2000-2001 GRADUATE CATALOG
University of Central Florida


Administration

Graduate Studies website: www.graduate.ucf.edu

2000-2001 GRADUATE CATALOG
University of Central Florida

May 2000, Volume XXIII

Orlando—Brevard—Daytona Beach—Downtown Center
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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

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 the Editor.

For directions to the University of Central Florida main campus and area campuses, see the directions and maps on pages 279-80 and the inside back cover.

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Graduate Catalog
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Orlando FL 32816-2444

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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.

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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 or the Student Development and Enrollment Services.

Contents

Contents

Graduate Degree and Certificate Programs

College of Arts and Sciences

Certificate
- Conservation Biology
- Domestic Violence
- Gender Studies
- Maya Studies
- Professional Writing
- Teaching English as a Foreign Language (TEFL)

Master of Arts
- Communication - *Tracks:* Mass Communication, Interpersonal Communication
- English - *Tracks:* Creative Writing, Literature, Technical Writing
- History
- Liberal Studies
- Political Science - *Tracks:* Political Analysis, Public Policy
- Psychology, Clinical
- Sociology, Applied
- Spanish
- Teaching English to Speakers of Other Languages (TESOL)

Master of Science
- Biology
- Chemistry, Industrial - *Track:* Forensic Science
- Mathematical Science - *Track:* Industrial Math
- Physics - *Track:* Optical Physics
- Psychology - *Track:* Industrial and Organizational
- Statistical Computing

Doctor of Philosophy
- Mathematics
- Physics - *Track:* Optical Physics
- Psychology - *Tracks:* Clinical, Human Factors, Industrial and Organizational

College of Business Administration

Master of Arts in Applied Economics (M.A.A.E.)
- *Specializations:* Financial Economics, Human Resource Economics, International Political Economy, Public Sector Economics, and Quantitative Economics

Master of Business Administration (M.B.A.)
- *Specializations:* Entrepreneurship, Finance, Human Resources Management, International Business, Management Information Systems, Marketing
- Executive M.B.A. - *Specialization:* Health Services Administration

Master of Science in Management (M.S.M.)
- *Tracks:* Human Resources / Change Management, Management Information Systems

Master of Science in Accounting (M.S.A.)

Master of Science in Taxation (M.S.T.)

Doctor of Philosophy in Business Administration
- *Tracks:* Accounting, Finance, Management, and Marketing

College of Education

Certificate
- Community College
- Initial Teacher Professional Preparation
- Pre-Kindergarten Handicapped Endorsement
- Teaching Excellence

Master of Education and/or Master of Arts
- Art Education
- Counselor Education - *Tracks:* Mental Health Counseling, School Counseling
- Curriculum and Instruction, *pending SUS Board of Regents approval*
- Educational Leadership - *Tracks:* Curriculum and Instruction, Student Personnel Administration in Higher Education
- Elementary Education - *Tracks:* Mathematics Education, Primary
- English Language Arts Education
- Exceptional Education - *Track:* Varying Exceptionalities
- Instructional Technology - *Tracks:* Educational Media, Educational Technology, Instructional Systems
- Mathematics Education
- Music Education
- Physical Education
- Reading Education
- Science Education - *Tracks:* Biology, Chemistry, Physics
- Social Science Education
- Vocational Education

Education Specialist
- Curriculum and Instruction
- Educational Leadership
- School Psychology - *Track:* School Counseling

Doctor of Education
- Curriculum and Instruction
- Educational Leadership

Doctor of Philosophy in Education
- *Pending SUS Board of Regents approval*
- *Tracks:* Counselor Education (School Counseling), Elementary Education, Exceptional Education, Instructional Technology, and Mathematics Education

College of Engineering and Computer Science

Certificate
- Civil Engineering
  - Geotechnical Engineering and Construction Materials
  - Structural Engineering
  - Surface Water Modeling
  - Transportation Engineering
- Computer Engineering
  - Software Engineering
  - Software-Intensive Systems

- Electrical Engineering
  - Antennas and Propagation
  - Communications Systems
  - Digital Signal Processing
  - Electronic Circuits
- Environmental Engineering
  - Air Pollution Control
  - Drinking Water Treatment
  - Hazardous Waste Management
  - Hazardous Waste Site Remediation
  - Wastewater Treatment
- Industrial Engineering and Management Systems
  - Applied Operations Research
  - Design for Usability
  - Industrial Ergonomics and Safety
  - Project Engineering
  - Quality Assurance
  - Systems Simulation for Engineers
  - Training Simulation
- Mechanical, Materials, and Aerospace Engineering
  - CAD/CAM Technology
  - Computational Methods in Mechanics
  - HVAC Engineering
  - Launch/Spacecraft Vehicle Processing
  - Materials Characterization
  - Materials Failure Analysis

Master of Science
- Computer Science
- Engineering - *Tracks:*
  - Engineering Management
  - Environmental Engineering Sciences
  - Human Engineering/Ergonomics
  - Interactive Simulation and Training Systems
  - Manufacturing Engineering
  - Operations Research
  - Quality Engineering
  - Simulation Modeling and Analysis
  - Structures and Foundations Engineering
  - Transportation Systems Engineering
  - Water Resources Engineering

Master of Science in Aerospace Engineering (M.S.A.E.)
- *Tracks:* Space Systems Design and Engineering, Thermofluid Aerodynamic Systems Design and Engineering

Master of Science in Civil Engineering (M.S.C.E.)
- *Tracks:* Structural and Geotechnical Engineering, Transportation Engineering, Water Resources Engineering

Master of Science in Computer Engineering (M.S.Cp.E.)
- *Tracks:* Computer Architecture, Digital Systems, Knowledge-based Systems, Software Engineering

Master of Science in Electrical Engineering (M.S.E.E.)
- *Tracks:* Communications, Controls/Power, Digital Signal Processing, Electromagnetics, Electronics, Electro-optics, Solid State and Microelectronics

Master of Science in Environmental Engineering (M.S.Env.E.)

Master of Science in Industrial Engineering (M.S.I.E.)

Master of Science in Materials Science and Engineering (M.S.M.S.E.)

Master of Science in Mechanical Engineering (M.S.M.E.)
- *Tracks:* Computer-aided Mechanical Engineering, Mechanical Systems, Professional, Thermo-fluids

Doctor of Philosophy
- Civil Engineering
- Computer Engineering
- Computer Science
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Science and Engineering, *pending SUS Board of Regents approval*
- Mechanical Engineering

College of Health and Public Affairs

Certificate
- Adult or Family Nurse Practitioner (post-master's certificate)
- Crime Analysis
- Gerontology
- Health Information Systems
- Managed Care
- Medical Group Management
- Nonprofit Management
- Nursing and Health Professional Education
- Planning
- Public Administration
- Risk and Quality Management

Master of Arts in Communicative Disorders

Master of Science
- Criminal Justice
- Health Sciences: Health Services Administration
- Molecular Biology and Microbiology
- Physical Therapy

Master of Science in Nursing (M.S.N.)
- *Tracks:* Clinical Nurse Specialist (MSN, RN to MSN), Nursing Leadership and Management (MSN, RN to MSN), Family or Adult Nurse Practitioner (MSN, RN to MSN), Nurse Practitioner to MSN

Master of Public Administration (M.P.A.)

Master of Social Work (M.S.W., clinical)

Doctor of Philosophy in Public Affairs
- *Specializations:* Criminal Justice, Public Administration, and Social Work

School of Optics

Certificate
- Applied Optics
- Lasers
- Optical Communications

Master of Science in Optics

Doctor of Philosophy in Optics

Academic Calendar, 2000-2001

	Fall 2000 Semester	Spring 2001 Semester	Summer 2001 Term A	Summer 2001 Term B	Summer 2001 Term C	Summer 2001 Term D
Early Registration	March 27-July 28	Oct. 23-Dec. 8	March 26-April 30	March 26-June 17	March 26-April 30	March 26-April 30
Early Payment deadline	July 28	Dec. 8	May 11	May 11***	May 11	May 11
Last day to apply for graduation*	July 31	Dec. 4	April 23	April 23	April 23	April 23
Regular Registration	Aug. 21-23	Jan. 4-8	May 7-8	June 18-19	May 7-8	May 7-8
Classes begin	Aug. 23	Jan. 8	May 8	June 19	May 8	May 8
Late registration	Aug. 21-29	Jan. 9-12	May 9-11	June 20-22	May 9-11	May 9-11
Add/Drop**	Aug. 24-29	Jan. 4-12	May 7-11	June 18-22	May 7-11	May 7-11
Fees due; last day for refund of fees	Aug. 29	Jan. 12	May 11	June 22****	May 11	May 11
Withdrawal deadline	Oct. 20	March 2	May 25	July 6	June 15	June 1
Last day to remove an incomplete	Dec. 4	April 23	June 18	July 30	July 30	July 9
Classes end	Dec. 4	April 23	June 18	July 30	July 30	July 9
Final exams and special exams	Dec. 5-11	April 24-30	June 18	July 30	July 30	July 9
Grades due in Registrar's Office	Dec. 14	May 3	June 21	Aug. 2	Aug. 2	July 12
Commencement	Dec. 15-16	May 4-5	Aug. 4	Aug. 4	Aug. 4	Aug. 4

* Students applying after the deadline cannot assume that their name will appear in the commencement program and may not receive information regarding graduation.

** If class meets after the Add/Drop date, then the Add/Drop period can be adjusted. Colleges may have earlier deadlines. See individual colleges for information.

*** Summer B payment deadline for all students who register March 26-May 11.

**** Summer B payment deadline for all students who register May 12-June 22.

Graduate Studies Deadlines

	Fall 2000	Spring 2001	Summer 2001
Request thesis/dissertation defense	Oct. 16	March 19	June 15
Announcement of defense	One week prior to defense		
Submit draft to thesis/dissertation editor	Oct. 30	March 30	June 29
Thesis/dissertation defense deadline	Nov. 13	April 6	July 20
Submit final thesis/dissertation to thesis/dissertation editor	Dec. 4	April 27	July 30

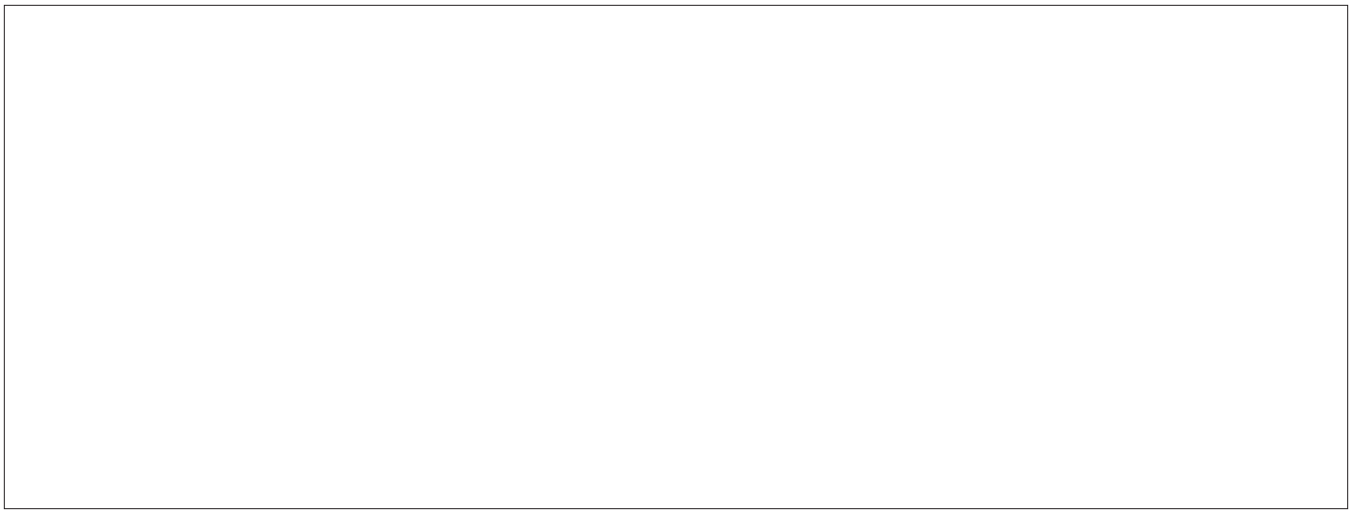
University Holidays and Special Dates

Labor Day ..... September 4
Homecoming Week* ..... October 16-21
Veterans' Day ..... November 10
Thanksgiving ..... November 23-26
M. L. King Jr. Day ..... January 15
Spring Holidays ..... March 12-17
UCF Founders' Day ..... April 4
Memorial Day ..... May 28
Independence Day ..... July 4

* Classes will be held during Homecoming Week.

NOTE: Calendar dates subject to change. Consult the *Schedule of Classes* and on-line academic calendar (http://www.ucf.edu) for current calendar information.

