Semester Hours**  
 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:

#### Environmental

Any of the appropriate ENV graduate-level courses  
 (5000 or 6000) with the consent of the student's advisor 3 hours each

**Water Resources**

Any of the appropriate CWR graduate-level courses  
(5000 or 6000) with the consent of the student's advisor

3 hours each

**Thesis or Research Report**

6 or 3 Semester Hours

**Total Hours Required for M.S.Env.E.**

30 or 33 Semester Hours

## 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****12 Semester Hours**CWR 5545 Water Resources Engineering OR

3 hours

CWR 6235 Open Channel Hydraulics OR

3 hours

CWR 6125 Groundwater Hydrology

3 hours

ENV 6015 Physical/Chemical Treatment Systems OR

3 hours

ENV 6016 Biological Treatment Systems OR

3 hours

ENV 6558 Industrial Waste Treatment

3 hours

ENV 6106 Atmospheric Dispersion Modeling OR

3 hours

ENV 6126 Design of Air Pollution Controls OR

3 hours

ENV 6347 Hazardous Waste Incineration

3 hours

ENV 5071 Env Analysis Transportation Systems OR

3 hours

ENV 6615 Receiving Water Impacts OR

3 hours

ENV 6519 Aquatic Chemical Processes

3 hours

**Elective Courses****12 or 18 Semester Hours**

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**

3 or 6 Semester Hours

**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.

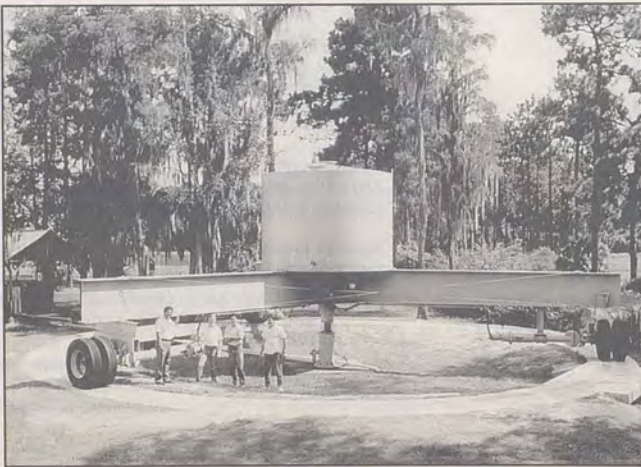
### Doctoral Degree Requirements

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.

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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

C. S. Bauer, Ph.D., P.E. ....	Professor
G. D. Boreman, Ph.D., P.E. ....	Professor
C. G. Christodoulou, Ph.D. ....	Professor
A. J. Gonzalez, Ph.D., P.E. ....	Professor
J. J. Liou, Ph.D. ....	Professor
D. C. Malocha, Ph.D., P.E. ....	Professor
W. B. Mikhael, Ph.D. ....	Chair and Professor
M. G. Moharam, Ph.D. ....	Professor
H. R. Myler, Ph.D., P.E. ....	Professor
R. L. Phillips, Ph.D. ....	Professor
M. J. Soileau, Ph.D. ....	CREOL Director and Professor
N. S. Tzannes, Ph.D. ....	Professor
I. Batarseh, Ph.D., P.E. ....	Associate Professor
M. A. Belkerdid, Ph.D., P.E. ....	Associate Professor
P. Delfyett, Ph.D. ....	Associate Professor
M. Georgiopoulos, Ph.D. ....	Associate Professor
J. E. Harvey, Ph.D. ....	Associate Professor
T. Kasparis, Ph.D. ....	Associate Professor
H. I. Klee, Ph.D. ....	Associate Professor
D. G. Linton, Ph.D., P.E. ....	Associate Professor
R. N. Miller, Ph.D., P.E. ....	Associate Dean and Associate Professor
A. Mortazawi, Ph.D. ....	Associate Professor
B. E. Petrasko, D.Eng. ....	Associate Professor
Z. Qu, Ph.D. ....	Associate Professor
S. M. Richie, Ph.D. ....	Associate Professor
N. Riza, Ph.D. ....	Associate Professor
K. B. Sundaram, Ph.D. ....	Associate Professor
P. F. Wahid, Ph.D. ....	Associate Professor
A. R. Weeks, Ph.D. ....	Associate Professor
J. S. Yuan, Ph.D. ....	Associate Professor
J. Zalewski, Ph.D. ....	Associate Professor
R. F. DeMara, Ph.D. ....	Assistant Professor
M. G. Haralambous, D.Sc., P.E. ....	Assistant Professor
J. Rolland, Ph.D. ....	Assistant Professor
P. Li Kam Wa, Ph.D. ....	Assistant Professor

### 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. Silfvast, Ph.D. ....	Professor of Physics
G. Stegeman, Ph.D. ....	Cobb-Hooker Professor of Physics
E. W. Van Stryland, 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

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          |                                  |

- One course from any other 2 areas listed above (6 hours total).
- No more than 6 credits of thesis will count toward the degree requirement.
- The remainder of the program courses is chosen in conjunction with an advisor in an approved program of study.
- At least 15 credit hours must be from 6000-level courses.

#### 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 11
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 6785	Advanced Computer Communications
EEL 6590	Advanced Topics in Communications

##### Controls/Power Specialization

###### Required Courses:

EEL 5630	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
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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 11
EEL 6492	Advanced Topics in Electromagnetic and Microwaves

#### Electronics Specialization

Required Courses:

EEL 6371	Advanced Electronics I
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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 6560	Laser Engineering
EEL 6561	Fourier Optics
EEL 5453	Geometrical Optics

Electives:

EEL 5563	Fiber Optics Communication
EEL 5451L	Electro-Optics Laboratory
EEL 6565	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	Electromagnetic Fields
Communications	Electronics
Controls/Power	Physical Electronics
Digital Systems	

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	Electro-Optics
Digital Signal Processing	Electromagnetics
Controls/Power	Physical Electronics
Digital Systems	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**

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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 4851)  
 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.

#### Required Courses (Core)

	9 Semester Hours
EEL 5881 Software Engineering I	3 hours
EEL 5708 High Performance Computer Architecture	3 hours
EEL 5874 Expert Systems and Knowledge Engineering	3 hours

#### 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	9 hours
EEL 6707 Parallel Processing	3 hours
EEL 6763 Current Topics in Parallel Processing	3 hours
Two courses in one of the following areas: Controls, Digital Signal Processing, or Microelectronics	6 hours
Electives (Selected in consultation with advisor)	3 hours
Thesis	6 hours
<b>Total</b>	<b>30 Semester Hours</b>



**Digital Systems (Non-Thesis Option)**

Core		9 hours
EEL 6707	Parallel Processing	3 hours
EEL 6763	Current Topics in Parallel Processing	3 hours
EEL 6883	Software Engineering II	3 hours
Three courses in one of the following areas: Controls, Digital Signal Processing, or Microelectronics		
Electives (Selected in consultation with advisor)		9 hours
Final Exam		0 hours
<b>Total</b>		<b>36 Semester Hours</b>

**Computer Architecture (Thesis Option)**

Core		9 hours
EEL 6707	Parallel Processing	3 hours
EEL 6763	Current Topics in Parallel Processing	3 hours
EEL 6769	Parallel Knowledge Processing Systems	3 hours
Electives (Selected in consultation with advisor)		3 hours
Thesis		6 hours
<b>Total</b>		<b>30 Semester Hours</b>

**Computer Architecture (Non-Thesis Option)**

Core		9 hours
EEL 6707	Parallel Processing	3 hours
EEL 6763	Current Topics in Parallel Processing	3 hours
EEL 6769	Parallel Knowledge Processing Systems	3 hours
EEL 6883	Software Engineering II	3 hours
Electives (selected in consultation with advisor)		15 hours
Final Exam		0 hours
<b>Total</b>		<b>36 Semester Hours</b>

**Software Engineering (Thesis Option)**

Core		9 hours
ECM 6883	Software Engineering II	3 hours
At least one of the following courses:		
EEL 6885	Software Engineering Quality Assurance Methods	3 hours
EEL 6887	Software Engineering Life-Cycle Control	3 hours
EEL 6897	Software Development for Real-Time Engineering Systems	3 hours
Electives (selected in consultation with advisor)		9 hours
Thesis		6 hours
<b>Total</b>		<b>30 Semester Hours</b>

**Software Engineering (Non-Thesis Option)**

Core		9 hours
ECM 6883	Software Engineering II	3 hours
At least two of the following courses:		
EEL 6885	Software Engineering Quality Assurance Methods	3 hours
EEL 6887	Software Engineering Life-Cycle Control	3 hours
EEL 6897	Software Development for Real-Time Engineering Systems	3 hours
Electives (selected in consultation with advisor)		18 hours
Final Exam		0 hours
<b>Total</b>		<b>36 Semester Hours</b>

**Knowledge-based Systems (Thesis Option)**

Core		9 hours
*EEL 4872	Engineering Applications of Intelligent Systems	3 hours
EEL 6875	Engineering of Artificial Intelligence Systems	3 hours
At least one of the following courses:		
EEL 6876	Current Topics in AI in Engr. Systems	3 hours
EEL 6878	Modeling and Artificial Intelligence	3 hours
Electives (Selected in consultation with advisor)		9 hours
Thesis		6 hours
<b>Total</b>		<b>30 Semester Hours</b>

**Knowledge-based Systems (Non-Thesis Option)**

Core			9 hours
*EEL 4872	Engineering Applications of Intelligent Systems		3 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
<b>Total</b>			<b>36 Semester Hours</b>

\* 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	Electromagnetics
Communications	Electro-optics
Controls	Knowledge-based Systems
Digital Signal Processing	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

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### 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

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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.

## Industrial Engineering and Management Systems Department

Robert L. Armacost	.....	Doctoral Program Coordinator
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Linda C. Malone	.....	Master of Science Programs Coordinator
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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
Mansooeh 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 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-



year research effort involving the University of Oregon and the Florida Solar Energy Center, sponsored by the U.S. Department of Energy to define how to achieve energy efficient, affordable industrialized housing in the 21st Century. In 1989, the Department became part of a multi-year effort with NASA to improve the efficiency and productivity of space shuttle processing operations. In 1990, the Department was selected to offer an M.S. in Engineering Management to selected NASA engineers at the Kennedy Space Center. The program has recently been expanded to include contractor employees at Kennedy Space Center. In 1993 the Department acquired the NASA-funded Multimedia Applications Laboratory which conducts research on how knowledge-based systems interfaced with multimedia software and hardware can provide intelligent information search, retrieval, and display. 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 and 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, Cilent 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 IEMS 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.)

30 Semester Hours

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

EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6140	Project Engineering	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6427	Linear Programming and Extensions	3 hours
STA	5205	Experimental Design	3 hours
EIN	6971	Thesis (required)	6 hours
Electives			6 Semester Hours

#### 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**

			<b>24 Semester Hours</b>
STA	5156	Probability and Statistics for Engineers	3 hours
EIN	5117	Management Information Systems	3 hours
EIN	5356	Cost Engineering	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
EIN	6140	Project Engineering	3 hours
EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6322	Engineering Management	3 hours
ESI	5316	Operations Research	3 hours

**Thesis Option**

EIN	6971	Thesis	<b>6 Semester Hours</b> 6 hours
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**Non-Thesis Option**

Electives	<b>12 Semester Hours</b> 12 hours
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**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**

			<b>18 Semester Hours</b>
EIN	5247	Experimental Design and Taguchi Methods (can substitute STA 5205 - Experimental Design or PSY 6216 - Advanced Research Methodology I)	3 hours
EIN	5248C	Ergonomics	3 hours
EIN	6215	System Safety Engineering and Management	3 hours
EIN	6249C	Biomechanics	3 hours
EIN	6258	Human-Computer Interaction	3 hours
EIN	6270C	Work Physiology	3 hours

<b>Human Performance/Perception Restricted Elective</b>	<b>3 Semester Hours</b>
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	
<b>Thesis Option</b>	<b>9 Semester Hours</b>
EIN 6971 Thesis	6 hours
	Electives
	3 hours
<b>Non-Thesis Option</b>	<b>15 Semester Hours</b>
	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 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.
- \*\*\* 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.

<b>Required Courses</b>	<b>15 Semester Hours</b>
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
<b>Thesis Option</b>	<b>15 Semester Hours</b>
EIN 6971 Thesis	6 hours
	Electives
	9 hours
<b>Non-Thesis Option</b>	<b>21 Semester Hours</b>
	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		21 Semester Hours
ESI 5531	Discrete Systems Simulation	3 hours
ESI 6427	Linear Programming and Extensions	3 hours
ESI 6437	Nonlinear Programming and Dynamic Programming <u>OR</u>	3 hours
ESI 6448	Network Analysis and Integer Programming	3 hours
EIN 5602C	Expert Systems in Industrial Engineering	3 hours
ESI 6358	Decision Analysis	3 hours
STA 5205	Experimental Design <u>OR</u>	3 hours
STA 6236	Regression Analysis	3 hours
STA 5825	Stochastic Processes and Applied Probability Theory	3 hours

**Thesis Option**

9 Semester Hours

EIN 6971	Thesis	6 hours
	Electives	3 hours

**Non-Thesis Option**

15 Semester Hours

	Electives	15 hours
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**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 (EIN 2032 or equivalent)\*\*

Manufacturing Engineering (EIN 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

EGN	5xxxC	Metrology	3 hours	15 Semester Hours
EIN	5392C	Manufacturing Systems Engineering	3 hours	
EIN	5607C	Computer Control of Manufacturing Systems	3 hours	
EIN	6417	Precision Engineering	3 hours	
EIN	6398	Advanced and Nontraditional Manufacturing Processes	3 hours	

#### Thesis Option

EIN	6971	Thesis	6 hours	15 Semester Hours
		Electives	9 hours	

#### Non-Thesis Option

Electives	21 hours	21 Semester Hours
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### 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 (EIN 2032)\*

Manufacturing Engineering (EIN 4391)\*\*

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

EIN	5602C	Expert Systems in Industrial Engineering	3 hours	24 Semester Hours
EIN	6140	Project Engineering	3 hours	
EIN	5392C	Manufacturing Systems Engineering	3 hours	
ESI	6227	Total Quality Management	3 hours	
ESI	5236	Reliability Engineering	3 hours	
ESI	6224	Quality Assurance Management	3 hours	
ESI	6225	Quality Analysis and Control	3 hours	
STA	5205	Experimental Design	3 hours	



<b>Thesis Option</b>		<b>6 Semester Hours</b>
EIN	6971 Thesis	6 hours
<b>Non-Thesis Option</b>		<b>12 Semester Hours</b>
	Electives	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.

<b>Required Courses</b>		<b>24 Semester Hours</b>
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
<b>Thesis Option</b>		<b>6 Semester Hours</b>
EIN	6971 Thesis	6 hours
<b>Non-Thesis Option</b>		<b>12 Semester Hours</b>
	Electives	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**

			<b>21 Semester Hours</b>
EIN	5602C	Expert Systems in Industrial Engineering	3 hours
EIN	6140	Project Engineering	3 hours
EIN	6647	Intelligent Simulation	3 hours
ESI	5316	Operations Research	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6532	Object Oriented Simulation	3 hours
STA	5205	Experimental Design	3 hours

**Thesis Option**

			<b>9 Semester Hours</b>
EIN	6971	Thesis	6 hours
		Electives	3 hours

**Non-Thesis Option**

			<b>12 Semester Hours</b>
		Electives	15 hours

## Doctor of Philosophy in Industrial Engineering

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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****33 Semester Hours**

The following areas must form part of the student's program of study. Substitute courses may be approved by the Department's Doctoral Committee.

STA	5205	Experimental Design	3 hours
STA	6236	Regression Analysis	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
EIN	5117	Management Information Systems	3 hours
EIN	6140	Project Engineering	3 hours
EIN	5248	Ergonomics	3 hours
EIN	5602C	Expert Systems in Industrial Engineering	3 hours
ESI	6225	Quality Analysis and Control	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6427	Linear Programming and Extensions	3 hours
EIN	6336	Production and Inventory Control	3 hours

**Electives****24 Semester Hours****Dissertation****24 Semester Hours****Minimum Hours Required for Ph.D.****81 Semester Hours**

**IEMS Graduate Elective  
Courses by Area of Study**
**Engineering Management**

EIN	5117	Management Information Systems	3 hours
EIN	5356	Cost Engineering	3 hours
EIN	5381	Engineering Logistics	3 hours
EIN	6140	Project Engineering	3 hours
EIN	6322	Engineering Management	3 hours
EIN	6339	Productivity Engineering	3 hours
EIN	6357	Advanced Engineering Economic Analysis	3 hours
EIN	6933	Systems Acquisition	3 hours
ESI	5451	Network-based Project Planning Scheduling and Control	3 hours

**Ergonomics**

EIN	5248C	Ergonomics	3 hours
EIN	5251	Human Computer Interaction: Usability Evaluation	3 hours
EIN	6215	Systems Safety Engineering and Management	3 hours
EIN	6249C	Biomechanics	3 hours
EIN	6252	Human-Virtual Environment Interaction	3 hours
EIN	6258	Human Computer Interaction	3 hours
EIN	6264C	Industrial Hygiene	3 hours
EIN	6270C	Work Physiology	3 hours
EIN	6935	Advanced Ergonomics Topics	3 hours

**Expert Systems**

EIN	5602	Expert Systems in Industrial Engineering	3 hours
EIN	6603	Readings in Expert Systems/AI in Industrial Engineering	3 hours

**Manufacturing/Operations Management**

EGN	5720	Internal Combustion Engine Analysis and Optimization	3 hours
EGN	5xxxC	Metrology	3 hours
EGN	6xxxC	Experimental Methods for High Performance Engine Manufacturing	3 hours
EIN	5368C	Integrated Factory Automation Systems	3 hours
EIN	5388	Forecasting	3 hours
EIN	5415C	Tool Engineering and Manufacturing Analysis	3 hours
EIN	6336	Production and Inventory Control	3 hours
EIN	5392C	Manufacturing Systems Engineering	3 hours
EIN	5607C	Computer Control of Manufacturing Systems	3 hours
EIN	6398	Advanced and Nontraditional Manufacturing Processes	3 hours
EIN	6399	Concurrent Engineering	3 hours
EIN	6417	Precision Engineering	3 hours
EIN	6418C	Electronics Manufacturing	3 hours
EIN	6425	Scheduling and Sequencing	3 hours
EIN	6936	Seminar in Advanced Industrial Engineering	3 hours
EIN	6930	Manufacturing Engineering Seminar	3 hours

**Operations Research**

ESI	5316	Operations Research	3 hours
ESI	5359	Risk Assessment and Management	3 hours
ESI	5491C	Engineering Applications of Linear and Nonlinear Optimization	3 hours
ESI	6336	Queuing Systems	3 hours
ESI	6358	Decision Analysis	3 hours
ESI	6427	Linear Programming and Extensions	3 hours
ESI	6437	Nonlinear Programming and Dynamic Programming	3 hours
ESI	6448	Network Analysis and Integer Programming	3 hours
ESI	6551C	Systems Engineering	3 hours
ESI	6941	Operations Research Practicum	6 hours
ESI	5315	Research Foundations for IE and OR Modeling	3 hours



**Simulation and Training**

EIN	5255	Training Simulator Engineering	3 hours
EIN	6317	Training Systems Engineering	3 hours
EIN	6645	Modeling and Simulation of Real-time Processes	3 hours
EIN	6647	Intelligent Simulation	3 hours
EIN	6649	Intelligent Simulation Training System Design	3 hours
ESI	5531	Discrete Systems Simulation	3 hours
ESI	6217	Statistical Aspects of Digital Simulation	3 hours
ESI	6529	Advanced Systems Simulation	3 hours
ESI	6532	Object Oriented Simulation	3 hours

**Statistics and Quality Control**

EIN	5247	Experimental Design and Taguchi Methods	3 hours
EIN	6330	Quality Control in Automation	3 hours
ESI	5236	Reliability Engineering	3 hours
ESI	6224	Quality Assurance Management	3 hours
ESI	6225	Quality Analysis and Control	3 hours
ESI	6227	Total Quality Management	3 hours
STA	5156	Probability and Statistics for Engineers	3 hours

**Other**

EIN	5936	Seminar in Industrial Engineering Doctoral Research	1 hour
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**Mechanical, Materials, and Aerospace Engineering Department**

Alain J. Kassab ..... Program Coordinator  
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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. McBryer, 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. ....	Assistant Professor
A. Minardi, Ph.D. ....	Associate Professor
J. Nayfeh, Ph.D. ....	Associate Professor
C. E. Nuckolls, Ph.D., P.E. ....	Associate Professor
G. G. Ventre, 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. ....	Department of Chemistry
B. Chai, Ph.D. ....	Department of Physics
L. Debnath, Ph.D. ....	Department of Mathematics
N. S. Dhere, Ph.D. ....	Florida Solar Energy Center
B. Nimmo, Ph.D. ....	Florida Solar Energy Center
K. Vajravelu, Ph.D. ....	Department of Mathematics

**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 chemomechanical 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 of 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 an 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****12 Semester Hours**

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	
EML	6725	Computational Fluid Dynamics and Heat Transfer I	3 hours

**Representative Electives****18-24 Semester Hours**

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**

12 Semester Hours

EMA	5104	Intermediate Structure and Properties of Materials	3 hours
EMA	5106	Metallurgical Thermodynamics OR	
EML	5237	Intermediate Mechanics of Materials	3 hours
EMA	6516	XRD and Crystallography	3 hours
EMA	6126	Physical Metallurgy	3 hours

**Representative Electives**

18-24 Semester Hours

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	5584	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	6062	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

**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**

12 Semester Hours

EML	5060	Mathematical Methods in Mechanical, Materials, and Aerospace Engineering	3 hours
EML	5237	Intermediate Mechanics of Materials	3 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

EML 6157	Radiation Heat Transfer	3 hours
EML 6158	Gaseous Radiation Heat Transfer	3 hours
EML 6712	Mechanics of Viscous Flow	3 hours
EML 6726	Computational Fluid Dynamics and Heat Transfer II	3 hours
EML 6971	Thesis	6 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, and 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

- CEG 5015** EN 3(3,0)  
**Geotechnical Engineering II.** PR: CEG 4101C. Continuation of CEG 4101C with emphasis on shear strength and design factors for earth pressures bearing capacity, and slope stability.
- CEG 5700** EN 3(3,0)  
**Geo-Environmental Engineering.** PR: CEG 4101C. Geotechnical applications to environmental problems, groundwater flow, soil contamination and groundwater contaminate transport, geosynthetics and stability of landfill design, control of contaminated sites.
- CEG 6065** EN 3(3,0)  
**Soil Dynamics.** PR: CEG 4101C. Comprehensive coverage in calculating the dynamic response of foundations, presenting a variety of contemporary techniques for fields and laboratory.
- CEG 6115** EN 3(3,0)  
**Foundation Engineering.** PR: CEG 5015. Analysis and design of spread footings, mat foundations, retaining walls, sheet-piling and bracing systems and pile foundations.
- CEG 6317** EN 3(3,0)  
**Advanced Geotechnical Engineering.** PR: CEG 5015. Mechanics of soils and models; elasticity and plasticity of soil bodies; strength of soils and stability of soil structures.
- CES 5325** EN 3(3,0)  
**Bridge Engineering.** PR: CES 4605 and CES 4706. Structural systems for bridges, loading, analysis by influence lines, slab and girder bridges, composite design, prestressed concrete, rating of existing bridges, specifications and economic factors.
- CES 5606** EN 3(3,0)  
**Advanced Steel Structures.** PR: CES 4605. Behavior and design of steel buildings; emphasis on AISC-LRFD building code; complex connections, tension members, stability of compression members, laterally unsupported beams, frames, and beam columns.
- CES 5706** EN 3(3,0)  
**Advanced Reinforced Concrete.** PR: CES 4702 or C.I. Design of frames, two-way systems, shear walls, shear and torsion, compression field theory; inelastic analysis, wind and seismic design; introduction to prestressed concrete.
- CES 5821** EN 3(3,0)  
**Masonry and Timber Design.** PR: C.I. Structural properties of masonry and timber; design loads, codes and standards; analysis of axial loads, flexure and shear.
- CES 6116** EN 3(3,0)  
**Finite Element Structural Analysis.** PR: CES 4101 or C.I. Concept, theory, and application of the finite element method; analysis of one-, two-, and three-dimensional structural components and systems; stability and dynamics; applications.
- CES 6129** EN 3(3,0)  
**Analysis of Plates and Shells.** PR: EML 5237 or equivalent. Theory of bending of thin plates. Energy and approximation techniques. Non-linear behavior of plates. Theory of thin shells with small deformations.
- CES 6170** EN 3(3,0)  
**Boundary Element Methods in Civil Engineering.** PR: C.I. Green's theorems; integral formulations for two- and three-dimensional and axisymmetric problems of solid mechanics; applications to structural and geomechanics problems; programming.
- CES 6209** EN 3(3,0)  
**Dynamics of Structures.** PR: C.I. Response analysis of single and multi-degree-of-freedom systems to periodic and non-periodic excitations; continuous systems; response spectra; applications in structural engineering.
- CES 6218** EN 3(3,0)  
**Structural Stability.** PR: EML 5237 or equivalent. Analysis of structural elements, columns, frameworks, lateral stability. Introduction to the stability of plates. Energy and approximate methods.
- CES 6220** EN 3(3,0)  
**Wind and Earthquake Engineering.** PR: CES 6209 or C.I. Wind characteristics; wind effects on structures; dynamic analysis for wind loads; nature of earthquake forces; response spectra and seismic design; wind and seismic codes.
- CES 6230** EN 3(3,0)  
**Advanced Structural Mechanics.** PR: C.I. Review of biaxial bending and torsion; plate bending; theory of elasticity, visco-elasticity and plasticity; anisotropic elasticity and stability.
- CES 6715** EN 3(3,0)  
**Prestressed Concrete Structures.** PR: CES 4702 and CES 5706 or C.I. Prestressed concrete behavior and design; applications in building and bridge design including pre- and post-tensioned girders, floors, roofs, and walls.
- CES 6840** EN 3(3,0)  
**Composite Steel Concrete Structures.** PR: CES 5606 and CES 5706 or C.I. Fundamentals of composite action; high performance materials, design of composite beams, slabs, beam-columns, joints; applications of prestressing; composite buildings and bridges; construction methods.
- CES 6910** EN 3(3,0)  
**Research in Structural Engineering.** PR: C.I. Behavior and design of steel, concrete, or composite structures under cyclic, wind, earthquake, impact, or blast loading.
- CGN 5320C** EN 3(2,2)  
**Geographic Information Systems.** Programming theory and application of geographic information systems to civil engineering projects.
- CGN 5504C** EN 3(2,2)  
**Civil Engineering Materials.** PR: EGN 3365C, EGN 3331, or C.I. Structure, properties, and applications of materials used in civil engineering including concrete, steel, asphalt, wood, soils, and composite materials.