2000 **2001**



Application for Admission

The Office of Graduate Studies will assist you in applying for a program. Our website can answer many of your questions and has the applications for admission available for downloading. You can also request information on-line, or you may call (407-823-2766) or fax (407-823-6442) a request. UCF uses a managed application for the admissions process. The applicant must complete all required documents and submit them as one packet to the university.

University Requirements

The minimum university requirements for admission into a graduate program are: a 3.0 grade point average (last 60 attempted semester hours of baccalaureate degree) on a 4.0 scale **or** 1000 on the combined verbal-quantitative portions of the Graduate Record Examination **or** 450 on the Graduate Management Admission Test (for programs that require it). The Test of English as a Foreign Language (TOEFL) is required when an applicant is from a country where English is not the primary language or when an applicant's bachelor's degree is not from an accredited U.S. institution. A TOEFL score of 220 (computer-based test; or equivalent score on the paper-based test) is required unless otherwise specified by the program.

Specific Program Requirements

Programs may have other requirements in addition to or different from the minimum university requirements. Check the admission requirements in the program description.

Applications for Admission

Be sure you obtain and complete the appropriate application for admission:

U.S. or Resident Alien Application—For degree-seeking applicants who are U.S. citizens or resident aliens in the United States

International Application—For degree-seeking applicants who are not U.S. citizens or resident aliens in the United States

Nondegree/Certification/Transient Application—For non-degree-seeking applicants who have completed at least a baccalaureate degree from a regionally accredited institution. For education certification students and for graduate certificate program applicants. For students who are enrolled in a graduate degree program at another university and want to take course work at UCF and transfer it to their home institution.

Reactivation/Readmission Application—For applicants who applied to UCF within the past year but were not accepted into a graduate program or were accepted into a graduate program but never attended. Also for previously admitted and enrolled graduate students who have been absent for two or more consecutive major semesters (Fall, Spring) and wish to apply for readmission to the same graduate program.

Description of Application

The Graduate Application for Admission includes these forms:

- Application for Admission form (signed by the applicant)
- $20 application fee in U.S. dollars made payable to the University of Central Florida (if you have not previously attended UCF)
- Residency Classification form
- Two official transcripts (in sealed envelopes) from each college/university attended
- GRE (or GMAT, if required by the program) scores sent directly to UCF
- TOEFL scores sent directly to UCF, if an applicant is from a country where English is not the primary language or when an applicant's bachelor's degree is not from an accredited U.S. institution
- Request for Assistantship Information (optional)
- Recommendations, if required by the program
- Essays or statements, if required by the program
- Professional resume, if required by the program
- Student Health Services - Health Form, including immunization record and health history (Distance learners do not need to fill out the Health Form.)

International Applicants—The University of Central Florida accepts only international students in good status with the U.S. Immigration and Naturalization Service (INS). Proof of good immigration status can be a valid passport, valid immigration documents, or an acceptance letter from the appropriate graduate program. In addition to the application materials listed above, international applicants must submit:

- Financial Statement with a letter indicating commitment (from parents, government, etc.) to financially support the applicant's education
- Transcript Evaluation from an approved agency

Nondegree/Certification/Transient

A complete application includes:

- Nondegree/Certification/Transient Application
- $20 application fee, if you have not previously attended UCF
- Residency Classification form
- Student Health Services - Health Form (required unless you are taking courses exclusively off-campus or if you are not a State University System [SUS] transient student)
- Official transcript showing an earned bachelor's degree from a regionally accredited institution. Transient students may submit a letter from their home institution in place of an official transcript; the letter should state that they are in good academic standing and that the institution will accept the transfer of hours.

Readmission

When a student applies for readmission, the program will determine if the student will be continued in graduate status or be reverted to nondegree status. See "Continuous Attendance" on page 34 in this catalog. Readmission applicants must submit:

- Readmission Application
- Residency Classification form
- Health History section of Student Health Services - Health Form

Reactivation

When a student applies for reactivation, the program determines if the student is accepted. Admission is not guaranteed by completing a Reactivation Application. Reactivation applicants must submit:

- Reactivation Application
- Residency Classification form

Application Deadlines

U.S. and Resident Alien Application

	FALL	SPRING	SUMMER
College of Arts and Sciences			
Biology	March 1*	Oct. 15	April 15
English	June 15	Dec. 1	May 1
Physics	Feb. 15*	—	—
Psychology, Human Factors	Jan. 25	—	—
Psychology, I&O (M.A., Ph.D.)	Feb. 1	—	—
Psychology, Clinical (M.A.)	Feb. 15*	Sept. 15	—
Psychology, Clinical (Ph.D.)	Jan. 15	—	—
Spanish	June 1	Dec. 1	March 1
TESOL	June 15	Nov. 1	March 15
All other programs in this college	July 15	Dec. 1	April 15
College of Business Administration			
All Master's programs**	July 15	Dec. 1	April 15
Doctoral program	Feb. 1*	—	—
Doctoral program	May 15	—	—
College of Education			
Education (PhD)	Feb. 20***	—	—
Curriculum and Instruction (Specialist, EdD, and PhD)****	Feb. 20	Sept. 20	—
Counselor Education (Master)	March 1	Oct. 1	—
Educational Leadership (Specialist and EdD)	Feb. 20	Sept. 20	—
Educational Technology (Master)	March 30	—	—
School Psychology (Specialist)	March 1	—	—
School Counseling (Specialist)	March 1	Oct. 1	—
All other programs in this college	July 15	Dec. 1	April 15
College of Engineering and Computer Science			
Computer Engineering, Computer Science, and Electrical Engineering	March 1*	—	—
Computer Engineering, Computer Science, and Electrical Engineering	July 15	Dec. 1	April 15
All other programs in this college	July 15	Dec. 1	April 15
College of Health and Public Affairs			
Communicative Disorders	Feb. 1	Oct. 1	Feb. 1
Criminal Justice	July 15	Dec. 1	April 15
Health Sciences: Health Services Administration	July 15	Dec. 1	April 15
Molecular Biology / Microbiology	March 15*	—	—
Molecular Biology / Microbiology	July 15	Dec. 1	April 15
Nursing (MSN, RN to MSN)	March 15	Sept. 15	—
Nursing (post-baccalaureate and certificate)	June 1	Oct. 15	—
Physical Therapy	—	—	Jan. 15
Public Administration (Master)	July 1	Dec. 1	April 1
Public Affairs (PhD)	Feb. 7*	—	—
Public Affairs (PhD)	March 15	—	—
Social Work	March 1	—	—
School of Optics			
All programs	July 15	Dec. 1	April 15
All programs	Feb. 1*	—	—

* Students applying for fellowships or assistantships must apply for the fall semester by this date.

** Applicants should apply at least one month before the application deadline to be considered for fellowships or assistantships.

*** Students applying for fellowships or assistantships should apply for admission by December 20.

**** For E.D. at Florida Gulf Coast University, the summer deadline is December 1. Daytona Beach deadlines are announced.

To all applicants:
Complete applications (all required documents) must be received by the date listed for your program to be considered for admission. Failure to meet this due date may prevent admission as a regular graduate student for the term.

Complete the application for graduate admission on-line or download the application forms at the Graduate Studies website:

http://www.graduate.ucf.edu

International Application

	FALL	SPRING	SUMMER
International applicants	March 1	Aug. 1	Dec. 1
Curriculum and Instruction (Specialist, EdD, and PhD)	Feb. 15	—	—
Counselor Education (Master)	March 1	—	Dec. 1
Educational Leadership (Specialist and EdD)	Feb. 15	—	—
Molecular Biology and Microbiology	March 1	—	Dec. 1
Nursing	Feb. 15	—	—
Physics	Feb. 15	—	—
Psychology, Human Factors	Feb. 1	—	—
Psychology, I&O	Feb. 1	—	—
Psychology, Clinical (M.A.)	Feb. 15	Aug. 1	—
Psychology, Clinical (Ph.D.)	Jan. 15	—	—

Nondegree, Certification, Transient, and Readmission Applications

Complete applications (all required documents) must be received by the date listed below, unless otherwise specified by the program, to be considered for admission.

Fall admission	July 15
Spring admission	December 15
Summer admission	April 15

Reactivation Application

The program deadline. See the U.S. / Resident Alien Application or International Application deadlines listed above.

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Assoc. Director for Academic Programs ..... M. G. "Jim" Moharam

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

The University of Central Florida is a major metropolitan research university whose mission is to deliver a comprehensive program of teaching, research, and service. It provides intellectual leadership through quality undergraduate and graduate programs. It proudly identifies with its geographic region while striving for national and international excellence in selected programs of teaching and research. It serves students who are diverse in age, ethnic, and racial identity, and socioeconomic background. It supports the cultural vitality of our region, serves as a major intellectual and creative resource, develops creative partnerships with public and private enterprise, and participates fully in the economic development of Florida.

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 members 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.

UCF works actively to build partnerships that promote development of Central Florida's economy through carefully targeted programs of graduate study and research. The I-4 High-Technology Corridor Council, whose goal is to attract, retain and expand high technology investment and jobs, is but the latest example of UCF's collaboration with partners from industry, state and local government, and higher education.

Service to its community is an important extension of the metropolitan 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 non-traditional 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, specialist, 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. UCF is listed with an "A" rating in the Report of Credit Given by Educational Institutions. The university is accredited by the following agencies:

Southern Association of Colleges and Schools (SACS)
American Assembly of Collegiate Schools of Business (AACSB)
Computer Science Accreditation Commission (CSAC)
National Council for Accreditation of Teacher Education (NCATE)
National Association of School Psychologists
Council for Accreditation of Counseling and Related Educational Programs
Florida Department of Education
Engineering Accreditation Commission (EAC)
Accreditation Board for Engineering and Technology (ABET)
Technology Accreditation Commission (TAC)
Accreditation Board for Engineering and Technology (ABET)
Commission on Accreditation of Allied Health Education Programs (CAAHEP of AMA)
Joint Review Committee on Education in Radiologic Technology (JRCERT)
National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
Committee on Accreditation for Respiratory Care
American Speech-Language-Hearing Association - Educational Standards Board (ASHA)
American Health Information Management Association (AHIMA), in conjunction with CAAHEP of AMA
National League for Nursing (NLN)
Florida Board of Nursing
American Chemical Society (ACS)
Council on Social Work Education (CSWE)
Commission on Accreditation in Physical Therapy Education - American Physical Therapy Association
National Association of Schools of Music (NASM)

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, and professional sports teams such as the Orlando Magic, the Solar Bears, and the Orlando Predators.

The Orlando Campus

The 1,415-acre campus is located 13 miles northeast of downtown Orlando. Seventy-nine permanent buildings valued at more than $300 million, radiate outward from an academic core, where UCF's colleges, classrooms, and Library are located. More than $45 million in new construction is under way, including a $14 million College of Health and Public Affairs building. Facilities recently completed include the $17 million Student Union and $14 million School of Communication Building. UCF recreational facilities include lighted outdoor tennis and basketball courts, an outdoor swimming pool, golf driving range, disc golf range, volleyball and basketball courts, and multipurpose 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 South Orlando Center. Times and dates for all courses are listed in the regularly published *Schedule of Classes.*

UCF Virtual Campus

Visit our website at
http://distrib.ucf.edu/

The UCF Virtual Campus provides opportunities for students to enroll in credit courses and select degree programs through a variety of interactive distributed technologies. Courses are delivered through the World Wide Web, two-way interactive television, videotape, and radio broadcasting. Virtual Campus courses use the World Wide Web, e-mail, computer conferencing, chat, multimedia, videotape, interactive two-way television, and WUCF radio.

Students participate virtually in web-based courses via computer. Some courses utilize the Web solely for instruction with no required face-to-face class meetings. Other courses utilize the Web to enhance classroom activities and, therefore, reduce face-to-face time in the classroom. Interactive two-way television increases the availability of courses at UCF area campuses and attendance centers. Videotape courses that provide undergraduate and graduate degrees in engineering to students throughout the state are enhanced with the Internet.

Distributed learning courses are listed each semester in "The UCF Virtual Campus" section of the *UCF Schedule of Classes.* Students who plan to enroll in a course with a web component or in a videotape course must have access to the Internet, a web browser such as Netscape, basic web browsing knowledge, ability to use e-mail, and basic computer skills such as word processing. Refer to http://distrib.ucf.edu/ for additional information.

Center for Distributed Learning

Steven E. Sorg, Assistant Vice President and Director
Web address: http://distrib.ucf.edu/cdl/
(407) 207-4910

The Center for Distributed Learning serves as the Virtual Campus for the university. The Center's mission is to provide support to students, faculty, and staff as new and existing technologies become increasingly available for distributed learning courses and programs. The Center is responsible for

planning and administering interactive television, video, and web-based programs. It serves as a clearinghouse for processes and resources providing support and marketing for off-campus and distributed learning credit programs. The Center also coordinates the university's standards and accreditation changes resulting from web-based instruction. The Center has an advisory committee composed of the distributed learning coordinators from each college, faculty, and representatives from other units on campus that support distributed learning.