<b>CGN 5506C</b>	<b>EN 3(2,2)</b>	<b>EAS 5157</b>	<b>EN 3(3,0)</b>
Asphalt Concrete Mix Design. PR: CEG 4101C. Properties of asphalt, aggregate and asphalt mixtures, Marshall mix design, Hveem mix design, pavement rehabilitation.		V/Stol Aerodynamics and Performance. PR: EAS 4105. CR: EML 5060. Momentum theory, blade element theory, hover and forward flight, stability, aeroelasticity.	
<b>CGN 6655</b>	<b>EN 3(3,0)</b>	<b>EAS 5302</b>	<b>EN 3(3,0)</b>
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.		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.	
<b>CWR 5205</b>	<b>EN 3(3,0)</b>	<b>EAS 5315</b>	<b>EN 3(3,0)</b>
Hydraulic Engineering. PR: CWR 4101C and CWR 4203C. Concepts of fluid mechanics and hydrodynamics applied to natural and man-made flow of interest to civil and environmental engineering.		Rocket Propulsion. PR: EAS 4134 or EML 4703. Analysis and performance of rocket motors; selection and thermochemistry of chemical propellants; liquid and solid propellant rockets.	
<b>CWR 5545</b>	<b>EN 3(3,0)</b>	<b>EAS 6138</b>	<b>EN 3(3,0)</b>
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.		Advanced Gas Dynamics. PR: EML 5713. CR: EML 5060. Analysis of steady and unsteady transonic, supersonic and hypersonic flows. Shock waves, nozzles, diffusers, and high speed wind tunnels.	
<b>CWR 6102</b>	<b>EN 3(3,0)</b>	<b>EAS 6185</b>	<b>EN 3(3,0)</b>
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.		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.	
<b>CWR 6125</b>	<b>EN 3(3,0)</b>	<b>EAS 6405</b>	<b>EN 3(3,0)</b>
Groundwater Hydrology. PR: CWR 4203C or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.		Advanced Flight Dynamics. PR: EAS 4105 or equivalent. Aerodynamic principles as applied to stability and control of aerospace vehicles. Generalized vehicle performance. Small disturbance dynamic stability and control response.	
<b>CWR 6126</b>	<b>EN 3(3,0)</b>	<b>EAS 6507</b>	<b>EN 3(3,0)</b>
Groundwater Modeling. PR: CWR 6125. Review of contemporary computer-based groundwater flow models and their application to environmental engineering problems.		Topics of Astrodynamics. PR: EML 5271 or C.I. Spacecraft attitude dynamics and control. Orbital mechanics. Optimal control of aerospace vehicles. Emphasis is on recent developments and applications.	
<b>CWR 6235</b>	<b>EN 3(3,0)</b>	<b>ECM 5135</b>	<b>EN 3(3,0)</b>
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.		Engineering Math Analysis I. PR: MAP 2302. Topics in advanced engineering mathematics including systems of differential equations, phase plane, linear algebra, and vector differential calculus.	
<b>CWR 6535</b>	<b>EN 3(3,0)</b>	<b>ECM 6235</b>	<b>EN 3(3,0)</b>
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.		Engineering Math Analysis II. PR: EEL 5135. Advanced engineering math topics including Fourier series, partial differential equations, and complex variables. noninstitutional imbalance.	
<b>CWR 6236</b>	<b>EN 3(3,0)</b>	<b>EEL 5173</b>	<b>EN 3(3,0)</b>
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.		Signal and System Analysis. PR: EEL 3122C and EEL 3657. Continuous and discrete dynamic models; emphasis on state variable models. Laplace, Z-transform and time domain solutions of dynamic model behavior. Real-time digital simulation. Sampling theory.	
<b>EAS 5123</b>	<b>EN 3(3,0)</b>	<b>EEL 5245C</b>	<b>EN 3(2,1)</b>
Intermediate Aerodynamics. PR: EAS 4134. CR: EML 5060. Aerodynamic characteristics of airfoils, finite wings, waves, wing-body combinations, viscous flow and flow instabilities. Airfoil design.		Power Electronics. PR: EEL 4309. Principles of power electronics, power semiconductor devices, inverter topologies, switch-mode and resonant dc-to-dc converters, cyclo-converters, applications.	



- EEL 5332C** EN 3(2,1)  
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** EN 3(3,0)  
Semiconductor Material and Device Characterization. PR: EEL 3306 or C.I. Semiconductor material characterization resistivity, mobility, doping carrier lifetime, device properties, threshold voltage, interface charge of MOS devices, optical and surface characterization of films.
- EEL 5353** EN 3(3,0)  
Semiconductor Device Modeling and Simulation. PR: EEL 3307. Large signal and small signal model development for semiconductor diodes, BJTs, and MOSFETs. Parameter extraction, numerical algorithm, and SPICE simulation are included.
- EEL 5355C** EN 4(3,3)  
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** EN 3(3,0)  
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** EN 3(3,0)  
Operational Amplifiers. PR: EEL 4309C. Ideal and non-ideal Op-Amps. Linear applications. Active RC and switched-capacitor filters. Non-linear and other functional circuits. Frequency stability and compensation of Op-Amps.
- EEL 5434** EN 3(3,0)  
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** EN 3(3,0)  
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** EN 3(3,0)  
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** EN 3(2,10)  
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** EN 3(3,0)  
Geometrical Optics. PR: C.I. or graduate standing. Fundamentals of Geometrical Optics, Geometrical Theory of Image Formation, Optical System Layout.
- EEL 5451L** EN 3(1,4)  
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** EN 3(3,1)  
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** EN 3(3,0)  
Digital Signal Processing Applications. PR: EEL 4750. The design and practical consideration for implementing Digital Signal Processing Algorithms including Fast Fourier Transform techniques, and some useful applications.
- EEL 5517** EN 3(3,0)  
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** EN 3(3,0)  
Random Processes I. PR: EEL 3552C and EIN 2032. Elements of probability theory; random variables, and stochastic processes.
- EEL 5547** EN 3(3,0)  
Introduction to Radar Systems. Introduction to pulse and CW Radar Systems. Chirp Radar Systems. Tracking Radar. Noise in Radar Systems.
- EEL 5555C** EN 3(2,2)  
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** EN 3(3,0)  
Fiber Optics Communication. PR: EEL 3552C, EEL 3470. Use of fiber optics as a communication channel. Principles of fiber optics. Mode theory, transmitters, modulators, sensors, detectors, and demodulators.
- EEL 5630** EN 3(3,0)  
Digital Control Systems. PR: EEL 3657. Real-time digital control systems analysis and design. Z-transforms, sampling and reconstruction, time and frequency response, stability analysis, digital controller design.
- EEL 5704** EN 3(3,0)  
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** EN 3(3,0)  
High Performance Computer Architecture. PR: EEL 4767. Engineering of high performance computer systems. Memory, processor and control subsystems design trade-offs. Virtual and cache memory. Pipeline, vector commuting.
- EEL 5741C** EN 3(2,3)  
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** EN 3(3,0)  
Performance Analysis of Computer and Communication Systems. PR: EEL 4767C, EIN 2032. Stochastic modeling and discrete-event simulation; Markov chains; networks of queues;



SemiMarkov models; application to multiprocessor systems, switching and multi-user communications.

**EEL 5771C** **EN 3(2,3)**  
**Engineering Applications of Computer Graphics.** PR: EGN 3420 or C.I. Computer Graphics in Engineering Applications. Laboratory program assignments.

**EEL 5820** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**Software Engineering I.** PR: EGN 3420, EEL 4851, or C.I. Design, implementation, and testing of computer software for engineering applications.

**EEL 5891** **EN 3(3,0)**  
**Continuous System Simulation I.** PR: EEL 3657 or C.I. Use of state-space techniques, numerical integration, and CSSL programs. Laboratory assignments.

**EEL 6XXX** **EN 3(3,0)**  
**Advanced Machines.** PR: EEL 4205.

**EEL 6246** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**Advanced Topics in Power Engineering.** PR: EEL 6255. A current topic will be discussed such as power system transients, system protection, T&D, and dielectric engineering.

**EEL 6338** **EN 3(3,0)**  
**Advanced Topics in Microelectronics.** PR: C.I. Covers advanced topics in microelectronics such as semiconductor device physics, semiconductor device fabrication, and semiconductor device modeling.

**EEL 6354** **EN 3(3,0)**  
**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 6371** **EN 3(3,0)**  
**Advanced Electronics I.** PR: EEL 5357 or EEL 5370. Models for integrated-circuit active devices. Analysis and design of IC amplifiers. Feedback amplifiers. Frequency response and stability. Compensation of amplifiers.

**EEL 6372** **EN 3(3,0)**  
**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 6443** **EN 3(3,0)**  
**Electro-optics.** PR: EEL 3470, EEL 5441. Principles, design and use of birefringent and periodic electro-optic devices. Nonlinear and phase-conjugate optics.

**EEL 6446** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**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 6463** **EN 3(3,0)**  
**Antenna Analysis and Design II.** PR: EEL 5462C. Moment method, GTD, aperture antennas, reflectors, frequency independent antennas and microstrip antennas.

**EEL 6488** **EN 3(3,0)**  
**Electromagnetic Fields.** PR: EEL 3470 or C.I. Maxwell's equations. Boundary conditions. Propagation, reflection, and refraction of waves. Guided waves. Radiation.

**EEL 6492** **EN 3(3,0)**  
**Advanced Topics in Electromagnetics and Microwaves.** PR: C.I. Advanced and current topics in EM fields, antennas, and microwaves.

**EEL 6502** **EN 3(3,0)**  
**Adaptive Digital Signal Processing.** PR: EEL 5513 or C.I. Weiner filtering, Least Mean Square and Recursive Least Squares based algorithms, adaptive prediction and identification with applications such as echo cancellation, etc.

**EEL 6504** **EN 3(3,0)**  
**Communications Systems Design.** PR: EEL 6530. Information and coding theory. Modem design. Binary and M-ary modulations. Intersymbol interference and pulse shaping. DS and FS spread-spectrum systems.

**EEL 6505** **EN 3(3,0)**  
**Multidimensional Digital Processing.** PR: EEL 5513 or C.I. Multidimensional signals and systems. Two-dimensional transforms and filters. Image processing applications.

**EEL 6530** **EN 3(3,0)**  
**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** **EN 3(3,0)**  
**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.