UCF Brevard Area Campus

James A. Drake, Campus Director
Clark Maxwell, Jr., Lifelong Learning Center
1519 Clearlake Road, Cocoa, FL 32922
(407) 632-1111, ext. 65567 • UCF ext. 506-5567
Mem Stahley, Associate Campus Director
(407) 632-1111, ext. 65567 • UCF ext. 506-5567
Pam Anthrop Cavanaugh, Interim Associate Campus Director, (407) 632-1111, ext. 65609 • UCF ext. 506-5609
Deborah J. Bradford, Assistant Director, Undergraduate Admissions, (407) 632-1111, ext. 65610 • UCF ext. 506-5610
For directions to the Brevard campus, see the map on page 279.

Graduate programs are offered in:
Aerospace Engineering and Space Systems (M.S.)
Business Administration (M.B.A.) at BCC Melbourne
Communicative Disorders (M.A.)
Criminal Justice (M.S.)
Educational Leadership (M.Ed.)
Education - Varying Exceptionalities (M.Ed. and M.A.)
Elementary Education (M.A.)
Engineering FEEDS/ITV, on videotape at Kennedy Space Center, BCC Palm Bay, and UCF Brevard-Cocoa
Industrial Engineering and Management Systems (M.S.)
Public Administration (M.P.A.)
Vocational Education (M.Ed. and M.A.)

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. Nine graduate programs offer course work for the master's degree.

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, Campus Life, cashiering services, a joint use computer lab, and bookstore.

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

Jack B. Rollins, Associate Vice President and Campus Executive Officer
P.O. Box 2811, 1200 International Speedway Blvd.
Daytona Beach, FL, 32120-2811
(904) 255-7423, ext. 4010
William J. Wetherell, Associate Campus Director
(904) 255-7423, ext. 4025
General information telephone number: (904) 254-4460
Web address: http://www.daytona.ucf.edu
For directions to the Daytona campus, see the map on page 279.

Graduate programs are offered in:
Business Administration (M.B.A.)
Criminal Justice (M.S.)
Curriculum and Instruction (Ed.D.)
Educational Leadership (M.Ed.)
Domestic Violence (certificate)
Elementary Education (M.S.)
Engineering (FEEDS/ITV-video)
Exceptional Education
Health Sciences: Health Services Administration (M.S.)
Nursing (R.N. to M.S.N.)
Psychology (M.A., clinical)
Public Administration (M.P.A. and certificate)
Social Work (M.S.W.)

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

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 6:00 p.m. Monday through Thursday and 8:00 a.m. to 4:00 p.m. on Friday. Hours are extended during scheduled registration periods.


Visual Arts

Division of Continuing Education

Division Administrative Office

J. Patrick Wagner, AVP / Director
12424 Research Parkway, Suite 265, Orlando, FL 32826
Phone (407) 207-4920 • Fax (407) 207-4930

The Division of Continuing Education is the unit within Academic Affairs that coordinates, in collaboration with the colleges, all UCF continuing education activity. Programs include nonfundable credit courses and an array of noncredit programs including conferences, institutes, short courses, workshops, seminars, and camps. Many of these programs are awarded Continuing Education Units (CEUs), when managed through the Division.

Off-Campus College Credit Programs

This unit of the Division of Continuing Education provides support for UCF's colleges and and academic departments that schedule courses and degree programs off campus at various area businesses and governmental agencies. Registration may be conducted on-site or via the Web for convenience of the participants. Registration for nonadmitted students through this unit does not constitute standard admission to the university.

Center for Multilingual Multicultural Studies

Consuelo Stebbins, Director
TR 547 • (407) 823-5515
Myrna Creasman, Assistant Director
TR 547 • (407) 823-5455

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.

South Orlando Center

John Duryea, Director
Orlando Central Park • (407) 856-6585
For directions to the Center, see the map on page 279.

The South Orlando 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 South Orlando Center also offers graduate and undergraduate courses from each of the UCF colleges. Graduate certificate courses are also offered and more are being planned for the coming semesters. Graduate and undergraduate courses are offered in a variety of ways, including traditional face-to-face format, Interactive Television, WEB, and FEEDS. Parking is free and plentiful.

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 interactive television courses. There is a computer lab for student use, and the library is equipped with LUIS terminals. Admission and financial assistance information is available.

UCF Downtown

Cecelia H. Rivers, Campus Executive Director
36 West Pine Street, Orlando, FL 32801 • (407) 317-7700
For directions to the Center, see the map on page 279.

The Downtown Center is located in the heart of downtown Orlando. Situated near Orlando's Church Street Station, access to the center is easy. With six classrooms, including a 130-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 engineering 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 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 Center offers upper-division and graduate-level courses through the colleges of Health and Public Affairs, Arts and Sciences, Business Administration, Education, and Engineering.

Information Technologies and Resources

The Division of Information Technologies and Resources includes the Library, Computer Services and Telecommunications, the Office of Instructional Resources, and the Course Development for Interactive Distributed Learning Unit. 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

Barry B. Baker, Director
Frank R. Allen, Associate Director
Margaret K. Scharf, Associate Director
LR 512 • (407) 823-2564

Faculty: Ellen P. Anderson, Joseph C. Andrews, Buenaventura B. Basco, Penny M. Beile, Linda K. Colding, Eda M. Correa, Carmen L. Docurro, J. Richard Gause, Jr., Donna R. Goda, Michael L. Gorzka, Carole S. Hinshaw, Athena R. Hoeppner, Suzanne E. Holler, Phyllis J. Hudson, Gary L. Hyslop, Selma K. Jaskowski, Patricia E. Kenly, Marcus D. Kilman, Allison O. King, Cynthia M. Kisby, Chang C. Lee, Cheryl G. Mahan, Kimberly K. Montgomery, Jeanne M. Piascik, Meredith C. Semones, Roger D. Simmons, Marilyn R. Snow, Peter Spyers-Duran II, Mem T. Stahley, Linda J. Sutton, Jeannette A. Ward, Jack L. Webb, Ying Zhang.

The main University Library, housed in a facility of 226,000 square feet, has a collection of over 1.2 million volumes, including 8,100 current serial subscriptions. In addition to bound volumes, the Library owns approximately 2.1 million microforms and 27,000 media titles. UCF is a partial depository for both United States and Florida government publications. The Library is open approximately 103 hours per week including evenings and weekends. Hours are extended during the last few weeks of each semester and shortened during vacation periods. Current hours are available on the web site (http://library.ucf.edu/hours.htm) or by calling 823-2756. Borrowing periods for library materials vary depending on the item format. See the web site (http://library.ucf.edu/circ) for complete circulation policies.

WebLUIS, the Library's web-based catalog, can be accessed from any public as well as home PC. From the web go to http://library.ucf.edu and click on WebLUIS. WebLUIS also offers a gateway to hundreds of electronic databases, the catalogs of other state university system libraries, and the community college system libraries. CD-ROM based databases are available from within the Library in the Electronic Reference Area, located near the Reference Desk on the second (main) floor. For help and advice in the use of the Library and its materials, the Reference Desk is open during most library hours. Librarians are on duty for assistance with interpreting the on-line catalog (holdings and locations), as well as with electronic reference sources and other library collections.

The Interlibrary Loan and Document Delivery Services Department (ILL) assists students in obtaining materials not owned by the Library. Most book loans and photocopied materials can be acquired free of charge within two weeks. Request forms are available on the ILL web site at http://library.ucf.edu/ill, at the ILL Office (Room 222), or at the Reference Desk. For more information, call 823-2383 during office hours or visit the ILL web site.

Special services are provided for people with disabilities. By using WebLUIS, students can determine the availability of books they need and telephone the Library to request that books be retrieved from the shelves and brought to them at the circulation desk. A Kurzweil reading machine is available in the Library for people with visual impairments; students 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.

The Curriculum Materials Center (CMC), a unit of the University Library, is located in the Education Building. The CMC provides representative K-12 curriculum materials for preview, review, analysis, and circulation. The facility serves primarily the students and faculty of the College of Education, however, it is open to all campus faculty, staff, and students. For more information on this center, see the CMC web site at http://library.ucf.edu/CMC or call 823-2791.

Additional library collections are available at the Brevard Community College/University of Central Florida Joint Use Library in Cocoa and at the Daytona Beach Community College Library in Daytona Beach. At both locations the university partners with the local community college to provide complete information services, including materials processing and checkout. Both locations have electronic access to LUIS and to university resources on the web. Courier and intercampus loan services make the main library's collections available to UCF students at all area campus sites. For more information, see the web site at http://library.ucf.edu/branches.htm.

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 fileservers, Sun Enterprise 450, IBM ES/9000 model 170 and other Internet and campus facilities. There are two public access DELL PC labs in Computer Center II (CCII), Education (EDU), and the Business Building (BA). UNIX equipment is available in CCII. 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. A Cyberknight Center is available in CCII to assist students with computer and Internet needs.

Voice Response systems are available for dial-up registration, grades, and financial aid information. Similar services are available from the web at https://polaris.ucf.edu. Campus KIOSK workstations are available in several campus buildings for frequently asked questions and individual stu-

dent record information. Additional information is available on the 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 (Student Union), which provides the UCF community a source for quality computer products and services at competitive prices. The store is an authorized campus reseller for Dell, Apple, Microsoft, and many other products. Maintenance and training support is also available from the store.

Office of Instructional Resources

Dr. Ruth Marshall, Director
Classroom Building I, Room 203
(407) 823-2571 • Fax: (407) 823-2109
Web address: http://www.oir.ucf.edu

The Office of Instructional Resources (OIR) supports UCF administrators, faculty, and staff with multimedia design and production, digital media, television production, audio production, photography, graphics, and a full range of multimedia and audiovisual 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 (CBI, Room 202) provides multimedia production and training resources for faculty using Macintosh and Windows personal computer systems. OIR's Electronic Classrooms (CBI, Rooms 307 and 320) are used for video conferencing and distributed learning course origination. They also provide faculty with excellent locations for training in distributed learning production and delivery skills. The Experimental Classroom (CBI, Room 212) provides UCF faculty with a room to demonstrate new classroom technologies in association with UCF industry partners. OIR also supports over forty advanced multimedia classrooms located throughout the campus.

OIR provides UCF with a full array of distributed learning delivery systems including an interactive video network that serves several rooms on the main campus; the Downtown Academic Center; the branch campuses at Brevard, Daytona, South Orlando, and Palm Bay; and other off-campus locations. An ITFS network serves the main campus, the Downtown Academic Center in Orlando, the branch campuses in Brevard and Daytona, and the South Orlando campus. OIR also provides Ku and C-band satellite reception, cable television delivery on the main campus, and ISDN (384k) video conference equipment and facilities.

Course Development and Web Services

Barbara Truman-Davis, Director
AD 395-C • (407) 823-6624
Web address: http://reach.ucf.edu/~coursdev

Course Development and Web Services (CD&WS) supports teaching and learning online at UCF. The unit is responsible for offering classes to faculty about teaching online, such as IDL 6543 (http://reach.ucf.edu/~idl6543) offered twice a year and WebCT Academy (http://reach.ucf.edu/~webct411) offered year-round to all faculty, staff, and student assistants. CD&WS also produces online courses and web sites found on the Reach Server (http://reach.ucf.edu) and maintains the university's primary web site. Webmaster support through training and referrals is available upon request for departments and faculty needing web-based authoring. Special events are held regularly to promote campus-wide participation and web-based research and development.

CD&WS comprises teams of instructional and digital media designers, software engineers, and programmers called Techrangers who work with faculty, departments, and students to create collaborative digital media projects. The *Pegasus Connections* CD-ROM is produced semiannually by CD&WS to provide the UCF community with Internet software tools, tutorials, and UCF information (see http://reach.ucf.edu/~coursdev/cdrom).

Online courses are listed each semester in the *Schedule of Classes.*

Florida Engineering Education Delivery System (FEEDS) Program

Dr. Ron Eaglin, Director
Naomi Morris, Coordinator
ENGR 387 • (407) 823-2481
World Wide Web: http://feeds.engr.ucf.edu/

The College of Engineering offers all graduate engineering programs by means of live delivery or videotaped instruction. Programs and courses offered are delivered by videotape to branch campuses or to businesses either in-state or out-of-state. Businesses can sign up to receive courses through a partner in education agreement with the College of Engineering. Courses offered through the FEEDS system are listed on the FEEDS web site and in the FEEDS annual catalog and the UCF *Schedule of Classes.* Also available from the FEEDS system are the Engineering graduate certificate programs offered by each discipline. More information about these programs is available from each engineering department or the Engineering home page at http://www.engr.ucf.edu.

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 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.

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 7,200 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.

Sponsored Journals and Publications

The university's research efforts include sponsorship 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, 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)

Dr. Jefferson M. Koonce, Director and Chief Scientist
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

Dr. Robert L. Pennington, Director
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.