- EEL 6543** EN 3(3,0)  
**Random Processes II.** PR: EEL 5542. Stochastic processes. Mean-squared estimation. Queueing theory. Spectral estimation. Applications to communications and radar systems.
- EEL 6558** EN 3(3,0)  
**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.
- EEL 6560** EN 3(3,0)  
**Laser Engineering.** PR: EEL 5441 or C.I. Principles of laser amplification and oscillations; design of lasers; general characteristics of excitation systems.
- EEL 6560L** EN 3(1,3)  
**Laser Engineering Laboratory.** PR: EEL 6560, 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.
- EEL 6561** EN 3(3,0)  
**Fourier Optics.** Application of Fourier transform theory to optical systems design. Development of optical correlation techniques. Holographic techniques and applications.
- EEL 6564** EN 3(3,0)  
**Statistical Optics with Applications.** PR: EEL 5441 and EEL 5542, or C.I. Characterization of random optical waves with applications in communications, turbulence scattering, and imaging.
- EEL 6565** EN 3(3,0)  
**Radiation and Detection.** PR: C.I. Radiometry, Planck radiators, spectrometers, photon-counting statistics, detector noise analysis, detector mechanisms.
- EEL 6590** EN 3(3,0)  
**Advanced Topics in Communications.** PR: C.I. Advanced and current topics in communications, such as coding theory, information theory, spread spectrum, etc.
- EEL 6616** EN 3(3,0)  
**Adaptive Control.** PR: EEL 5173. System identification and adaptive control design, including identification algorithms, MRAC, STR, and stochastic adaptive control. Lyapunov stability and input-output stability.
- EEL 6617** EN 3(3,0)  
**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.
- EEL 6621** EN 3(3,0)  
**Nonlinear Control Systems.** PR: EEL 5173. Phase plane descriptions of nonlinear phenomena, limit cycles, jump conditions, stability, describing functions, Liapunov and Popov theory, time and frequency domain analysis for nonlinear systems.
- EEL 6662** EN 3(3,0)  
**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.
- EEL 6671** EN 3(3,0)  
**Modern and Optimal Control Systems.** PR: EEL 5173. The optimal control problem. Necessary conditions for constrained minimums in finite dimensional space. Application to discrete time control problems. Pontryagin conditions and Hamilton-Jacobi equations. Computational considerations.
- EEL 6674** EN 3(3,0)  
**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.
- EEL 6680** EN 3(3,0)  
**Advanced Topics in Modern Control Systems.** PR: C.I. Introduces students to present-day issues in control systems analysis, design, and implementation.
- EEL 6707** EN 3(3,0)  
**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.
- EEL 6708** EN 3(3,0)  
**Computer Systems Design.** PR: EEL 5704 or C.I. Study of digital systems and computer architecture using digital design language. Specification and design of computer systems. Comparison of software and hardware solutions.
- EEL 6743C** EN 3(2,3)  
**Microcomputer Applications Design.** PR: EEL 5741C or C.I. Advanced applications of microcomputer systems. Design of systems and software to implement a case study in microcomputer usage.
- EEL 6763** EN 3(3,0)  
**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.
- EEL 6769** EN 3(3,0)  
**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.
- EEL 6785** EN 3(3,0)  
**Computer Network Design.** PR: EEL 4768C or C.I. Network types and network protocols. Design of networks and analysis of their performance.
- EEL 6812** EN 3(3,0)  
**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.
- EEL 6823** EN 3(3,0)  
**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; multispectral 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 5881 or equivalent; C.I. Continuation of EEL 5881. Emphasis on term projects and case studies.
- EEL 6885** EN 3(3,0)  
**Software Engineering Quality Assurance Methods.** PR: EEL 5881, EEL 6883. Methods for verification and validation of software quality, including software engineering metrics and models.
- 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, sampled 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: Thermo/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 6xxxC** 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 ESI 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, equipments 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 5381** EN 3(3,0)  
**Engineering Logistics.** Study of the logistics life-cycle involving planning, analysis and design, testing, production, distribution, and support.
- EIN 5388** EN 3(3,0)  
**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, and EIN 4411C or EML 4535C; or C.I. Automated systems for manufacturing, numerical control (NC) machines, NC programming, robot control and programming, machine and system control.
- EIN 5936** EN 1(1,0)  
**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 6215** EN 3(3,0)  
**System Safety Engineering and Management.** PR: C.I. Occupational injury and accident statistic. Accident investigation and prevention methods. Hazard analysis. Occupational safety and health standards and regulations. Product safety and liability.
- 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/methods 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.



EIN 6357	EN 3(3,0)	Advanced Engineering Economic Analysis. PR: EGN 3613; EIN 2032 or equivalent. Topics include measuring economic worth, economic optimization under constraints. Analysis of economic risk and uncertainty, foundations of utility functions.
EIN 6398	EN 3(3,0)	Advanced and Nontraditional Manufacturing Processes. PR: EIN 4391C or C.I. Latest methods and developments in manufacturing process engineering.
EIN 6399	EN 3(3,0)	Concurrent Engineering. Elements of concurrent engineering and its applications. Topics include quality function deployment, design for manufacturability, and design for assembly.
EIN 6418C	EN 3(3,0)	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.
EIN 6603	EN 3(3,0)	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.
EIN 6645	EN 3(3,0)	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.
EIN 6647	EN 3(2,2)	Intelligent Simulation. The use of intelligent objects in building simulation models to achieve a goal by altering the scenarios during problem solution.
EIN 6649	EN 3(2,2)	Intelligent Simulation Training System Design. A systems approach to building intelligent simulation training systems. Emphasis on removing the human instructor from the content training.
EIN 6930	EN 3(3,0)	Manufacturing Engineering Seminar. PR: C.I. Presentation of latest manufacturing engineering technological advancements and related topics.
EIN 6933	EN 3(3,0)	Systems Acquisition. What the engineer needs to know about the systems acquisition process when dealing with government contracting agencies.
EIN 6934	EN 3(3,0)	Contract Negotiations. PR EIN 6933. A seminar on the contract negotiation phase of systems acquisition for the United States Government; Contract Formulation and Acquisition Process Management is emphasized.
EIN 6935	EN 3(3,0)	Advanced Ergonomics Topics. PR: C.I. Seminar treatment of selected advanced topics in ergonomics.
EIN 6936	EN 3(3,0)	Seminar in Advanced Industrial Engineering. Topical seminar. Potential topic areas include quality function deployment, axiomatic design, design quality, benchmarking, re-engineering processes.
EMA 5XXX	EN 3(3,0)	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.
EMA 5104	EN 3(3,0)	Intermediate Structure and Properties of Materials. PR: EGN 3365. Fundamentals of dislocation theory, metallurgical thermodynamics and diffusion. Phase transformations, strengthening mechanisms and fracture. Introduction to engineering polymers, ceramics, and composites.
EMA 5106	EN 3(3,0)	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.
EMA 5108	EN 3(3,0)	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.
EMA 5140	EN 3(3,0)	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.
EMA 5326	EN 3(3,0)	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.
EMA 5504	EN 3(3,0)	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.
EMA 5584	EN 3(3,0)	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.
EMA 5610	EN 3(3,0)	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.
EMA 5705	EN 3(3,0)	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.
EMA 6126	EN 3(3,0)	Physical Metallurgy. PR: EMA 5104 or EML 3124. Analytical methods in crystallography, dislocation theory, annealing,



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, eutectic 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 point, line, and planar defects in crystalline materials. Discusses 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 EMA 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 co-

efficient 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 5152** EN 3(3,0)  
**Intermediate Heat Transfer.** PR: EML 4142, EML 5713. CR: EML 5060. An intermediate-level course dealing with heat and mass diffusion, boundary layer problems, and radiation from real bodies. Emphasis on combined modes, numerical methods.

**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 5237** EN 3(3,0)  
**Intermediate Mechanics of Materials.** PR: EML 3500. CR: EML 5060. Elements of elasticity. Failure theories. Bending and torsion. Thin plates. Energy principles. Thick-walled cylinders. Applications to design.

**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 5271** EN 3(3,0)  
**Intermediate Dynamics.** PR: EML 2321. Dynamics of particles, rigid bodies, and distributed mass systems. Hamilton's principle. Lagrange's equations. Numerical methods. Mechanisms.

**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** EN 3(3,0)  
**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** EN 3(2,3)  
**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 5546** EN 3(3,0)  
**Engineering Design with Composite Materials.** PR: EML 5237. Mechanics of structural components of composite materials under static, thermal, vibratory loads. Instability. Lamina and laminate theory, energy methods, failure theories, and structural joining methods.
- EML 5572** EN 3(3,0)  
**Probabilistic Methods in Mechanical Design.** PR: EML 3500, STA 3032. Uncertainty modeling in design. Use of probabilistic mathematics to assess strength, stiffness, toughness, and stability. Applications.
- EML 5713** EN 3(3,0)  
**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** EN 3(3,0)  
**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 6067** EN 3(3,0)  
**Finite Elements in Mechanical, Materials, and Aerospace Engineering I.** PR: EML 5237 or EML 5713. Finite element analysis of thermomechanical response of aerospace and mechanical components and structures. Plates and shells. Vibrations. Composite materials. Minimum weight design. CAD interface. Introduction to codes.
- EML 6068** EN 3(3,0)  
**Finite Elements in Mechanical, Materials, and Aerospace Engineering II.** PR: EML 6067 or C.I. Advanced finite element applications to aerospace and mechanical components and structures. Rotating systems. Fracture mechanics. Aeroelasticity. Buckling. Impact. Use of codes.
- EML 6104** EN 3(3,0)  
**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 6124** EN 3(3,0)  
**Two-Phase Flow.** PR: EML 5152. Introduction to two-phase flow and boiling heat transfer. General transport equations and models for analyzing two-phase systems. Emphasis placed on liquid-vapor systems.
- EML 6154** EN 3(3,0)  
**Conduction Heat Transfer.** PR: EML 5152 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 6155** EN 3(3,0)  
**Convection Heat Transfer.** PR: EML 5152, EML 5713, or C.I. Convection heat, mass and momentum transfer in laminar and turbulent flows. Applications to the design of thermal systems.
- EML 6157** EN 3(3,0)  
**Radiation Heat Transfer.** PR: EML 5152 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 6158** EN 3(3,0)  
**Gaseous Radiation Heat Transfer.** PR: EML 6157. Development of Radiative Transfer Equation, radiative properties of gases, and solutions to gaseous radiation problems.
- EML 6211** EN 3(3,0)  
**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 6223** EN 3(3,0)  
**Advanced Vibrational Systems.** PR: EML 4220, EML 5271 or C.I. Discrete and distributed parameter systems. Introduction to nonlinear and random vibrations. Concepts of modern dynamic analysis.
- EML 6226** EN 3(3,0)  
**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 6227** EN 3(3,0)  
**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 6305C** EN 3(2,2)  
**Experimental Mechanics.** PR: EML 4304, EML 5237. Selected topics in strain measurements, photoelasticity, holographic interferometry; laser speckle measurement; acoustic emission, measurement of correlation and coherence functions.
- EML 6547** EN 3(3,0)  
**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 mechanisms and fracture criteria.
- EML 6653** EN 3(3,0)  
**Theory of Elasticity.** PR: EML 5237. Review of stress and strain; solution by tensor stress and potential functions, axisymmetric problems; wave propagation.
- EML 6712** EN 3(3,0)  
**Mechanics of Viscous Flow.** PR: EML 5060, EML 5713. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.