Executive Development Center

Sylvia Caceres, Interim Director
BA 237 • (407) 823-2446 • Fax (407) 823-3153
E-mail: execdev@bus.ucf.edu
Web address: http://www.bus.ucf.edu/ced

The Center for Executive Development (CED) of the College of Business Administration develops and coordinates seminars, workshops, and conferences on business and management-related topics. The Center is designed to support the business community in all of its requirements for management education and training. This support may be in the form of short, intensive seminars presented on campus or on-site, special topics seminars developed for particular needs, or customized certificate and non-certificate training programs to increase key competencies and managerial skills. The Center offers individualized attention and training consultation to business clients interested in topics such as Accounting, Business Development, Finance, Leadership, Management, Marketing, Professional Development, and Strategic Planning. The Annual Tax and Accounting Conference and Purchasing Manager Certification are examples of seminars and workshops being offered on a yearly basis. International programs include Brazilian workshops and the International School of Tourism and Hotel Management at Colegio Universitario del Este, Puerto Rico.

Additionally, the Center offers a fully accredited Executive MBA Program for qualified executives seeking to earn an advanced degree in business administration while continuing to work full-time. This fast-paced graduate program provides selected students the opportunity to study the latest in business technologies and application. Alumni of the program include professionals from outstanding organizations such as AAA, AT & T, Barnett Bank, Darden Restaurants, Harris Corporation, Lockheed Martin, Nestle, Pepsi Cola, Sears, Roebuck and Co., SPRINT, SunTrust Bank, Tupperware, Walt Disney World Co., and Universal Studios.

Center for Research and Education in Optics and Lasers (CREOL)

Dr. Eric Van Stryland, Professor and Interim Director
E-mail: director@creol.ucf.edu
P.O. Box 162700, Orlando, FL 32826-2700 • (407) 823-6834
Web address: http://www.creol.ucf.edu

The Center for Research and Education in Optics and Lasers (CREOL), established in 1986, is the Florida State University System's Center of Excellence for research and education in optics, lasers, and photonics with the mission to provide the highest quality education in optics and lasers, conduct scholarly fundamental and applied research, and aid in the development of Florida's high technology-based industries.

CREOL is integrated in the School of Optics and serves as its research arm. The School of Optics is one of only three optics academic institutes in the nation offering master's (M.S.) and doctoral (Ph.D.) degrees. The School of Optics/CREOL has become an internationally recognized institute with 23 faculty members, 21 Ph.D. level research scientists, and more than 100 graduate students. The faculty are recognized to be among the best in the optics, laser, and photonics field with two-thirds holding the rank of Fellow in major national and international professional societies. The School of Optics/CREOL is housed in an 83,000-square-foot building dedicated to optics, photonics, and laser education and research on the main campus. This facility houses ninety research laboratories equipped with over $35 million in state-of-the-art equipment. CREOL's research activities span the spectrum from basic science to prototype development. The faculty and research staff pursue joint research projects with industry, academia, and government laboratories, and are always seeking new opportunities to work with industry to expose students to the industrial environment and to aid in technology transfer. Current research areas include linear and nonlinear guided-wave optics and devices, high speed photonic telecommunications, solid state laser development, nonlinear optics, laser-induced damage, quantum-well optoelectronics, photonic information processing, infrared systems, optical diagnostics, optical system design, image analysis, virtual reality, medical imaging, diffractive optics, optical crystal growth and characterization, high intensity lasers, x-ray optics, EUV sources, optical glasses, laser materials processing, free-electron lasers, and light matter interaction. These research pro-

grams are supported by over $5 million in research grants and contracts from numerous federal and state agencies and industry.

Graduate assistantships, with stipends ranging from $15,000 up to $20,000 are available to outstanding students pursuing graduate education in optics and photonics. Research training opportunities are also available to undergraduate students through the Research Experience for Undergraduates (REU) program sponsored by the National Science Foundation, and other resarch grants and contracts.

CREOL has a very active Industrial Affiliate Program to facilitate strong cooperative relations with industry. The program provides businesses and manufacturers with 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 of laser and electro-optic technology.

For additional information, please visit our website at http://www.creol.ucf.edu or contact Dr. Eric Van Stryland, Professor and Interim Director of the School of Optics/CREOL at (407) 823-6834 or by e-mail: director@creol.ucf.edu.

Dick Pope, Sr., Institute for Tourism Studies

Dr. Abraham Pizam, Director
BA 410 • (407) 823-2188

The mission of the Dick Pope, Sr., Institute for Tourism Studies is to improve the quality of the tourism product and increase the benefits of tourism for the industry, the state, and the local community. To this end, the institute is involved in a variety of research projects and educational programs.

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; in addition, the institute conducts feasibility, economic, motivational, and forecasting studies. 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 educating the public about the tourism industry in Florida and internationally, and about its contribution to the social and economic welfare of the general public.

Florida-Canada Linkage Institute

Dr. Warren McHone, Director
Orlando Campus • (407) 823-5789
E-mail: fcli@bus.ucf.edu
Web address: http://www.bus.ucf.edu/fcli/

The Florida-Canada Linkage Institute was established by the State of Florida in 1986 to foster cultural, educational, and economic linkages between Florida and Canada. Linkage is developed through promotion of expanded public/private dialogue on cooperative research and technical assistance, cultural exchange, enhancement of language training and student/faculty exchange programs.

Florida-Eastern Europe Linkage Institute

Dr. Jean C. Kijek, Director
HPB 350D/E, P.O. Box 160155, Orlando, FL 32816-0155
(407) 823-3647 • Fax (407) 823-3649

The Florida-Eastern Europe Linkage Institute (a Class I state-mandated activity) is a statewide 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, eastern Europe, and former Soviet Union; 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 linkages 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

Marilyn Crotty, Director
(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.

Institute for Simulation and Training (IST)

Dr. Dennis K. McBride, Executive Director
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 as a research unit of the University of Central Florida (UCF) and is part of the Department of Defense (DoD) Center of Excellence (COE) for Simulation and Training. The COE represents the largest concentration of simulation and training expertise in the world.

IST is located in the Central Florida Research Park, where it occupies over 35,000 square feet of laboratory and office space adjacent to the main UCF campus. Also located in the Park is the Army Simulation Training and Instrumentation Command (STRICOM), the Naval Air Warfare Center Training Systems Division (NAWCTSD), and the Air Force Agency for Modeling and Simulation (AFAMS), in addition to numerous companies involved in simulation and training development.

IST's strength lies in its broad-based, multidisciplinary resources. These include a concentration of in-house simulation and training expertise, extensive laboratory facilities and equipment, and an experienced support staff. IST draws on these resources together with those of UCF, government, commercial organizations, and other universities to advance the state-of-the-art in simulation-based training.

Services provided by IST include:

- Research and research support
- Data gathering, evaluation, and distribution
- Technology transfer
- Modeling and simulation course, workshop, publication, and website development
- Resources and research opportunities for students in simulation-related disciplines
- Development of links among academic, government, and commercial simulation entities

IST's research staff encompasses a broad spectrum of academic disciplines including computer science, computer engineering, human factors psychology, instructional design, and a variety of engineering disciplines. Additionally, many of IST's researchers and program managers have extensive experience in commercial and military organizations. Integrating this experience with the academic environment provides a unique perspective on simulation and training research with a thorough understanding of application requirements.

Augmenting the professional staff are nearly 100 graduate and undergraduate students who work in almost every research and support area of IST. Since its inception, more than 550 students have worked at IST, many completing advanced degrees in simulation-related disciplines while contributing to institute research efforts. Major research domains at the institute include:

- Simulator networking
- Virtual world visualization and interaction
- Education and training applications
- Information gathering / dissemination
- Technology transfer

Institute of Statistics

Dr. Mark E. Johnson, Director
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

Dr. Daniel Jones, Director
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

Aloyse T. Polfer, Director
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, Personnel, Bookkeeping, Business Tax, Franchising, Sources of Financing, Product Innovation, Business Plan Development. Additional programs provide assistance to clients in the areas of government contracting, energy conservation, and international trade.

Small Business Institute

Dr. Ron Rubin, Director
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.

Florida Solar Energy Center (FSEC)

Dr. David Block, Director
1679 Clearlake Road, Cocoa, FL 32922-5703
(321) 638-1000 • Fax (321) 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 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 approximately $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 1998 exceeds $87 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
- Education and Training

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.

Florida Space Institute (FSI)

Dr. Ron Phillips, Director
12424 Research Parkway, Suite 400, Orlando, FL 32826
(407) 658-5599 • Fax (407) 658-5595
Cape Canaveral Air Station, Mail Code: FSI, Kennedy Space Center, FL 32899 • (321) 730-3305 • Fax (321) 730-3127
The Astronauts Memorial Foundation, Mail Code: FSI-A, Kennedy Space Center, FL 32899 • (321) 452-9834 • Fax (321) 452-4842

Florida Space Institute (FSI) is an interdisciplinary organization that relies on faculty participation from all five colleges of the University. FSI's goal is to maximize space research opportunities for UCF faculty and students, while providing highly valued results to the space community. FSI'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, FSI serves to aid in the development of new space-related courses and programs. FSI 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.

Environmental Systems Engineering Institute

Dr. James S. Taylor, Director
(407) 823-2785

Engineering research is a primary function of the Environmental Systems Engineering Institute (ESEI). Located within the Civil and Environmental Engineering Department at the University of Central Florida (UCF), ESEI provides a central location for coordinating environmental projects utilizing the specific expertise of CEE and other departments at UCF. Specific expertise within the CEE department includes potable water treatment, corrosion control, stormwater abatement, air dispersion modeling, noise abatement, solid waste, incineration, hazardous waste investigation, wastewater treatment, and receiving water impacts.

UCF has a long history of environmental problem solving. ESEI projects have involved colleges and departments outside of the College of Engineering at UCF in order to conduct comprehensive environmental projects concerning research, training, analysis, and education. UCF has significant capital resources invested in laboratory space, advanced analytical equipment, and computer technology that is available for environmentally oriented problem solving.

Projects conducted through ESEI provide a central contact point within UCF, which allows a project team with a high degree of specialized expertise to be assembled. Information regarding ESEI or any environmentally oriented project can be obtained by calling or writing Dr. J. S. Taylor at the above address or phone number. ESEI was created by UCF to enhance environmental education and services at UCF and actively seeks interaction with government and private organizations.

Other Centers

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

The Institute for Exercise, Physiology, and Wellness provides physiologic assessments for: Body Fat Percent (Hydrostatic Weighing); VO_2 Max; Resting Metabolic Rate; Lactate Threshold; Cholesterol Profile; and Exercise and Nutrition Intervention Programs.

Additional centers providing opportunities for graduate student research are:

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

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

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

Institute for Research and Program Development in Education
Dr. Michael C. Hynes, Director • (407) 823-6076

Admission & Registration

Graduate Studies coordinates the admission 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 non-degree students or as certificate students. Please note that non-degree admission or admission to a graduate certificate program at UCF does not guarantee admission to graduate status in a degree program.

Request applications and program information on-line, or by e-mail, telephone, or fax.

Graduate Studies website: http://www.graduate.ucf.edu

E-mail requests and questions: graduate@mail.ucf.edu

Telephone: (407) 823-2766

Fax: (407) 823-6442

Applicants are responsible for sending the application with all supporting documents to:

Graduate Studies—Admissions
Administration Bldg., Suite 230
University of Central Florida
P.O. Box 160112
Orlando, FL 32816-0112

Admission to Graduate Programs

In seeking admission to a graduate program, the following documents are required to be on file before the application can be considered. 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.

NOTE: All 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 and included in the packet.

Admission to a Graduate Program

If you are a U.S. citizen or resident alien in the United States, please submit the following:

- Graduate Application for Admission form (signed by the applicant)
- $20 application fee (not required if you have previously attended UCF)
- Residency Classification form
- Two official transcripts (in sealed envelopes) from each college/university attended. Request transcripts electronically if you graduated from a Florida public institution.
- GRE (or GMAT, if required by the program) scores sent directly to UCF
- TOEFL scores sent directly to UCF, if an applicant is from a country where English is not the primary language or if an applicant's bachelor's degree is not from an accredited U.S. institution
- Free Application for Federal Student Aid (FAFSA), if financial support is desired
- Recommendations, if required by the program
- Essay/Goal Statement/Research Statement/Personal Statement, if required by the program
- Professional resume, if required by the program
- Student Health Services - Health Form, including immunization record and health history* (Distance learners do not need to fill out the Health Form.)

Some programs may require interviews, portfolios, or other materials.

* To expedite processing of materials, return this completed form with the rest of your application. This form is not used in making an admission decision. However, you will not be allowed to enroll at UCF without completing this form.