- 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: EGN 3704, CWR 3201, 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 Waste 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, NO<sub>3</sub>, DBP<sub>3</sub>, 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(1,6)  
**Unit Operation and Processes Laboratory.** PR: ENV 6015 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; multiattribute 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)  
**Object-oriented Simulation.** Object-oriented modeling and development techniques for building large process-based discrete event simulation models. Concurrency in discrete event simulation. Object-oriented simulation environment.
- 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)  
**Seminar in Advanced Operations Research.** PR: ESI 6427 or C.I. Topical seminar. Potential topic areas include tabu search, genetic algorithms, simulated annealing, neural networks. Analytic Hierarchy Process, and methods for large-scale optimization.
- 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. Brutten, 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. ....	Assistant 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
D. Slaughter, J.D. ....	Assistant Professor
K. Cook, 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



S. Douglass, M.S.	Associate Professor
T. Edwards, Ed.D., RT(R)	Associate Professor
E. Hamby, D.B.A., P.T.	Associate Professor
A. Liberman, Ph.D., M.H.A., M.Ed.	Associate Professor
J. S. Lytle, M.S., M.P.H.	Associate Professor
T. S. Mendenhall, Ph.D., M.B.A.	Associate Professor
J. A. Valentine, Ph.D., M.S.W., M.P.H.	Associate Professor
L. T. Worrell, M.P.H.	Associate Professor
L. Chase-Beasley, Ph.D., P.T.	Assistant Professor
T. Rotarius, Ph.D., M.B.A.	Assistant Professor
C. J. Barr, M.S.	Instructor
G. Bertetta, M.S.	Instructor
M. Diesen, M.S., M.Ed.	Instructor
K. B. Enchelmayer, M.P.T., O.T.R.	Instructor
T. Falen, M.S.	Instructor
R. Freeman, M.Ed., P.T.	Instructor
V. J. Hudson, M.P.T., M.B.A., A.T.C.	Instructor
J. Ludy, M.A.	Instructor
P. Welker, M.A., RT(R) (CT)	Instructor

**Department of Molecular Biology and Microbiology**

R. N. Gennaro, Ph.D.	Chair and Professor
O. M. Berringer, Ph.D.	Professor
M. J. Sweeney, Ph.D.	Associate Dean and Professor
R. S. White, Ph.D.	Professor
R. J. Wodzinski, Ph.D.	Professor
J. F. Charba, Ph.D.	Associate Professor
D. W. Washington, Ph.D.	Associate Professor
K. Chai, Ph.D.	Assistant Professor
D. Chakrabarti, Ph.D.	Assistant Professor
R. Chakrabarti, Ph.D.	Assistant Professor
C. Fernandez-Valle, Ph.D.	Assistant Professor
S. Naser Ph.D.	Assistant Professor
D. F. Hitchcock, M.S.	Instructor

**School of Nursing**

E. Stullenbarger, DSN, RN	Director and Professor
M. L. Sole, Ph.D., RN, CCRN	Associate Professor
D. Wink, Ed.D., RNC	Associate Professor
J. Dorner, M.N., RN	Assistant Dean and Associate Professor
A. Bushy, Ph.D., RN	Professor
M. Bear, Ph.D., RN	Associate Professor
K. Dow, Ph.D., RN	Associate Professor
G. Giovinco, Ph.D., Ed.D., RN	Associate Professor
R. Gropper, Ph.D., RN	Associate Professor
K. Kapke, Ph.D., RN	Associate Professor
J. Kijek, Ph.D., RN	Associate Professor
F. Smith, Ed.D., RN	Associate Professor
V. Browne-Krimsley, Ed.D., RN	Assistant Professor
N. Crigger, Ph.D., RN	Assistant Professor
L. Hennig, Ed.D., RN	Assistant Professor
L. Holcomb, DSN, RN	Assistant Professor
E. Kiehl, Ph.D., RN	Assistant Professor

**Department of Public Administration**

W. C. Lawther, Ph.D.	Chair and Associate Professor
P. W. Colby, Ph.D.	Professor
R. A. Shapek, Ph.D.	Director of the Florida-Eastern Europe Linkage Institute and Professor
J. D. Jurie, D.P.A.	Associate Professor
K. Tom Liou, Ph.D.	Associate Professor
M. P. Aristigueta, M.P.A.	Assistant Professor

E. Berman, Ph.D.	Assistant Professor
G. Gianakis, Ph.D.	Assistant Professor
Jo Marie Rios, Ph.D.	Assistant Professor
M. Rogers, M.P.A.	Instructor

**School of Social Work**

I. C. Colby, DSW	Chair and Professor
D. Poole, Ph.D.	Professor
K. Kazmerski, DSW	Associate Professor
E. K. Suh, Ph.D.	Associate Professor
M. Van Hook, Ph.D.	Associate Professor
E. M. Abel, M.S.W.	Assistant Professor
C. E. Green, Ph.D.	Assistant Professor
A. Leon, Ph.D.	Assistant Professor
E. Pomeroy, Ph.D.	Assistant Professor
L. Davis, M.S.W.	Coordinator, Field Education
G. Jacinto, M.S.W.	Clinical Instructor
M. Sauer, M.S.W.	Clinical Instructor

## Communicative Disorders Department

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Harold A. Utt, Ph.D. .... Program Coordinator  
 Office: Research Pavilion Suite 200, Phone: (407) 249-4798  
 e-mail: [hutt@pegasus.cc.ucf.edu](mailto: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			39 Semester Hours
SPA	5327	Aural Habilitation - Rehabilitation	4 hours
SPA	5600	Administration and Management of Communicative Disorders	3 hours
SPA	5805	Research in Communicative Disorders	3 hours
SPA	6410	Language Problems in Adults: Aphasia and Other Symbolic Disorders	3 hours
SPA	5225	Fluency Disorders	3 hours
SPA	6553	Differential Diagnosis in Speech and Language	3 hours
SPA	5553L	Differential Diagnosis in Speech and Language Laboratory	1 hour
SPA	6132	Measurements in Speech Science	3 hours
SPA	6204	Advanced Studies in Communicative Disorders: Articulation	3 hours
SPA	6211	Voice Disorders	3 hours
SPA	6403	Language Disorders: School Age Language	3 hours
SPA	5236	Speech Problems in Adults: Motor Speech Disorders	3 hours
SPA	5404	Language Disorders: Pre-School	3 hours

### Two seminars must be included in the Program of Study:

SPA	6407	Seminar in Language	2 hours
SPA	6526	Seminar in Speech Pathology	2 hours
SPA	6826	Seminar in Research	2 hours

### Practicum credit toward degree

6 Semester Hours

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

6 Semester Hours

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

7 Semester Hours

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) 823-2603, 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 work force 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			15 Semester Hours
CCJ	5011	The Nature of Crime	3 hours
CCJ	5456	The Administration of Justice	3 hours
CCJ	5704	Research Methods in Criminal Justice	3 hours
CCJ	6xxx	Quantitative Methods and Computer Utilization in Criminal Justice	3 hours
<b>And ONE of the following:</b>			
CCJ	5105	Foundations of Law Enforcement	3 hours
CCJ	5305	Foundations of Corrections	

Advanced Curriculum			15 Semester Hours
<b>Choose five of the following:</b>			
CCJ	6106	Policy Analysis in Criminal Justice	
CCJ	6217	Law and Social Control	
CCJ	6485	Issues in Justice Policy	



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 840 (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****15 Semester Hours**

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**


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## Molecular Biology and Microbiology Department

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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

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**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

MCB 5654	Applied Microbiology	3 hours
MCB 6407C	Laboratory Methods for Molecular Biology	5 hours
MCB 5205	Infectious Processes	3 hours
MCB 5505	Virology	3 hours
MCB 6417C	Microbial Metabolism	3 hours
PCB 5235	Immunopathology	3 hours
PCB 5806	Endocrinology	3 hours
ZOO 5745C	Essentials of Neuroanatomy	4 hours
MCB 6938	Seminar	1-2 hours
MCB 6971	Thesis	1-6 hours
MCB 5487	Current Topics in Molecular Biology	3 hours
MCB 5XXX	Signal Transduction Mechanics	3 hours
MCB 5XXX	Tumor Biology	3 hours
MCB 5XXX	Molecular Biology of Disease	3 hours

#### 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.

Required Courses for All Students			15 Semester Hours
NGR	5110	Theoretical Bases in Nursing	3 hours
NGR	5195	Issues in Nursing and Health Care Policy	3 hours
NGR	5810	Research Methods in Nursing	3 hours
NGR	6840	Statistical Methods in Nursing Research	3 hours
NGR	6971	Thesis OR	3 hours
NGR	6813	Research Utilization Project	3 hours
Requirements for Nurse Practitioner Majors			43 Semester Hours
NGR	5155	Health Promotion Across the Lifespan	3 hours
NGR	5141	Pathophysiological Bases for Advanced Nursing Practice	3 hours
NGR	5002C	Advanced Health Assessment	3 hours
NGR	6192	Pharmacology for Advanced Nursing Practice	3 hours
NGR	6600C	Family Nurse Practitioner I	4 hours
NGR	6601C	Family Nurse Practitioner II	4 hours
NGR	6602C	Family Nurse Practitioner III	4 hours
NGR	6603C	Family Nurse Practitioner Practicum	4 hours
		Required courses (listed above)	15 hours



Requirements for Nursing Administration Majors			36 Semester Hours
NGR	5720	Organizational Dynamics	3 hours
NGR	6722	Financial Management and Resource Development	3 hours
HSA	5198	Information Systems and Computer Applications	3 hours
NGR	6723	Nursing Administration I	4 hours
NGR	6724	Nursing Administration II	5 hours
HSA	xxxx	Elective (HSA or Business Administration graduate course)	3 hours
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

NUR	3065	Health Assessment	3 hours
NUR	3809	Transitional Concepts in Nursing I	3 hours
NUR	XXXX	Professional Development Seminar	3 hours
NUR	4635C	Scientific Theories of Nursing VI	6 hours
NUR	4XXX	Directed Nursing Practice	2 hours
HSA/BA		Elective	3 hours

Validated credit for previous nursing courses

28 Semester Hours

##### BSN/MSN Shared Courses

NGR	5195	Issues in Nursing and Health Care Policy	3 hours
NGR	5720	Organizational Dynamics	3 hours
NGR	5810	Research Methods in Nursing	3 hours
HSA	5198	Information Systems and Computer Applications in Medicine	3 hours

**MSN Courses**

NGR 5110	Theoretical Bases in Nursing	3 hours
NGR 6722	Financial Management and Resource Development	3 hours
NGR 6723	Nursing Administration I	4 hours
NGR 6724	Nursing Administration II	5 hours
NGR 6840	Statistical Methods in Nursing Research	3 hours
HSA XXXX	Elective	3 hours
NGR 6971	Thesis OR	3 hours
NGR 6813	Research Utilization Project	3 hours

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**

<b>Semester 1 – Fall</b>		<b>9 Semester Hours</b>
NUR 3065	Health Assessment	3 hours
NUR 3809	Transitional Concepts in Nursing I	3 hours
NUR XXXX	Professional Development Seminar	3 hours

<b>Semester 2 – Spring</b>		<b>9 Semester Hours</b>
NGR 5810	Research Methods in Nursing	3 hours
NUR 4635C	Scientific Theories of Nursing VI	6 hours

**Validated Credit** **28 Semester Hours**

<b>Semester 3 – Summer</b>		<b>6 Semester Hours</b>
NGR 5195	Issues in Nursing and Health Care Policy	3 hours
NUR XXXX	Elective	3 hours

<b>Semester 4 – Fall</b>		<b>8 Semester Hours</b>
NGR 5720	Organizational Dynamics	3 hours
HSA 5198	Information Systems and Computer Applications in Medicine	3 hours
NUR 4XXX	Directed Nursing Practice	2 hours

**BSN Awarded**

<b>Semester 5 – Spring</b>		<b>7 Semester Hours</b>
NGR 5110	Theoretical Bases in Nursing	3 hours
NGR 6723	Nursing Administration I	4 hours

<b>Semester 6 – Summer</b>		<b>6 Semester Hours</b>
NGR 6722	Financial Management and Resource Development	3 hours
NGR 6840	Statistical Methods in Nursing Research	3 hours

<b>Semester 7 – Fall</b>		<b>8 Semester Hours</b>
NGR 6724	Nursing Administration II	5 hours
HSA XXXX	Elective	3 hours

<b>Semester 8 – Spring</b>		<b>3 Semester Hours</b>
NGR 6971	Thesis/Project	3 hours

**MSN Awarded****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.



## Public Administration Department

K. Tom Liou, D.P.A. .... Program Coordinator  
Office: HPB 202, Phone: (407) 823-2604, e-mail: kliou@pegasus.cc.ucf.edu

### 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			24 Semester Hours
PAD	6053	Public Administrators in the Governance Process	3 hours
PAD	6035	Public Administration in the Policy Process	3 hours
PAD	6700	Analytic Techniques for Public Administrators I	3 hours
PAD	6701	Analytic Techniques for Public Administrators II	3 hours
PAD	6037	Public Organization Management	3 hours
PAD	6227	Public Budgeting and Financial Management	3 hours
PAD	6417	Human Resource Management	3 hours
PAD	6335	Strategic Planning and Management	3 hours

#### Advanced Curriculum

9 Semester Hours

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

3 Semester Hours

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.

**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	
<b>Minimum Hours Required for M.P.A.</b>	<b>36-42 Semester Hours</b>

## School of Social Work

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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

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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.

Biology	English or Communications
Psychology	Statistics
Sociology	Culture

**Foundation: Generalist Social Work Practice****30 Semester Hours**

SOW 5305	Social Work Practice I: Generalist Practice	3 hours
SOW 5306	Social Work Practice II: Interventions	3 hours
SOW 5105	Human Behavior and Social Environment I: Individuals	3 hours
SOW 5106	Human Behavior and Social Environment II: Social Systems	3 hours
SOW 5404	Social Work Research	3 hours
SOW 5432	Evaluating Social Work	3 hours
SOW 5235	Social Welfare Policies and Services	3 hours
SOW 5132	Diverse Client Populations	3 hours
SOW 5532	Field Education I: Generalist Practice (224 clock hours)	3 hours
SOW 5533	Field Education II: Interventions (224 clock hours)	3 hours

**Advanced: Clinical Specialist****30 Semester Hours**

SOW 6348	Clinical Practice with Individuals	3 hours
SOW 6324	Clinical Practice with Groups	3 hours
SOW 6612	Clinical Practice with Families	3 hours
SOW 6123	Psychosocial Pathology and Differential Diagnosis	3 hours
SOW 6246	Policy Analysis and Social Change	2 hours
SOW 6914	Advanced Research Project in Clinical Practice	2 hours
SOW 6535	Field Education III: Clinical Practice—Individuals and Families (304 clock hours)	4 hours
SOW 6536	Field Education IV: Clinical Practice—Groups (304 clock hours)	4 hours
	Practice Elective	3 hours
	Practice or Approved General Elective*	3 hours

**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 6106** 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 6938** HPA  
**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 6946** HPA  
**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 6107** 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 6108** 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 6126** 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 6508** 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 6815** HPA 2-6(0,20)  
**Practicum in Health Care Management.** PR: Graduate status or C.I. Supervised practicum in health care institution management.
- HSC 6132** 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 6245** 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 6247** 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 6306** 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.



<b>HSC 6392</b>	<b>HPA 3(3,0)</b>	<b>Issues and Trends in the Health Professions.</b> PR: Graduate status or C.I. Exploration of current status, issues, problems and future trends in the practice and education of health professions.
<b>HSC 6402</b>	<b>HPA 3(3,0)</b>	<b>Environmental Health.</b> 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.
<b>HSC 6412</b>	<b>HPA 3(3,0)</b>	<b>Epidemiology.</b> PR: Graduate status or C.I. A study of the distribution and determinants of diseases and injuries in human populations.
<b>HSC 6513</b>	<b>HPA 3(3,0)</b>	<b>Principles and Practice of Medicine.</b> PR: Graduate status or C.I. A comprehensive survey of medicine.
<b>HSC 6568</b>	<b>HPA 3(3,0)</b>	<b>Issues in Geriatric Health Care.</b> 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.
<b>HSC 6575</b>	<b>HPA 3(3,0)</b>	<b>Principles of Preventive Medicine.</b> Total concept of health care including methods of screening, diagnosis, treatment, rehabilitation, and promotion of health in diverse populations.
<b>HSC 6605</b>	<b>HPA 3(3,0)</b>	<b>Health and Society.</b> PR: Graduate status or C.I. Understanding health and illness as defined by patients, providers, and other persons in the social system.
<b>HSC 6636</b>	<b>HPA 3(3,0)</b>	<b>Issues and Trends in the Health Professions.</b> Exploration of current status, issues, problems, and future trends in the practice and education of health professions.
<b>HSC 6815</b>	<b>HPA 2-6(0,20)</b>	<b>Practicum in Health Science Education.</b> PR: Graduate status or C.I. Supervised practicum in academic, clinical, or community instructional program.
<b>HSC 6911</b>	<b>HPA 3(3,0)</b>	<b>Scientific Inquiry in the Health Profession.</b> PR: Graduate status or C.I. Research design and evaluation in health professions.
<b>HSC 6911</b>	<b>HPA 3(3,0)</b>	<b>Scientific Inquiry in the Health Professions.</b> PR: STA 2014 or comparable course. The course will cover research design and evaluation, theory building, and biostatistics.
<b>HUN 5937</b>	<b>HPA 3(3,0)</b>	<b>Nutrition and Exercise Physiology.</b> This course correlates human nutrition with exercise physiology. Nutritional concepts are related to human performance and fitness.
<b>LIN 5705</b>	<b>HPA 3(3,0)</b>	<b>Psycholinguistics.</b> 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.
<b>MCB 5XXX</b>	<b>HPA 3(3,0)</b>	<b>Molecular Biology of Disease.</b> PR: Graduate standing or C.I. An in-depth study of the molecular biological mechanisms of diseases in experimental animal models and human populations.
<b>MCB 5XXX</b>	<b>HPA 3(3,0)</b>	<b>Tumor Biology.</b> PR: PCB 4524. This course provides an introduction and broad overview of the current knowledge and research in the field of cancer biology.
<b>MCB 5XXX</b>	<b>HPA 3(3,0)</b>	<b>Signal Transduction Mechanics.</b> 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.
<b>MCB 5205</b>	<b>HPA 3(3,0)</b>	<b>Infectious Processes.</b> PR: MCB 3013C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.
<b>MCB 5487</b>	<b>HPA Variable</b>	<b>Current Topics in Molecular Biology.</b> 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.
<b>MCB 5505</b>	<b>HPA 3(3,0)</b>	<b>Virology.</b> PR: MCB 3013C and BCH 4054. Nature of viruses and other intracellular parasites, including descriptions of structure, propagation, isolation, and identification methods.
<b>MCB 5654</b>	<b>HPA 3(3,0)</b>	<b>Applied Microbiology.</b> PR: MCB 3013C or C.I. Biochemistry of industrial processes including economics, screening, scale up, quality control, and applied genetics.
<b>MCB 6407C</b>	<b>HPA 5(3,4)</b>	<b>Laboratory Methods in Molecular Biology.</b> PR: PCB 4524 and MCB 4404, or C.I. Experimental techniques and design in laboratory biological research.
<b>MCB 6417C</b>	<b>HPA 3(3,0)</b>	<b>Microbial Metabolism.</b> PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and synthesis.
<b>NGR 5002C</b>	<b>HPA 3(2,1)</b>	<b>Advanced Health Assessment.</b> PR: Basic Health Assessment course; current RN license in FL; Bac. Degree in Nsg. Concepts and skills of advance physical/behavior health assessment over the life-span.
<b>NGR 5110</b>	<b>HPA 3(3,0)</b>	<b>Theoretical Bases in Nursing.</b> PR: Bac. Degree in Nsg. Exploration and analysis of the philosophical, conceptual, and theoretical bases of nursing.
<b>NGR 5141</b>	<b>HPA 3(3,0)</b>	<b>Pathophysiological Bases for Advanced Nursing Practice.</b> PR: Bac. Degree in Nsg. Critical examination of the physiological and pathophysiological mechanisms affecting individuals.
<b>NGR 5155</b>	<b>HPA 3(3,0)</b>	<b>Health Promotion Across the Lifespan.</b> PR: Bac. Degree in Nsg. Application of theories and models of health promotion, education, motivation, assessment and planning. Promotion and maintenance of health from conception to death.



- NGR 5195** **HPA 3(3,0)**  
**Issues in Nursing and Health Care Policy.** PR: Bac. Degree in Nsg. Study of selected legal, ethical, sociocultural, and policy issues related to advanced nursing practice and health care delivery systems.
- NGR 5720** **HPA 3(3,0)**  
**Organizational Dynamics.** PR: Bac. Degree in Nsg. Analysis of theories and models of health care organizational systems. Emphasis on nursing administration roles.
- NGR 5721** **HPA 3(3,0)**  
**Dimensions of Nursing Administration.** PR: Bac. Degree in Nsg. Basic principles and organization theory for nursing administration.
- NGR 5810** **HPA 3(3,0)**  
**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.
- NGR 6192** **HPA 3(3,0)**  
**Pharmacology for Advanced Nursing Practice.** PR: NGR 5141. Comprehensive study of medications used in the promotion and maintenance of health across the lifespan. Examination of the implications for advanced nursing practice.
- NGR 6600C** **HPA 4(2,2)**  
**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.
- NGR 6601C** **HPA 4(1,3)**  
**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.
- NGR 6602C** **HPA 4(1,3)**  
**Family Nurse Practitioner III.** PR: NGR 6601C, NGR 5195. Theoretical and clinical bases for management of high-risk problems within families and target populations.
- NGR 6603L** **HPA 1-4**  
**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.
- NGR 6722** **HPA 3(3,0)**  
**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.
- NGR 6723** **HPA 4(2,2)**  
**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.
- NGR 6724** **HPA 5(2,3)**  
**Nursing Administration II.** PR: NGR 6723, NGR 6722. Continuation of Nursing Administration I.
- NGR 6813** **HPA 1-3**  
**Research Utilization Project.** PR: NGR 6840. Development of a project which evaluates nursing research findings for applicability to practice.
- NGR 6840** **HPA 3(3,0)**  
**Statistical Methods in Nursing Research.** PR: NGR 5810. Data analysis and interpretation of quantitative and qualitative research methods in nursing. Use of computerized statistical software.
- PAD 5041** **HPA 3(3,0)**  
**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.
- PAD 5336** **HPA 3(3,0)**  
**Introduction to Urban Planning.** PR: C.I. Issues of urbanization, regional development, land use and comprehensive planning, environmental planning, and social planning.
- PAD 5337** **HPA 3(3,0)**  
**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.
- PAD 5338** **HPA 3(3,0)**  
**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.
- PAD 5425** **HPA 3(3,0)**  
**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.
- PAD 5427** **HPA 3(3,0)**  
**Labor Relations in the Public Sector.** Current trends and developments in employment relations in the public sector, especially employee organization, negotiations, and the collective bargaining process.
- PAD 5806** **HPA 3(3,0)**  
**Local Government Operations.** Operational functions of municipal and county governments and the role of the chief executive officer.
- PAD 5807** **HPA 3(3,0)**  
**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.
- PAD 5850** **HPA 3(3,0)**  
**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.
- PAD 6035** **HPA 3(3,0)**  
**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.