Admission for UCF Graduates Who Obtained Their Degrees Less Than One Year Ago

UCF students who graduated from UCF within one year of applying to a graduate program may use the one-page application form developed specifically for them. To apply, the following materials should be received by Graduate Studies (AD 230):

- UCF graduate application (one-page form)
- GRE scores sent directly to UCF

Students may need to update their residency or health forms if their status has changed. Graduate Studies will obtain the UCF transcript. No letters of recommendation, statements, or other materials can accompany this application; some programs do not accept this application. Please check our website or with your program about the use of this application.

International Admission to a Graduate Program

To apply for international admission to a graduate program, it is best to complete the forms available on the web, which are downloadable. For those without web access, please request an application form by mail or e-mail (graduate@mail.ucf.edu). If you are not a U.S. citizen or resident alien, please return:

- Graduate Application for International Admission (signed by the applicant)
- An unofficial transcript showing a bachelor's degree (or equivalent)
- $20 application fee (not required if you have previously attended UCF)

Once these documents have been received, additional forms will be sent to the applicant for completion.

- Residency Classification form
- Financial Statement with a letter indicating commitment (from your parents, government, etc.) to financially support your education
- Two official transcripts (in sealed envelopes) from each college / university attended. Request transcripts electronically if you graduated from a Florida public institution.*
- Transcript Evaluation (see "Transcript Evaluation" under "International Students" in this chapter)
- GRE (or GMAT, if required by the program) scores sent directly to UCF. We cannot accept international students without official copies of the GRE or GMAT. Please make arrangements to take these exams before submitting this application.
- TOEFL scores sent directly to UCF, if an applicant is from a country where English is not the primary language or if an applicant's bachelor's degree is not from an accredited U.S. institution. We cannot accept international students without an official copy of the TOEFL. Please make arrangements to take this exam before submitting this application.
- Recommendations, if required by the program
- Essays or statements, if required by the program
- Professional resume, if required by the program
- Student Health Services - Health Form, including immunization record and health history** (Distance learners do not need to fill out the Health Form.)

Some programs require interviews, portfolios, or other materials.

* Official transcripts are required. If time is a factor in issuing the I-20, you may receive special permission from your UCF program coordinator to submit unofficial transcripts now and bring official transcripts with you when you arrive at UCF. However, failure to produce official transcripts on arrival will result in immediate deportation at the applicant's expense.

** To expedite processing of materials, return this completed form with the rest of your application. This form is not used in making an admission decision. However, you will not be allowed to enroll at UCF without completing this form.

Admission as a Non-degree Student

If you are interested in taking graduate courses at UCF for personal or professional enhancement or to prepare for a graduate program, complete a Nondegree application. The following materials should be returned:

- Nondegree Application form
- $20 application fee (not required if you have previously attended UCF or you are a State University System [SUS] transient student)
- Residency Classification form
- Official transcript showing an earned bachelor's degree
- Student Health Services - Health Form

Admission as a Transient Student

Students attending UCF for a term from another institution where they are receiving their degree are classified as transient students. To apply as a transient student the following materials should be received by Graduate Studies (AD 230):

- Nondegree Application form
- Residency Classification form
- $20 application fee (not required if you have previously attended UCF or you are a State University System (SUS) transient student
- Health Form required if you are not a State University System (SUS) transient student
- A letter from your home institution stating that you are in good academic standing and that the institution will accept the transfer of the hours

Admission to a Certificate Program

If you are interested in taking graduate courses at UCF in a specialized or interdisciplinary area and receiving a graduate certificate, complete a Nondegree Application. The following materials should be returned:

- Nondegree Application form
- Residency Classification form
- $20 application fee (not required if you have previously attended UCF or you are a State University System (SUS) transient student
- Student Health Services - Health Form
- Official transcript showing an earned bachelor's degree or master's degree.

If you are a regular graduate student in a graduate degree program and wish to supplement your degree with a graduate certificate, you may do so by completing a Nondegree Application form indicating the certificate program.

Accreditation

For the purposes of this catalog, "accredited institutions" means those institutions accredited by one of the six regional associations. Students with degrees from nonaccredited institutions will not be accepted into graduate programs at the University of Central Florida without an independent evaluation of the institution. 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 study may be obtained from Graduate Studies - Admissions (AD 230) or by downloading from our web site at http://www.graduate.ucf.edu. Completed applications must be submitted to the same office.

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 non-degree status, all applicants must obtain official transcripts from the previous institution showing a baccalaureate degree and the grades for the last 60 semester (90 quarter) hours of attempted undergraduate work and include them in the application packet sent directly to Graduate Studies - Admissions (AD 230). If grades were transferred in from other schools in the last 60 semester hours, official transcripts from those schools also must be obtained and included. 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 230) 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. The GMAT exam is computerized and is available at Sylvan Learning Centers (407-671-2332). The GRE is also available in a computerized format at Sylvan and test scores are usually available in four to six weeks. Preparatory courses are offered through the Division of Continuing Education (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 230).

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 non-degree applicants, all supporting admissions documents should be received by Graduate Studies no later than July 15 (fall admission), December 1 (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 in the first semester will result in registration holds for all succeeding terms.

All 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

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 Student Development and Enrollment Services office 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. In accordance with 228.093, F.S. the university is required to release student directory information to independent vendors upon request. Therefore, **if students do not wish their names on such a list, they should notify the Dean of Students in writing upon acceptance of admission to a graduate program of study.** *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 Student Health Services - Health Form should be mailed with the application for admission. Those students who will take courses solely on the web, and never come to UCF or an area campus, will be required to fill out the Medical History part of the form only. 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. Complete a reactivation form or fax (407-823-6442) or e-mail (graduate@mail.ucf.edu) Graduate Studies indicating your name, Social Security Number, and date desired for admission.

Admission to the University

Admission as a non-degree student is not admission to a graduate program. The admission process begins with the receipt of the Graduate Application for Admission packet and fee in Graduate Studies. Graduate Studies will return your completed, stamped postcard notifying you of receipt of the application. Providing Graduate Studies with all 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. Transcripts, test scores, recommendations, and personal statements are also forwarded to the degree program as soon as they are received.

Non-degree-seeking applicants will receive notice of acceptance to the university and registration information from Graduate Studies. Acceptance to a graduate degree program will be made by the academic program.

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 three 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.

- Students may not be guaranteed continuing graduate status if they do not enroll in the university for a period of two major semesters (spring / fall). When students apply for readmission, after having been out two or more semesters, the program will review the students' records to determine if they will be continued in graduate status or be reverted to non-degree status.
- Students taking thesis or dissertation hours are required to be continuously enrolled until the thesis or dissertation is completed.
- 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, conditional, provisional, or restricted) 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-6.003 to appeal that decision. The appeal procedure consists of the student writing a letter within thirty days of the date of denial 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 infor-

mation 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 Vice Provost and Dean of Graduate Studies indicating the desire to appeal further and the reasons why an appeal is sought. The Vice Provost and Dean of Graduate Studies may ask the Graduate Council to examine the necessary information and recommend a response to the appeal.

Admission to graduate status can be in one of four categories: regular, conditional, provisional, or restricted status.

Admission Classifications

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 1000 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. Programs are encouraged to have more restrictive admission requirements than the BOR requirements. Program requirements may be based on other factors such as work experience, research interests of the prospective student, evidence of extracurricular or community work, personal interviews, or other factors specified by the program.
- International students must demonstrate their proficiency in the English language. 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. A computer-based TOEFL score of 220 (or equivalent score on the paper-based test) is required unless otherwise specified by the program.

Graduate Status—Conditional
A student who meets the Board of Regents criteria for admission, but has not submitted all required documents may be admitted conditionally into a graduate program. Conditions must be met by midterm of the first semester in order to register for future semester classes.

Graduate Status—Provisional
A student who does not fulfill the minimum BOR requirements 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 non-degree 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 non-degree status. (See "Appeals" in the "University Graduate Regulations" chapter.)

Graduate Status—Restricted
Even though BOR minimum requirements are met, a program may attach restrictions to the admission of an applicant, such as completing certain prerequisite courses, retaking the GRE, maintaining a certain GPA in the first few hours of a graduate program, etc. Students may be denied admission to regular graduate status if the conditions are not met.

Non-degree Status
Students are generally placed in this category at their request. International students are not eligible for non-degree status unless they hold an eligible visa status.

A student may elect to remain in non-degree 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 non-degree status, students are allowed to take graduate courses, in some departments, on a space-available basis. Non-degree students may also enroll in specific graduate certificate programs. Non-degree students register the last day of registration. Not all departments accept non-degree 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 non-degree 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. In general, at the discretion of the program, students accepted into graduate programs may transfer all the hours from a graduate certificate program into a graduate program.

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 230). The program coordinator of the new program will then decide whether to admit the student. Non-degree 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

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 from UCF

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.

Financial Statement for International Students

The Financial Statement must be satisfactorily completed before immigration forms will be issued. Please complete both sides of the Financial Statement. Part 2 of the form must be completed (unless a government or employer is your sponsor) confirming the ability of your parent or sponsor to cover your educational expenses. We also require a letter indicating a commitment (from your parents, government, etc.) to financially support your education. If you have questions about this requirement, please contact UCF International Student Services (407-823-2337).

Official Transcripts

Official transcripts are required. If time is a factor in issuing the I-20, then you may receive special permission from your UCF program coordinator to submit unofficial transcripts now and bring official transcripts with you when you arrive at UCF. However, failure to produce official transcripts upon arrival will result in immediate deportation at the applicant's expense.

Transcript Evaluation

In addition to your official transcripts, a transcript evaluation is required of all students who attended a college / university outside the United States AND scored below 1000 on the GRE (or 450 on the GMAT). If transfer credits are desired from previous work at an international institution, then a transcript is needed. An admission decision may be delayed by the failure to produce a transcript evaluation. If time is a factor in enrolling at UCF, it is recommended that applicants send their transcripts for evaluation with the application packet.

UCF accepts transcript evaluations from the following agencies:

World Education Services, Inc.
PO Box 01-5060, Miami, FL 33101
E-mail: SOUTH@WES.ORG
Telephone: 305-358-6688
Fax: 305-358-4411

Josef Silny and Assocs., Inc.
International Education Consultants
PO Box 248233, Coral Gables, FL 33124
Website: http://www.jsilny.com
Telephone: 305-666-0233
Fax: 305-666-4133

International Application Deadlines

Complete applications (all required documents) for all graduate programs must be received by the date listed below to be considered for admission for that semester. Failure to meet these deadlines may prevent admission as a regular graduate student for the term.

	FALL	SPRING	SUMMER
International applicants	March 1	August 1	Dec. 1
The following programs have other deadlines for international applicants:			
Curriculum and Instruction (Specialist and EdD)	Feb. 15	—	—
Counselor Education (Master)	March 1	—	Dec. 1
Educational Leadership (Specialist and EdD)	Feb. 15	—	—
Molecular Biology and Microbiology	March 1	—	Dec. 1
Nursing	Feb. 15	—	—
Physics	Feb. 15	—	—
Psychology, Human Factors	Feb. 1	—	—
Psychology, I&O	Feb. 1	—	—
Psychology, Clinical (M.A.)	Feb. 15	August 1	—
Psychology, Clinical (Ph.D.)	Jan. 15	—	—

Test of English as a Foreign Language

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.

A TOEFL computer-based score of 220 (or equivalent score on the paper-based test) is required unless otherwise specified by the program. The list below includes programs that have determined a minimum required TOEFL score higher than the university requirement.

PROGRAM	TOEFL (Paper)	TOEFL (Computer)
College of Arts and Sciences		
Biology	573	230
English	577	233
History	577	233
College of Business Administration	577	233

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). There are no exceptions made for submitting this proof. 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

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. The dates and times of each of these registration periods are listed in the *Schedule of Classes.*

Telephone and On-line Registration

Registration is available by telephone (407-823-2527 or 877-823-2527) in the college advising offices. Registration is also available on-line on the Web through the POLARIS system. To access the system (https: / / polaris.ucf.edu), you will need to enter a student identification number and also a PIN code.

PIN (Personal Identification Number)

For new students who have never accessed POLARIS, a kiosk, or Direct Access (Financial Aid), the PIN code will be the birth month and day in the MMDD format (August 27 would be 0827) for the student. After logging in once, the system will force a change to a new four-digit PIN. Student should check their PIN prior to registration.

If a PIN has been forgotten, a photo ID presented to the Registrar's Office or at an area campus records office is necessary to reset it. The PIN cannot be reset using the telephone.

The universal PIN can be used for TouchTone registration and grades, POLARIS, Direct Access (Financial Aid), and the kiosks located around campus.

On-line Registration Information and Course Schedules

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

Registration: http://www.ucf.edu
Course Schedules: http://pegasus.cc.ucf.edu/~wwwdata/tally2.html

Schedule of Classes

The *Schedule of Classes* is published two times a year by the Registrar's Office (AD 161). 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 and health 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) and on the Web at www.graduate.ucf.edu. Registration information will be mailed to first-term graduate students about two to three weeks prior to the beginning of the term.