<b>PAD 6037</b>	<b>HPA 3(3,0)</b>	<b>Public Organization Management.</b> Structure, functioning, performance of public organizations; behavior of individuals and groups; application for public management, includes both macro and micro approaches to organizational behavior.
<b>PAD 6053</b>	<b>HPA 3(3,0)</b>	<b>Public Administrators in the Governance Process.</b> 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.
<b>PAD 6062</b>	<b>HPA 3(3,0)</b>	<b>Advanced Concepts and Applications in Public Administration.</b> PR: Completion of all core requirements. An integrative course applying the skills, knowledge, and values considered in the program to selected public problems.
<b>PAD 6227</b>	<b>HPA 3(3,0)</b>	<b>Public Budgeting and Financial Management.</b> Budgets as planning programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS, and incrementalism.
<b>PAD 6307</b>	<b>HPA 3(3,0)</b>	<b>Policy Implementation.</b> Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.
<b>PAD 6327</b>	<b>HPA 3(3,0)</b>	<b>Public Program Evaluation Techniques.</b> Techniques and skills utilized in the evaluation of public programs.
<b>PAD 6335</b>	<b>HPA 3(3,0)</b>	<b>Strategic Planning and Management.</b> PR: PAD 6037, PAD 6053, PAD 6700 (may be taken concurrently), or C.I. An examination and analysis of planning, goal setting, and strategic management in public sector organizations.
<b>PAD 6353</b>	<b>HPA 3(3,0)</b>	<b>Environmental Program Management Research.</b> Research of environmental programs, problems, issues, and policies to prepare persons working for or entering government service for environmental program staff or management responsibilities.
<b>PAD 6417</b>	<b>HPA 3(3,0)</b>	<b>Human Resource Management.</b> Administrator as manager and motivator of public employees with particular emphasis on organizational behavior and contemporary public service legislation.
<b>PAD 6700</b>	<b>HPA 3(3,0)</b>	<b>Analytic Techniques for Public Administration I.</b> Statistical methodology and use of computers as a tool for decision making in the public sector.
<b>PAD 6701</b>	<b>HPA 3(3,0)</b>	<b>Analytic Techniques for Public Administration II.</b> PR: Completion of PAD 6700. Applied analytical tools for administrators in the public sector. Practical use of computers in policy and decision making.
<b>PAD 6716</b>	<b>HPA 3(3,0)</b>	<b>MIS for Public Managers.</b> PR: C.I. Use of systems concept and computers in contemporary public sector management information systems.
<b>PAD 6934</b>	<b>HPA 3(3,0)</b>	<b>Special Issues in Public Administration.</b> Substantive and theoretical issues confronting the broad spectrum of contemporary public administration. May be repeated for credit when content is different.
<b>PAD 6946</b>	<b>HPA 3(3,0)</b>	<b>Internship.</b> PR: C.I.
<b>PCB 5235</b>	<b>HPA 3(3,0)</b>	<b>Immunopathology.</b> PR: PCB 3233. In-depth overview of diseases due to deficiencies or over-reactivity of the immune system.
<b>PCB 5806</b>	<b>HPA 3(3,0)</b>	<b>Endocrinology.</b> PR: PCB 4723 and BCH 4053 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.
<b>PET 5355</b>	<b>HPA 3(3,0)</b>	<b>Exercise Physiology and Health.</b> In-depth study of adaptations of cardiovascular and respiratory systems during varying degrees of exercise.
<b>PHC 6000</b>	<b>HPA 3(3,0)</b>	<b>Epidemiology.</b> PR: HSC 6911 or equivalent. A study of the distribution and determination of diseases and injuries in human populations.
<b>PHC 6010</b>	<b>HPA 3(3,0)</b>	<b>Quantitative Methods in Epidemiology.</b> PR: Admission to MSHS graduate program and PHC 6000. Principles of managerial epidemiology, quantitative methods, application of prostastics, use of personal computers to handle data and solve problems.
<b>PHC 6146</b>	<b>HPA 3(3,0)</b>	<b>Health Planning and Policy.</b> 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.
<b>PHC 6160</b>	<b>HPA 3(3,0)</b>	<b>Health Care Finance.</b> The identification of resources available to health care institutions, allocation of resources, and control of resource expenditures.
<b>PHC 6411</b>	<b>HPA 3(3,0)</b>	<b>Health and Society.</b> Understanding health and illness as defined by patients, providers, and other persons in the social system.
<b>PHC 6420</b>	<b>HPA 3(3,0)</b>	<b>Case Studies in Health Law.</b> Health law including patient care, liability, malpractice, workmen's compensation, and legal responsibilities of health personnel.
<b>RET 5910</b>	<b>HPA 3(3,0)</b>	<b>Research Methods in Cardiopulmonary Physiology.</b> Introduction to methods used in scientific and medical research in cardiopulmonary physiology. Literature review, experimentation, and analysis of data.
<b>RET 6555</b>	<b>HPA 3(3,0)</b>	<b>Cardiac Rehabilitation.</b> PR: HSC 6566. Lecture course emphasizing the principles underlying the formulation and implementation of a comprehensive cardiac rehabilitation and prevention program.



- SOW 5105** HPA 3(3,0)  
**Human Behavior and Social Environment I.** 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** HPA 3(3,0)  
**Human Behavior and Social Environment II: Social Systems.** Study of the patterns and dynamics of families, groups, organizations, and communities from a social work systems perspective.
- SOW 5132** HPA 3(3,0)  
**Diverse Client Populations.** Study of human diversity, focusing on the needs, resources, problems, and service issues of several identified minority client populations.
- SOW 5235** HPA 3(3,0)  
**Social Welfare Policies and Services.** Study of societal responses to human needs; forces shaping social welfare systems; introduces frameworks for analyzing social policies and services.
- SOW 5305** HPA 3(3,0)  
**Social Work Practice I: Generalist Practice.** Study of social work functions, knowledge, values, roles and skills; the use of a generalist model of practice.
- SOW 5306** HPA 3(3,0)  
**Social Work Practice II: Intervention Approaches.** Study of selected social work theories, strategies, and techniques for helping people and improving system responsiveness to human needs.
- SOW 5355** HPA 3(3,0)  
**Studies in Urban Social Work Practice.** Analysis of one or more urban practice issues and approaches. May be repeated for credit.
- SOW 5373** HPA 3(3,0)  
**Clinical Supervision.** Supervisory theory and practice in clinical settings.
- SOW 5404** HPA 3(3,0)  
**Social Work Research.** Study of group research designs in social work; quantitative analyses; and related ethical issues.
- SOW 5432** HPA 3(3,0)  
**Evaluating Social Work.** Study of single case designs in social work; recording methods; behavioral and standardized measures; applications to individuals, families, groups, programs, communities.
- SOW 5532** HPA 3(3,0)  
**Field Education I: Generalist Practice.** CR: SOW 5305. Supervised practice of social work in an agency for 224 clock hours.
- SOW 5533** HPA 3(0,3)  
**Field Education II: Interventions.** PR: SOW 5532. CR: SOW 5306. Continuation of SOW 5532, Field Education I, in the same field agency for 224 clock hours.
- SOW 5625** HPA 3(3,0)  
**Social Work with Women.** Alternative approaches to the treatment of women in the urban setting.
- SOW 5655** HPA 3(3,0)  
**Child Abuse: Treatment and Prevention.** The social worker's role and interventions with victims of child abuse and their family members.
- SOW 5662** HPA 3(3,0)  
**Strategies in Employee Assistance Programs.** Techniques for establishing, providing, and evaluating services to people with problems which affect job performance.
- SOW 5712** HPA 3(3,0)  
**Interventions with Substance Abusers.** Strategies for working with persons who abuse drugs, alcohol, and other substances.
- SOW 6123** HPA 3(3,0)  
**Psychosocial Pathology and Differential Diagnosis.** PR: All first-year courses in the MSW Program SOW 5305, 5105, 5404, 5325, 5306, 5106, 5432, 5532, 5132, 5533. Study of psychosocial dynamics of dysfunctional behavior in individuals.
- SOW 6246** HPA 2(2,0)  
**Policy Analysis and Social Change.** PR: All first-year courses in the MSW Program SOW 5305, 5105, 5404, 5235, 5105, 5404, 5235, 5532, 5306, 5106, 5432, 5132, 5533. Study of urban problems, policies, and planning from the perspective of their impact on individuals and families.
- SOW 6324** HPA 3(3,0)  
**Clinical Practice with Groups.** Group therapy and support approaches to such problems as addictions, sexually transmitted diseases, spouse abuse, and batterers.
- SOW 6348** HPA 3(3,0)  
**Clinical Practice with Individuals.** Behavioral, crisis, and psychosocial theories applied to such problems as adjustment, rape, suicide, elder and child abuse, homelessness, residential/shelter care, delinquency, and retardation.
- SOW 6535** HPA 4(0,4)  
**Field Education III: Clinical Practice-Individuals and Families.** PR: SOW 5532 and SOW 5533. Supervised specialist practice in a field agency for 304 clock hours.
- SOW 6536** HPA 4(0,4)  
**Field Education IV: Clinical Practice-Groups.** PR: SOW 6535. Continuation of SOW 6535, Field Education III, in the same field agency for 304 additional clock hours.
- SOW 6612** HPA 3(3,0)  
**Clinical Practice with Families.** Family-focused models of intervention applied to such problems as resettlement/uprooting, divorce, single parenting, and blended families.
- SOW 6655** HPA 3(3,0)  
**Clinical Practice with Children and Adolescents.** Social work practice and treatment of children and adolescents in family systems.
- SOW 6689** HPA 3(3,0)  
**Sex Therapy.** Intervention approaches for sex-related problems.
- SOW 6914** HPA 2(2,0)  
**Advanced Research Project in Clinical Practice: Clinical Practice in Urban Setting.** PR: All first-year courses in the MSW Program, SOW 5305, 5105, 5404, 5235, 5532, 5306, 5106, 5432, 5132, 5533, 6348, 6612, 6123, 5246, 6535. Student-selected research on an issue of clinical practice in urban settings.
- SPA 5005** HPA 3(3,0)  
**Survey of Communicative Disorders.** PR: C.I. A survey of speech, language, and hearing disorders for rehabilitative personnel and other interested professionals.



<b>SPA 5120</b> Physiological Acoustics. PR: SPA 4032, Graduate status or C.I. Lectures, readings, and experiments pertaining to the subjective reception of sound.	<b>HPA 4(4,3)</b>	<b>SPA 6204</b> 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.	<b>HPA 3(3,0)</b>
<b>SPA 5225</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6204L</b> Advanced Studies in Communicative Disorders: Articulation Laboratory. PR: SPA 3112, SPA 311 2L, SPA 4201. Practical application of clinical skills in articulation disorders. May be repeated for credit.	<b>HPA 1(0,2)</b>
<b>SPA 5225L</b> Fluency Disorders Laboratory. PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.	<b>HPA 1(0,2)</b>	<b>SPA 6211</b> Voice Disorders. PR: SPA 3101. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate, and other disorders of the vocal mechanisms.	<b>HPA 3(3,0)</b>
<b>SPA 5236</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6211L</b> Voice Disorders Laboratory. PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.	<b>HPA 1(0,2)</b>
<b>SPA 5307</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6308</b> 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.	<b>HPA 4(4,0)</b>
<b>SPA 5327</b> 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.	<b>HPA 4(4,0)</b>	<b>SPA 6345</b> Amplification. PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electroacoustic measurements, coupling techniques, and orientation and counseling.	<b>HPA 4(4,0)</b>
<b>SPA 5404</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6353</b> Hearing Conservation. PR: SPA 4032, SPA 5120. Industrial audiometry, community noise abatement, and public school hearing conservation.	<b>HPA 4(4,0)</b>
<b>SPA 5553L</b> 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.	<b>HPA 1(0,4)</b>	<b>SPA 6403</b> 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.	<b>HPA 3(3,0)</b>
<b>SPA 5600</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6407</b> Seminar in Language. PR: Graduate status or C.I. Examines innovative and disorder-specific evaluation and treatment in adult and pediatric language disorders.	<b>HPA 2(2,0)</b>
<b>SPA 5805</b> 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.	<b>HPA 3(3,0)</b>	<b>SPA 6410</b> 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.	<b>HPA 3(3,0)</b>
<b>SPA 6132</b> 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.	<b>HPA 3(1,4)</b>	<b>SPA 6505</b> 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.	<b>HPA 3(0,6)</b>
		<b>SPA 6506</b> Clinical Practicum in Audiology. PR: SPA 4032. Advanced clinical practice in communicative disorders. May be repeated for credit when content is different.	<b>HPA 3(0,6)</b>



**SPA 6526** **HPA 2(2,0)**  
**Seminar in Speech Pathology.** PR: Graduate status or C.I. Examines 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 6826** **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 6938** **HPA 1-6**  
**Special Topics/Seminars:** May be repeated for credit.

**ZOO 5745C** **HPA 4(3,3)**  
**Essentials of Neuroanatomy:** PR: Human/Comparative Anatomy, or 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

Prefix	Level Code (first digit)	Century Digit (second digit)	Decade Digit (third digit)	Unit Digit (fourth digit)	Lab Code
SYG	1	0	1	0	
Sociology, General	Freshman level at this institution	Entry-level General Sociology	Survey Course	Social Problems	No laboratory component in this course

## 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.

	Special Grad	Grad and Prof
Directed Independent Studies	5907	6908
Directed Research	5917	6918
Special Topics/Seminars	5937	6938
Internships, Practicums, Clinical Practice	5944	6946
Study Abroad	5957	6958
Research Report		6909
Treatise (Thesis or Research Report)		6971
Thesis—Specialist		6973
Doctoral Research		7919
Doctoral Special Topics/Seminars		7939
Doctoral Dissertation		7980

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

ECl 5215C Hydraulic Engineering EN 3(2,3)  
 ECl 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**