Continuing Graduate Students

Continuing graduate students register by telephone using their PIN codes. 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 adviser 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.

Non-degree-seeking Students

All non-degree-seeking 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, non-degree-seeking students can ONLY register for 5000- and 6000-level classes. In the College of Business Administration, non-degree-seeking students cannot register for graduate courses. The College of Engineering will only allow non-degree-seeking students to register with special approval from the program coordinator. Non-degree-seeking 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.

Non-degree-seeking students must be registered for 12 hours to be considered full-time. Non-degree-seeking 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, non-degree-seeking 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 non-degree-seeking status may be used toward a graduate degree.

Audit Registration

Auditors are those students wishing to attend classes without receiving academic credit. To audit a class, the student must file a regular application and be accepted as a degree-seeking or non-degree-seeking student. Audit forms are available in the Registrar's Office and must be filled out by the student and must be approved by the college where the course is taught. Students registering for credit during regular registration, late registration, or add/drop may not change to audit status, but must remain in the course or withdraw through normal withdrawal procedures.

Holds

Holds may be placed on students' records, transcripts, grades, or registrations because of financial or other obligations to the university. Satisfaction of the hold is required before a release can be given. To obtain a release on financial holds, payment must be made in cash, cashier's check, or money order in U.S. currency at the Cashier's Office (AD 111).

To release Graduate Studies holds, the students must provide the documents to complete their records; or if the hold is labeled "denied," they must stop by Graduate Studies (AD 144) and switch to non-degree status.

Those students who are placed on nine-hour holds must see their adviser or they may sign a form provided by Graduate Studies stating they are not taking courses toward a graduate degree.

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.

Fee Invoices

You are not assured of being registered for any class until you pick up your Fee Invoice / Schedule. Your fee invoice lists your fees and the classes in which you are registered. Please obtain a new invoice if you drop or add classes so that the invoice will reflect changes in your fees. Be sure to have your current address on file (see "Address Changes").

Pick up your Fee Invoice / Schedule by presenting a photo ID at the Registrar's Office, area campus, or college advising offices. Fee Invoices are also available on POLARIS, by telephone (local 407-823-2527; long distance 877-823-2527), and in these offices: Arts and Sciences, FA 202; Business Administration, BA 240; Education, ED 109; Engineering, ENGR 281; and Health and Public Affairs, HPB 201.

Mandatory Health Information

In order for a student to register, the State University System of Florida requires:

- All students born AFTER 1956 to present documented proof of immunity to measles (rubeola).
- All students UNDER the age of 40 to present documented proof of immunity to rubella (German measles).
- All students (REGARDLESS OF AGE) to submit a signed medical history form.

Please refer to the immunization form for specific details of requirements and acceptable documentation. If you have questions, contact the Immunization Coordinator, Student Health Services (phone: 407-823-3707; fax: 407-823-3135; e-mail: bjobes@pegasus.cc.ucf.edu). Our office hours are Monday-Friday, 8:00 a.m. to 4:30 p.m.

Address Changes

The address the university uses for students is taken from the application for admission or readmission. It is the student's responsibility to make the appropriate changes to their address. Address changes should be made in the Registrar's Office (AD 161) or at any of the kiosks located on campus.

Address changes can also be made by writing to the Registrar's Office. Written requests must include the student's Social Security Number and signature and must be mailed to the Registrar's Office, UCF P.O. Box 161114, Orlando, FL 32816-0114.

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.

Enrollment Status for Fall and Spring Terms

Non-degree-seeking		Degree-seeking	
Status	**Credit Hours**	**Status**	**Credit Hours**
Full	12 or more	Full	9 or more
Half	6, 7, 8, 9, 10, or 11	Half	5, 6, 7, or 8
LTHT	less than 6	LTHT	less than 5

Enrollment Status for Summer Term

Non-degree-seeking		Degree-seeking	
Status	**Credit Hours**	**Status**	**Credit Hours**
Full	12	Full	6
Half	6	Half	3
LTHT	less than 6	LTHT	less than 3

One credit hour of thesis or three credit hours of dissertation is considered full time in all semesters provided all course work is completed and the minimum number of thesis or dissertation hours have been taken. Students taking thesis or dissertation hours are required to be continuously enrolled until the thesis or dissertation is completed.

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).

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. Paychecks are delayed when these arrangements are not made prior to the beginning of the semester.

Fellowships

All graduate students who are receiving fellowships should register as early as possible, and see the Fellowships Coordinator (AD 144, 823-6497, gradfaid@pegasus.cc.ucf.edu) 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.

Parking

Phone: (407) 823-5812

All vehicles parked on campus, including evening students' vehicles, must be registered with the Parking Services Office and display the appropriate permit or decal. Parking Services offers assistance to motorists, including battery jump-starts and unlocking car doors. Office hours are 7:30 a.m. to 6 p.m. Monday - Thursday and 7:30 a.m. - 5 p.m. on Friday.

Visitor Information Center

Phone: (407) 823-2429

To park on campus without a permit, purchase a daily permit at the Visitor Information Center (VIC) across from the Administration Building or from any of pay-and-display machines on campus. Daily permits are valid only in student lots. Meters are also available. The VIC is open 7 a.m. to 8 p.m. Monday - Friday, and 7:30 a.m. to 4 p.m. Saturday.

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.

Students are encouraged to obtain a fee invoice / schedule to confirm fees and course registration. Fee invoice / schedules are available on the POLARIS web system, from students' college advising offices, and the Registrar's Office. Students should obtain a new fee invoice / schedule after making any course changes or schedule adjustments.

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.

Tuition Surcharge

The General Appropriations Act proviso 1997-98 directs students to pay an additional 50% of tuition for credit hours in excess of 115% of the hours required in the student's degree program. There are exceptions to this for those who are active military personnel, those students who have declared disability, and those who have taken hours to achieve teacher certification which are not credited toward the first bachelor's degree. Other exceptions are made for those participating in internship hours, study abroad, and honors programs, as specified in the proviso. The surcharge will be applied by the

1999-2000 Fee Schedule

(Fees for 2000-2001 were not available at the time of publication.)

Category Course Classifications	Florida Resident Undergraduate (0000-4999)	 Graduate (5000-7999)	Non-Florida Resident Undergraduate (0000-4999)	 Graduate (5000-7999)
Fees per Credit Hour:				
Matriculation	$49.33	$118.68	$ 49.33	$118.68
Non-Resident Fee	-0-	-0-	221.86	343.56
Building Fee	2.32	2.32	2.32	2.32
Capital Improvement Fee	2.44	2.44	2.44	2.44
Financial Aid Fee	2.46	5.93	2.46	5.93
Non-Resident Financial Aid Fee	-0-	-0-	11.09	17.17
Activity and Service Fee	6.95	6.95	6.95	6.95
Athletic Fee (capped at 12 hrs)	9.90	9.90	9.90	9.90
Total per Hour	**$73.40**	**$146.22**	**$306.35**	**$506.95**

Repeat Course Surcharge: Beginning with the fall term 1997, a student enrolled in the same undergraduate college credit course more than twice shall pay matriculation at 100 percent of the full cost of instruction.

credit hour and includes the matriculation fee plus 50%; it does not include additional fees such as the health fee, building fee, activity fees, etc.

The excess hour surcharge will not apply to graduate students, including those accepted provisionally, conditionally, restricted, or regularly, although it will apply to non-degree students who began their baccalaureate work in Fall 1996 or thereafter. It will not apply to those hours required for teacher certification, to maintain other professional state certification or licensure, or for those admitted and enrolled in UCF graduate certificate programs.

Graduate hours taken and applied toward an undergraduate program will be counted as part of the 115% of hours required in the student's degree program. Course work taken at any other state-funded institution as well as public and private credit, including credit from out-of-state that is accepted, will be part of the 115% if applied to the student's degree program at UCF.

Students attempting a second baccalaureate degree will be subject to the surcharge for all course work taken beyond the first degree toward the second degree. For those attempting two degrees at one time, all hours in excess of the 115% for one degree will be subject to the surcharge.

State employees who are enrolled on a space-available basis using the state employee waiver will be charged an excess hour fee for the course if it is over the 115% of hours required for the student's degree program.

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)	varies
Campus Card Fee	10.00
Campus Card Replacement Fee	15.00
Late Registration Fee (see "E" below)	50.00
Late Payment Fee (see "E" below)	50.00
Returned Check Fees:	
Check amounts up to $50.00	25.00
Check amounts over $50.00 and less than $300.00	30.00
Check amounts over $300.00	$40.00 or 5%, whichever is greater

C. Room and Board (estimated)

Residence Hall Rooms (per semester)	$1,095.00-1,675.00
Charge for late housing payment	$50.00
Board plans. Contact Food Service, (407) 823-2651	$1,100.00-1,300.00

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

D. Books and Supplies per semester (estimated) $400.00

E. Late Registration and Late Payment Fees

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

F. Vehicle Registration (required of everyone operating a motor-powered vehicle on campus) per calendar year for all students, including full-time students, part-time students, and courtesy students from other institutions.
Student decal fee (1999-2000) $103.00

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 fol-

lowing 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 or late payment fee may make their appeal to the Fee Appeals Committee by initiating a student petition (Form 41-561). This form can be obtained from Student Development and Enrollment Services, 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.

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 and Thursday, 8:30 a.m. to 7:00 p.m., and Tuesday, Wednesday, and 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.

Not attending classes or withdrawing after Add/Drop (normally the first week of classes) does not eliminate the requirement to pay fees.

Refund of Fees

A refund of fees will be made under the conditions noted below. A written appeal for a refund or other appeal action must be submitted to the University within six (6) months of the close of the semester to which the refund or other appeal action is applicable. Any debts to the University will be deducted from the refund, up to the full amount.

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 percent 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).
C. Refunds for exceptional circumstances at any time upon withdrawal from one or more courses.
   1. Up to 100 percent 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.

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 (AD 230)—407-823-6497, Fax: 407-823-6442; e-mail address: gradfaid@mail.ucf.edu; website: http://www.graduate.ucf.edu

Student Financial Assistance Office (AD 120)—407-823-2827; website: http://pegasus.cc.ucf.edu/~finaid

Loans—Fax: 407-823-5241

Holds on records, graduate status—Fax: 407-823-6442

Some on-line financial aid information web pages are available for specific information concerning financial aid, grants, and fellowships:

Financial Aid Information: http://www.finaid.org

Non-degree-seeking students are not eligible for financial aid.

Tuition Waivers

Full-time (regularly or conditionally, not provisionally or restricted) accepted 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. In-state tuition waivers are available for qualified Florida residents. Out-of-state tuition waivers are offered to qualified non-Florida residents. Part-time graduate students and post-baccalaureate students are not eligible to receive tuition waivers.

Graduate Teaching and Research Assistants must be enrolled full-time (nine credit hours in the fall and spring terms and six 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 three hours of dissertation to be considered full-time and receive a tuition waiver after all required course work and minimum thesis/dissertation hours are taken. Graduate Teaching and Research Assistants who are pursuing a non-thesis option and are in their graduating semester, as determined by their college may receive tuition payments paid by the college to Student Accounts. Full-time graduate teaching and research assistants and associates are eligible for FICA and FUTA exemptions if they are enrolled at least half time, regardless of the hours worked. This chapter has more details under "FICA/FUTA Exemption Guidelines."

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 graduate 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 academic 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 Development and Enrollment Services, etc. Graduate students who work in these offices should request tuition waiver support from the Office of Graduate Studies (AD 230).
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 graduate 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 $3,250 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 Waivers for State of Florida Employees

State employees, faculty, and staff who use a state tuition fee waiver for course work (up to 6 credit hours per semester) 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 state 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 instruc-

tion in music, art, or dance, web-based instruction, etc. State employees should check with their program about the use of the state employee tuition waiver.

Tuition 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 the Office of the Registrar, AD 161, (407) 823-3100.

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

The university awards more than $2 million in fellowships each year. Some fellowships are selected based on academic merit; others are available only to minority applicants or those who can demonstrate financial need. A number of fellowships are selected by college nominations; however, others require a fellowship application. Refer to the description of each fellowship's requirements for more information.

Fellowship information is available from several sources. Program and graduate coordinators and other interested faculty may be contacted for specific opportunities related to their fields of study. Published fellowship deadlines are approximate and subject to change. A listing of fellowship opportunities and application materials offered by the university to graduate students is available on the Graduate Studies website: http://www.graduate.ucf.edu. Books, such as the *Graduate Scholarship Directory*, listing fellowship opportunities are available at the Reserve Desk of the Library for students to review.

Non-degree-seeking post-baccalaureate and graduate certificate students are not eligible for fellowships or financial aid.

International students receiving fellowships are subject to up to 14 percent withholding on their fellowship checks. International students must obtain either a Social Security Number (SSN) or an Individual Tax Identification Number (ITIN) prior to receipt of a fellowship. Further information on this issue can be obtained from International Student Services.

Need-based Fellowships

For need-based fellowships, students must complete the Free Application for Federal Student Aid (FAFSA). This application may be completed on-line at FAFSA Express: http://www.ed.gov/offices/OPE/express.html. International students are not eligible for need-based support.

Students must have unmet need as determined by the FAFSA to be eligible for need-based awards. Graduate students who receive need-based awards (such as the Incentive Fellowship or Work Fellowship) should be aware that the amount they receive is dependent on their need. If tuition waivers, other fellowships, or assistantships are granted after being awarded a need-based fellowship, then the total financial package may have to be adjusted to satisfy federal requirements.

General Fellowship Requirements

- UCF fellowships are not awarded in conjunction with other fellowships, and students are eligible to receive a given fellowship only once (with the exception of the Work Fellowship).
- Students must be regularly admitted graduate students by the time the fellowship is awarded in order to receive the funds, except in the case of Summer Mentoring Fellowships, which can be awarded to provisionally admitted students.
- Academically, most fellowships require a GRE score of at least 1000 (or a GMAT score of at least 500) and/or a 3.0 grade point average in the last 60 attempted semester hours of undergraduate study.
- Each fellowship has different specific requirements.

Academic Progress for Fellowship Recipients

Fellowship recipients are required to be in good standing and make satisfactory academic progress to continue to receive a fellowship award. To be considered in good standing a fellowship recipient is required to maintain the standards listed below. Failure to meet any one of these standards will cause cancellation of the fellowship. An exception of this policy may be granted by the Office of Graduate Studies after review of evidence of mitigating circumstances presented by the student.

- Students must be fully accepted into a graduate degree program at UCF.
- Students must enroll and maintain nine graduate hours or three dissertation hours or one thesis hour each semester of the award.
- Students must maintain a minimum grade point average of 3.0 each term of the award.
- Students must receive a satisfactory progress report from their academic adviser each term of the award.
- Students cannot receive a grade of incomplete ("I") and continue to receive the award.

Provost's Graduate Fellowship

College-nominated (March 15th)
- New graduate students
- Undergraduate GPA of at least 3.5 and GRE score of at least 1200 (or GMAT of at least 600)
- Award $8,000 per year for two semesters ($4,000 each semester) from Graduate Studies
- Normal tuition waiver for up to 9 graduate hours of course work per semester provided by department
- Additional minimum $5,000 per year assistantship ($2,500 per semester) or fellowship from college / department
- U.S. citizens or international students are eligible

UCF Undergrad to Grad Fellowship

College-nominated (March 15th)
- UCF undergraduates who within one year of completing bachelor's degree continue on to graduate studies
- Award $5,000 per year for four semesters ($2,500 each semester) from Graduate Studies
- Additional assistantship of 10 hours per week from college / department
- Normal tuition waiver for up to 9 graduate hours of course work per semester provided by department
- Two-year fellowship

Graduate Work Fellowship

College-nominated (March 15th)
- New and continuing students
- Award $6,500 per year for two semesters ($3,250 each semester)
- Must document financial need by filing FAFSA
- 20- hour-per-week assistantship in the department of study
- Tuition waiver can be given by department
- The fellowship is included in the student's assistantship paychecks and does not defer tuition and fees.

Summer Mentoring Fellowship

College-nominated (March 15th)
- Award $3,250 per summer semester from Graduate Studies
- No tuition provided
- First-year graduate student; minority students preferred
- Expected to conduct research project under faculty direction
- Must present research paper at end of summer
- Must only enroll in 6 hours of independent study (XXX 6908) or directed research (XXX 6918) during summer
- U.S. citizen or permanent resident alien

UCF Foundation Minority Graduate Fellowship

UCF Fellowships Application due March 30th
- Award $3,250 per year for two semesters ($1,625 each semester) from Graduate Studies
- New graduate students who are of an ethnic minority
- U.S. citizens or permanent resident aliens
- Tuition waiver (in-state tuition only) for up to 9 graduate hours of course work per semester provided by Graduate Studies
- Application available at http: / / www.graduate.ucf.edu

Incentive Graduate Fellowship

Awarded by Graduate Studies
- New and continuing graduate students
- Award $5,000 per year for two semesters ($2,500 each semester, depending on need) from Graduate Studies
- Must document financial need by filing FAFSA
- No tuition provided

Merit Fellowship

Awarded by Graduate Studies
- New and continuing graduate students
- Award $5,000 per year for two semesters ($2,500 each semester) from Graduate Studies
- No tuition provided

Assistantship Enhancement

College-nominated (March 15th)
- New or continuing graduate students who have an assistantship
- Award $4000 or $2000, depending on department or college nomination, from Graduate Studies
- Awards are added to the normal assistantship amount and the PAF (appointment paperwork) is prepared for the total. Graduate Studies transfers the award funds to the college / department account on the student's PAF.
- Tuition waiver can be given by department
- The award is included in the student's paychecks and does not defer tuition and fees.

Graduate Travel Fellowship

Graduate Travel Fellowship Application required
- Full-time (see Graduate Studies website for current definition or call 407-823-6497), degree-seeking graduate students in good academic standing. Only one application per person may be funded for a 12-month period.
- Award $100 for local or regional travel; $250 for national or international travel from Graduate Studies
- Travel must be for the documented purpose of delivering a research paper or comparable creative activity at a professional meeting (does not include displays or exhibits), with preference being given to those presenting at national and international meetings. Students must be the primary author and presenter.
- Application due dates:
  Period I—June 15 (For travel completed July-October)
  Period II—October 15 (For travel completed November-February)
  Period III—February 15 (For travel completed March-June)
- The fellowship is paid by check, which is mailed to the student.
- Application available at http: / / www.graduate.ucf.edu

UCF also participates in these programs:

Florida A&M University Feeder Program

Admission application due March 30th
- Graduate of FAMU
- Master's award $10,000 per year ($5,000 fellowship each semester) from Graduate Studies
- Doctoral award $15,000 per year ($7,500 fellowship each semester) from Graduate Studies
- Two-year award
- Tuition waiver (in-state tuition only) for up to 9 graduate hours of course work per semester provided by Graduate Studies
- Nomination form from FAMU
- E-mail notification of intent to attend UCF (send e-mail to gradfaid@mail.ucf.edu)

Delores A. Auzenne Fellowship

UCF Fellowships Application due March 30th
- Award $5,000 per year for two semesters ($2,500 each semester)
- New and continuing graduate minority students
- Resident of the State of Florida for minimum of two years
- U.S. citizens or permanent resident aliens
- Must reapply each year
- No tuition provided
- Application available at http://www.graduate.ucf.edu

McKnight Doctoral Fellowship

McKnight Application due January 15th
- Award $11,000 per year for two semesters ($5,500 each semester)
- Five-year award; three years from Florida Education Fund and remaining two years from UCF
- Tuition waiver (in-state tuition only) for up to 9 graduate hours of course work per semester provided by Graduate Studies
- New and continuing African American doctoral students
- U.S. citizens or permanent resident aliens
- McKnight application available online (http://www.fl-educ-fd.org/) or from the Graduate Studies Fellowships Office

FGAMP Graduate Fellowship

UCF Fellowships Application due March 30th
- Minority students in engineering, computer science, physics, and math
- Award $4,000 per year for two semesters ($2,000 each semester)
- Tuition waiver for up to 9 graduate hours of course work per semester provided by department
- 20-hour-per-week assistantship (mentoring activities) provided by department
- U.S. citizen or permanent resident who is an ethnic minority
- Application available at http://www.graduate.ucf.edu

Siemens-Westinghouse Graduate Fellowship

Admission application due February 22nd
- New master's or doctoral students interested in the areas of heat transfer, thermodynamics, combustion, and turbomachinery
- For more information, contact the Graduate Studies Fellowships Office or Dr. Alain Kassab, Graduate Program Coordinator, Department of Mechanical, Materials, and Aerospace Engineering: kassab@mail.ucf.edu or 407-823-5778. Website: http://www.mmae.engr.ucf.edu.

GEM Fellowship

National Consortium for Graduate Degrees for Minorities in Engineering and Sciences, Inc.
GEM Application required
For complete details, see the GEM website: http://www.nd.edu/~gem
GEM e-mail: gem.1@nd.edu
- Under-represented minority graduate students selected by GEM as a GEM scholar
- GEM provides support in engineering and natural science disciplines (see the GEM website for details)
- Admitted to a degree program as a regular graduate student and enrolled for at least 9 graduate hours of course work each term
- The GEM website includes an on-line application and detailed information about eligibility and awards.

Schwartz Electro-Optics Graduate Fellowship in Industrial Mathematics

Admission application due February 15th
- New or continuing graduate student interested in research of mutual interest to Schwartz Electro-Optics
- Minimum of 3.25 GPA (last 60 attempted semester hours of baccalaureate degree) on a 4.0 scale and at least 1000 on the combined verbal-quantitative portions of the GRE
- Excellent written and verbal communication skills and strong leadership ability
- For more information, contact Dr. Ahmed Zayed, Graduate Program Coordinator, Department of Mathematics: zayed@pegasus.cc.ucf.edu or 407-823-5989. Department website: http://www.cas.ucf.edu/mathematics/.

Lucent Florida Universities Fellowship Program (LFFP)

LFFP Application due January 31st
For complete details, see the LFFP website:
http://www.bell-labs.com/fellowships/LFFP/
- New master's or doctoral students in chemistry, computer science/engineering, electrical engineering, industrial engineering, materials science, mechanical engineering, operations research, optics, physics, or statistics
- U.S. citizens or permanent resident aliens
- Details and application forms are on the LFFP website.
- Completed application forms should be turned in to the Graduate Studies Fellowships Office.

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 GRA/GTAs may be for any duration up to 12 months, as required by the conditions of their employment, but normally are contracted by term. GAs are appointed one time and continue 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 for your individual program of study. It is important to complete the Request for Assistantship Information form in the Graduate Application for Admission packet if desiring an assistantship and include on the form any special abilities, particularly computing or teaching experiences. All graduate assistants must be employed at more than minimum wage ($10.00 per hour), for a minimum of 10 hours per week and a maximum of 20 hours per week.

Part-time students (those registered for less than nine hours in the fall and spring terms, less than six hours in the summer term, or less than one hour of thesis or three hours of dissertation during any term) and non-degree students are not eligible to receive assistantships.

Graduate students who want to work more than twenty hours per week must complete a Multiple Employment/Excess Hours form with the University. Students should consult their program coordinators for more information.

Each college has guidelines for determining pay rates for graduate students. Factors included are the stage of the student's graduate studies, discipline, and prior educational or research experience. Graduate assistantships funded using state monies are 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.

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 regardless of the number of departments in which they have assistantship support. They may be assigned to professors to assist with research activity, or they may be assigned as graders, lab assistants, or classroom teachers. Only those graduate students who have satisfactorily completed and passed more than 18 credit hours of graduate course work in the major may be classroom teachers of record. All graduate teaching and research assistants must sign a contract with the University for employment. Graduate Assistants (GAs) will complete a time card to record their hourly work for payment.

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. Nondegree 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 on campus without prior INS approval as long as the student is enrolled full-time and employment does not interfere with their studies. Off-campus employment, however, must be at locations affiliated with the university either through contractually funded projects or associated with the university curricula. Curricular training is authorized by International Student Services only to students who qualify for Curricular Training for off-campus employment.

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.

International students on an F-1 visa are eligible to apply for one year of optional practical training after completion of their program.

For additional information, students should contact the International Student Services at (407) 823-2526.

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 during the year, 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 confidentiality 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 Board of Regents 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.

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 at least half-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 pay classifications of 9181-9185.

To be eligible for this IRS exemption, a graduate assistant must:

- Be enrolled at least half time at UCF
- Attend classes regularly

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
- Graduate students are eligible for the FICA and FUTA exemptions only if they are enrolled at least half time. Graduate students are considered half-time when they are registered for at least five hours in fall or spring terms, at least three hours in summer terms, or enrolled in at least one hour of thesis or three hours of dissertation during any term.
- Generally, students who are on sole fellowship support are not subject to FICA and FUTA taxes, since they do not have to account for hours of employment per week.
- Graduate students will be exempt from FICA/Medicare taxes during pay periods that overlap with the academic term and during breaks of less than five weeks. Graduate students who are not enrolled for longer than five weeks and employed by the university are subject to FICA/FUTA.

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 Work Study. Graduate students may be considered for the Federal Stafford Loan, the Perkins Loan, and the Federal 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 at least half-time at UCF, and maintain academic progress. The maximum subsidized loan amount for graduate students is $8,500. 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. If you are a student transferring to UCF after the Fall term (Spring or Summer), you must provide the UCF Office of Student Financial Assistance with a financial aid transcript from the school attended during the previous term(s), either Fall and/or Spring. 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 at least half-time at UCF.

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. Students may request up to $600; more may be obtained for graduate students only under special conditions that generally are recommended by Graduate Studies.