ACG	Accounting General	EES	Environmental Engineering Science
ACO	Accounting: Occupational Technical	EET	Electrical Electronic Technology
ADE	Adult Education	EEX	Education: Exceptional Child - Care Competencies
ADV	Advertising	EGC	Guidance and Counseling
AFH	African History	EGM	Engineering: Mechanical
AFR	Air Force ROTC	EGN	Engineering: General
AMH	American History	EGS	Engineering: Support
AML	American Literature	EIN	Engineering: Industrial
ANT	Anthropology	ELD	Education: Specific Learning Disabilities
APA	Applied Accounting	EMA	Engineering: Materials
APB	Applied Biology	EME	Education: Technology and Media
ARE	Art Education	EML	Engineering: Mechanical
ARH	Art History	EMR	Education: Mental Retardation
ART	Art	ENC	English Composition
ASH	Asian History	ENG	English - General
AST	Astronomy	ENL	English Literature
AVM	Aviation Management	ENU	Engineering: Nuclear
BCH	Biochemistry	ENV	Engineering: Environmental
BCN	Building Construction	ENY	Entomology
BOT	Botany	EPH	Education: Physical and Multiple Handicapped
BSC	Introductory Biology	ESE	Education: Secondary
BTE	Business Teacher Education	ESI	Engineering Systems - Industrial
BUL	Business Law	ESL	English as a Second Language
CAP	Computer Applications	EST	Electronic Specialty Technology
CBH	Comparative Psychology and Animal Behavior	ETC	Engineering Tech: Civil
CCE	Civil Construction Engineering	ETG	Engineering Tech: General
CCJ	Criminology and Criminal Justice	ETI	Engineering Tech: Industrial
CDA	Computer Design/Architecture	ETM	Engineering Tech: Mechanical
CEG	Civil Geotechnical Structures	EUH	European History
CES	Civil Engineering Structure	EVI	Education: Visually Impaired - Blind
CET	Computer Engineering Technology	EVS	Environmental Science
CGN	Civil Engineering	EVT	Education: Vocational Technical
CGS	Computer General	EXP	Experimental Psychology
CHI	Chinese	FIL	Film
CHM	Chemistry	FIN	Finance
CHS	Chemistry - Specialized	FLE	Foreign Language Education
CIS	Computer and Information Systems	FOL	Foreign and Biblical Languages
CJT	Criminal Justice Technology	FOT	Foreign and Biblical Languages in Translation
CLA	Classical and Ancient Studies	FRE	French Language
CLP	Clinical Psychology	FRW	French Literature (Writings)
COC	Computer Concepts	FSS	Food Service Systems
COE	Cooperative Education	GEA	Geography: Regional Areas
COM	Communications	GBB	General Business
COP	Computer Programming	GEO	Geography
COT	Computer Theory	GER	German Language
CPO	Comparative Politics	GEW	German Literature (Writings)
CRM	Computer Resources/Management	GLY	Geology
CRW	Creative Writing	HBR	Modern Hebrew Language
CWR	Civil Water Resources	HBT	Hebrew Language Translation
CYP	Communication Psychology	HFT	Hotel and Restaurant
DAA	Dance Activities	HLP	Health Education
DAE	Dance Education	HMW	Modern Hebrew Literature (Writings)
DEP	Development Psychology	HSA	Health Services Administration
EAB	Experimental Analysis of Behavior	HSC	Health Science
EAS	Engineering: Aerospace	HUM	Humanities
ECM	Engineering: Computer Mathematics	HUN	Human Nutrition
ECO	Economics	IDH	Interdisciplinary Honors
ECP	Economic Problems and Policy	INP	Industrial and Applied Psychology
ECS	Economic Systems and Development	INR	International Relations
EDA	Education: Administration	ISM	Information Systems Management
EDE	Education: Elementary	ISS	Interdisciplinary Social Sciences
EDF	Education: Foundation	ITA	Italian Language
EDG	Education: General	ITW	Italian Literature (Writings)
EDH	Education: Higher	JOU	Journalism
EDM	Education: Middle School	JPN	Japanese
EDP	Education: Psychology	JST	Judaic Studies
EDS	Education: Supervision	LAE	Language Arts and English Education
EEC	Education: Early Childhood	LAH	Latin American History
EED	Education: Emotional Disorders	LAT	Latin
EEL	Engineering: Electrical	LEI	Leisure
		LIN	Linguistics

LIS	Library Science	REL	Religion
LIT	Literature	RET	Respiratory Therapy
MAA	Mathematics - Analysis	RMI	Risk Management and Insurance
MAC	Mathematics - Calculus and Precalculus	RTE	Radiological Sciences
MAD	Mathematics - Discrete	RTV	Radio-Television
MAE	Mathematics Education	RUS	Russian Language
MAN	Management	SCE	Science Education
MAP	Mathematics - Applied	SED	Speech Education
MAR	Marketing	SLS	Student Life Skills
MAS	Mathematics: Algebraic Structures	SOP	Social Psychology
MAT	Mathematics	SOW	Social Work
MCB	Microbiology	SPA	Speech Pathology and Audiology
MET	Meteorology	SPC	Speech Communication
MGF	Mathematics: General and Finite	SPN	Spanish Language
MHF	Mathematics: History and Foundations	SPS	School Psychology
MIS	Military Science	SPW	Spanish Literature (Writings)
MLS	Medical Laboratory Science	SSE	Social Studies Education
MMC	Mass Media Communication	STA	Statistics
MRE	Medical Records	STU	Student Development
MTG	Mathematics: Topology and Geometry	SUR	Surveying
MUC	Music: Composition	SYA	Sociology Analysis
MUE	Music Education	SYD	Sociology of Demography and Area of Studies
MUG	Music Conducting	SYG	Sociology, General
MUH	Music: History/Musicology	SYO	Sociology - Social Organizations
MUH	Music: Music Literature	SYP	Sociology - Social Processes
MUN	Music: Music Ensembles	TAX	Taxation
MUS	Music	THE	Theatre
MUT	Music: Theory	TPA	Theatre Production and Administration
MVB	Music: Applied - Brasses	TPP	Theatre Performance and Performance Training
MVK	Music: Applied - Keyboard	TTE	Transportation and Traffic Engineering
MVO	Music: Applied - Other Instruments	URP	Urban and Regional Planning
MVP	Music: Applied - Percussion	VIC	Visual Communication
MVS	Music: Applied - Strings	ZOO	Zoology
MVV	Music: Applied - Voice		
MVW	Music: Applied - Woodwinds		
NGR	Nursing - Graduate		
NUR	Nursing		
NUU	Nursing Universals		
OCE	Oceanography		
OST	Office Systems Technology		
PAD	Public Administration		
PCB	Process Cell Biology		
PCO	Psychology for Counseling		
PEL	Physical Education Acts (GEN) - Object Centr., Land		
PEM	Physical Education Acts (GEN) - Perform Centr., Land		
PEN	Physical Education Acts (GEN) - Water, Snow, Ice		
PEO	Physical Education Acts (PROFNL) - Object Centr., Land		
PEP	Physical Education Acts (PROFNL) - Perf. Centr. Land		
PEQ	Physical Education Acts (PROFNL) - Water, Snow, Ice		
PET	Physical Education Theory		
PGY	Photography		
PHH	Philosophy, History of		
PHI	Philosophy		
PHM	Philosophy of Man and Society		
PHS	Physics - Specialized		
PHT	Physical Therapy		
PHY	Physics		
PHZ	Physics Continued		
PLA	Paralegal/Legal Asst./Legal Admin.		
POS	Political Science		
POT	Political Theory		
PPE	Psychology of Personality		
PSB	Psychobiology		
PSC	Physical Sciences		
PSY	Psychology		
PUP	Public Policy		
PUR	Public Relations		
RAT	Radiation Therapy		
REA	Reading		
RED	Reading Education		
REE	Real Estate		



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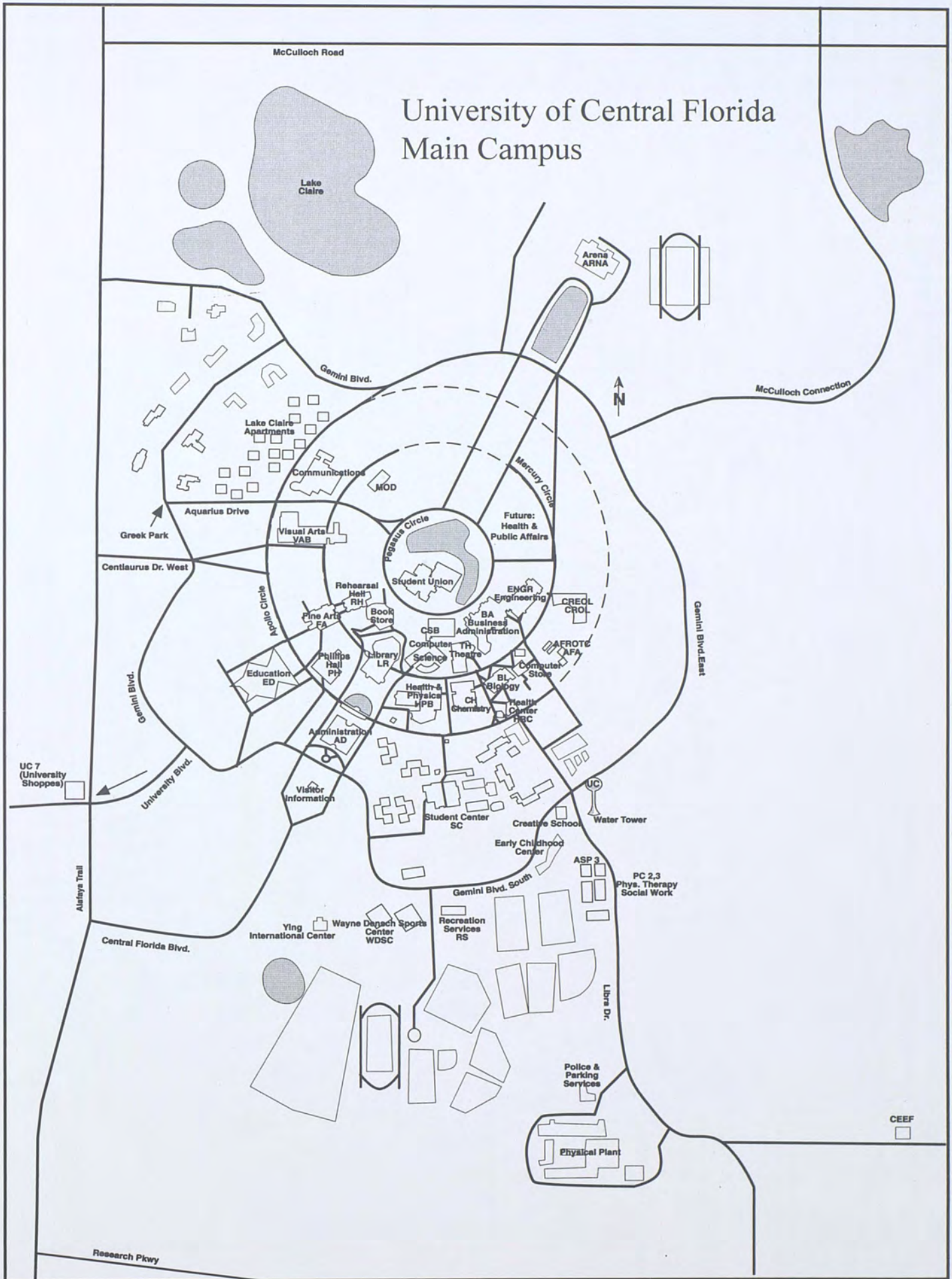
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# University of Central Florida Main Campus



McCulloch Road

Gemini Blvd.

McCulloch Connection



Centaurus Dr. West

Greek Park

Aquarius Drive

Lake Claire Apartments

Communications

MOD

Mercury Circle

Future: Health & Public Affairs

Student Union

Rehearsal Hwy

RH

Book Store

CSB

Computer Science

Theatre

Health & Physical Education

MPB

Administration

AD

Visitor Information

Student Center

SC

Ying International Center

Wayne Degsch Sports Center

WDC

Recreation Services

RS

Police & Parking Services

Physical Plant

CEEP

ASP 3

PC 2.3 Phys. Therapy Social Work

Water Tower

Early Childhood Center

Creative School

AFROTC

AFA

Computer Store

BL

Biology

CH

Chemistry

Health Center

PHC

BA Business Administration

ENGR Engineering

CREQL

CROL

Visual Arts

VAB

Education

ED

Fine Arts

FA

Philips Hall

PH

Library

LR

Avylo Circle

Gemini Blvd. East

University Blvd.

Alaysia Trail

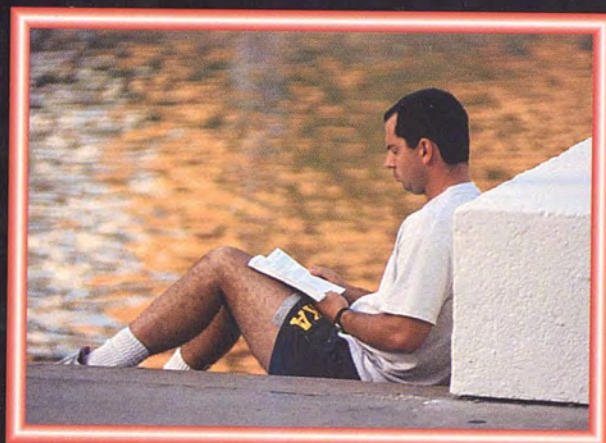
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