Non-degree-seeking students are not eligible for student loans. However, "5B" students are eligible. "5B" students are non-degree students who are seeking first-time teacher certification in the College of Education.

Federal Work Study Program

The Federal 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.

The Office of Student Financial Assistance is responsible for administering student employment under the Federal Work Study (FWS) program.

Federal Work Study is available to graduate students who demonstrate financial need. Graduate students must be enrolled at least half-time, be U.S. citizens, and maintain satisfactory academic progress to be eligible for the Federal Work Study Program.

Scholarships

Visit the web site at http://pegasus.cc.ucf.edu/~finaid/ for more information about scholarships.

Student Rights and Responsibilities Concerning Financial Aid

- Students have the right to full information about the financial aid programs available at UCF, 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.
- **It is the student's responsibility to periodically check their financial assistance progress on POLARIS (Personal On-Line Access to Restricted Information Systems) for application status, Short-Term Loan status, deferment status, and disbursement information. Disbursement information is also available on the student's Z-TEL line (linked to the student's UCF Smart Card).**

Organization of Graduate Studies

Visit us on the World Wide Web at **http://www.graduate.ucf.edu**

The Office of Graduate Studies is responsible for providing leadership and vision for all graduate education at UCF. Admissions, marketing and recruiting, enrollment management, records, policies, appeals, and graduation of graduate students are important concerns of the office.

Graduate Studies works in conjunction with the Faculty Senate Committees and the college and graduate program coordinators and is responsible for developing university-wide graduate policies, coordinating graduate activities, distributing tuition fee waivers, assistantship enhancements, and fellowships to the colleges, coordinating the adoption of new graduate programs, 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 admission 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 or the Graduate Council. Operational procedures should be directed to the Office of Graduate Studies (AD 230) or to the individual graduate college or program coordinators.

Mission Statement

The Office of Graduate Studies provides leadership to enhance the university's capability of achieving international prominence in key areas of graduate studies. Graduate Studies collaborates with the faculty to develop policies and best practices to further the high academic standards and excellence of our graduate programs. Graduate Studies provides support for interdisciplinary and cooperative programs. Graduate Studies is mindful of the need to retain the academic values of the graduate programs while acting as a partner in the social and economic well-being of the community and state.

The Office of Graduate Studies is client-centered, focused on providing the information and services that students need to enhance their experience with UCF and that faculty and staff need to effectively carry out their responsibilities to students. Graduate Studies emphasizes cooperation with the colleges, graduate programs, administrative offices, and support services to provide an excellent experience for our graduate students from inquiry to graduation. Through its primary activities, programs, and services, Graduate Studies contributes to enrollment growth, planning for graduate education, enhanced infrastructure support for our graduate students and programs, and quality student support services for a diverse and talented graduate student population. We are a strong advocate for providing graduate education to all persons who are full-time working professionals requiring flexible and relevant advanced education, those who are high ability full-time graduate students being mentored by our graduate faculty, and those who are nontraditional, underrepresented, or economically disadvantaged.

Graduate College and Program Coordinators

Graduate College Coordinators work with the Office of 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 Graduate Program Coordinators work with the Graduate College 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 Graduate College Coordinators on their activities.

Graduate Council

The Graduate Council is a standing committee of the Faculty Senate and reports to the Senate on graduate policy and curriculum matters. The committee consists of eighteen members, at least six of whom are current Faculty Senate members. The composition of the committee consists of a nonvoting library representative, three members from each college, except Arts and Sciences which has six. The Vice Provost and Dean of Graduate Studies is an ex-officio member of this committee.

The Graduate Council deals with policy issues and standards for the university. New graduate program requests are reviewed by the Graduate Council. The program proposals are submitted to the Office of 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 Council for final approval. The Graduate Council then transmits its recommendations to the Office of Graduate Studies.

The Graduate Council has three subcommittees that examine and formulate policies and procedures, hear petitions for variances from graduate programs, college, or university requirements, and review graduate Course Action Requests for new programs, among other matters. Each subcommit-

tee consists of four senate members and at least three non-senate members.

Duties of the Graduate Council

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 subcommittees.
4. Transmits its recommendations to the Faculty Senate Steering Committee, which normally submits these recommendations to Graduate Studies on behalf of the Provost.

Policy and Procedures Subcommittee

The Policy and Procedures Subcommittee examines and recommends new policies and procedures or changes to existing policies and procedures with regard to graduate education.

The Policy and Procedures Subcommittee consists of four senate members and at least three non-senate members with representation from each college and the Vice Provost and Dean of Graduate Studies as an ex-officio member. The Chair of the Graduate Council serves as the Chair of the Policy and Procedures Subcommittee. Terms of service are two years, staggered. Vacancies are filled during the term in which they occur from the college of the vacating member for the remainder of that person's term.

Duties of the Policy and Procedures Subcommittee

1. Examines existing policies and procedures and recommends new policies and procedures with regard to graduate education, including but not limited to policies and procedures affecting admissions, academic progress, and financial support for graduate students.
2. Reviews all matters referred by the Graduate Council.
3. Transmits its recommendations to the Faculty Senate Steering Committee, which will normally submit these recommendations to the Vice Provost and Dean of Graduate Studies.

Appeals Subcommittee

The Appeals Subcommittee is a subcommittee of the Graduate Council. It consists of four senate members and at least three non-senate members with representation from each college and with the Vice Provost and Dean of Graduate Studies as an ex-officio member. The Chair of the Graduate Council appoints the Chair of the Appeals Subcommittee. Terms of service are two years, staggered. Vacancies are filled during the term of in which they occur from the college of the vacating member for the remainder of that person's term. A graduate student representative is appointed by the Chair of the Graduate Council based on recommendations made from the Deans of the colleges and the Vice Provost and Dean of Graduate Studies.

Duties of the Appeals Subcommittee

1. Hears petitions for variances from graduate program, college, or university requirements for non-degree, certificate, or graduate students at the university or applicants to graduate programs. A student petition is considered when the department and college have reviewed the request and denied the petition or when the student is requesting an exception to university policies or regulations. Applicant petitions are considered upon request of the applicant when the program has reviewed an appeal of an admissions decision, after denying admission.
2. Recommends approval or denial of appeals or petitions to the Vice Provost and Dean of Graduate Studies, who will notify the student, department, and college of the action.
3. Hears all requests from graduate program coordinators for exceptions from graduate policies and procedures.
4. Reviews nominees for the University Excellence in Graduate Teaching Award and makes recommendations to the Vice President for Academic Affairs.
5. Monitors graduate program quality and makes recommendations to the Graduate Council.
6. Reviews all matters referred by the Graduate Council.

Course Review and New Programs Subcommittee

The Course Review and New Programs Subcommittee is a subcommittee of the Graduate Council. It consists of four senate members and at least three non-senate members with representation from each college and the Vice Provost and Dean of Graduate Studies as an ex-officio member. The vice chair of the Graduate Council serves as the chair of the Course Review and New Programs Subcommittee. Terms of office are two years, staggered. Vacancies are filled during the term in which they occur from the same college of the vacating member for the remainder of that person's term.

Duties of the Course Review and New Programs Subcommittee

1. Reviews curricular issues related to graduate education.
2. Reviews proposals of new graduate programs and deletion of existing programs, which will be submitted to this subcommittee by the Vice Provost and Dean of Graduate Studies prior to submission to the Board of Regents for final approval.
3. Reviews changes to existing graduate programs (such as hours, thesis / non-thesis options) and makes recommendations to the Vice Provost and Dean of Graduate Studies.
4. Reviews new tracks or options to existing graduate programs and deletions of tracks or options, and makes recommendations to the Vice Provost and Dean of Graduate Studies.

5. Reviews new graduate certificate programs and the deletion of existing certificate programs and makes recommendations to the Vice Provost and Dean of Graduate Studies.
6. Reviews all requests for additions, revisions, and deletions of graduate and special topic courses and makes recommendations to the Vice Provost and Dean of Graduate Studies.
7. Reviews all matters referred by the Graduate Council.

Graduate College Coordinators

Arts and Sciences—Dr. Ben Morgan, CAS 190, (407) 823-0218. E-mail: morgan@mail.ucf.edu

Business Administration—Dr. Robert Ford, BA 240, (407) 823-2385. E-mail: robert.ford@bus.ucf.edu

Education—Dr. Michael Hynes, ED 146, (407) 823-6076. E-mail: hynes@mail.ucf.edu

Engineering and Computer Science—Dr. Issa Batarseh, ENGR 281, (407) 823-2455. E-mail: gradengr@mail.ucf.edu

Health and Public Affairs—Ms. Joyce Dorner, MAP 219, (407) 823-0205. E-mail: jdorner@pegasus.cc.ucf.edu

School of Optics—Dr. Jim Moharam, CROL 274, (407) 823-6833. E-mail: moharam@creol.ucf.edu

Graduate Program Coordinators

College of Arts and Sciences

Biology (M.S.)—Dr. John Weishampel, BIO 140, (407) 823-6634. E-mail: jweisham@mail.ucf.edu

Chemistry, Industrial (M.S.)—Dr. Kevin Belfield, CH 222, (407) 823-1028. E-mail: kbelfiel@mail.ucf.edu

Chemistry, Forensic Science Track (M.S.)—Dr. Jack Ballantyne, CH 223, (407) 823-0163. E-mail: jballant@pegasus.cc.ucf.edu

Communication (M.A.)—Dr. Burt Pryor, COMM 248, (407) 823-2681. E-mail: apryor@pegasus.cc.ucf.edu

English (M.A.) and Professional Writing (certificate)—Dr. John Schell, HFA 302D, (407) 823-2287. E-mail: schell@pegasus.cc.ucf.edu

Gender Studies (certificate)—Dr. Shelley Park, HFA 201H, (407) 823-2269. E-mail: spark@pegasus.cc.ucf.edu

History (M.A.)—Dr. Shirley Leckie, HFA 554, (407) 823-2224. E-mail: sleckie@pegasus.cc.ucf.edu

Liberal Studies (M.A.)—Dr. Elliot Vittes, HFA 207B, (407) 823-2745. E-mail: mls@mail.ucf.edu

Mathematics (M.S. & Ph.D.)—Dr. Ahmed Zayed, MAP 210, (407) 823-5989. E-mail: zayed@pegasus.cc.ucf.edu

Maya Studies (certificate)—Dr. Diane Chase or Dr. H. Jay Corzine, HFA 406F, (407) 823-2227. E-mail: chase@mail.ucf.edu, hcorzine@pegasus.cc.ucf.edu

Physics (M.S. & Ph.D.)—Dr. Michael Johnson, MAP 310, (407) 823-5199. E-mail: graduate@physics.ucf.edu

Political Science (M.A.)—Dr. Dwight Kiel, HFA 415, (407) 823-2608. E-mail: psgrad@pegasus.cc.ucf.edu

Psychology, Clinical (Ph.D.)—Dr. Mark D. Rapport, PH 409J, (407) 823-2974. E-mail: mrapport@mail.ucf.edu

Psychology, Clinical (M.A.)—Dr. Bernard Jensen, PH 302C, (407) 823-2157. E-mail: bjensen@pegasus.cc.ucf.edu

Psychology, Industrial and Organizational (Ph.D.)—Dr. Eugene Stone-Romero, PH 309F, (407) 823-2544. E-mail: estone@pegasus.cc.ucf.edu

Psychology, Industrial and Organizational (M.S.)—Dr. William Wooten, PH 409G, (407) 823-3478. E-mail: wwooten@pegasus.cc.ucf.edu

Psychology, Human Factors (Ph.D.)—Dr. Eduardo Salas, PH 302H, (407) 823-2552. E-mail: esalas@pegasus.cc.ucf.edu

Applied Sociology (M.A.) and Domestic Violence (certificate)—Dr. David Gay, HFA 417D, (407) 823-2227. E-mail: dgay@pegasus.cc.ucf.edu

Spanish (M.A.)—Dr. Delmarie Martinez, HFA 523, (407) 823-3431. E-mail: dmartine@pegasus.cc.ucf.edu

Statistical Computing (M.S.)—Dr. James Schott, CCII 205, (407) 823-2797. E-mail: jschott@pegasus.cc.ucf.edu

TESOL (M.A.)—Dr. Consuelo Stebbins, HFA 523, (407) 823-0088. E-mail: stebbins@pegasus.cc.ucf.edu

College of Business Administration

Business Administration (M.B.A.)—Dr. Robert Ford, BA 240, (407) 823-2385. E-mail: robert.ford@bus.ucf.edu

Executive M.B.A.—Dr. Sylvia Caceres, BA 237, (407) 823-2448. E-mail: sylvia.caceres@bus.ucf.edu

Executive M.B.A., Health Services Administration—Dr. Myron Fottler, TR 534, (407) 823-5531. E-mail: fottler@mail.ucf.edu

Business Administration (Ph.D.)—Dr. Stan Smith, BA 240, (407) 823-2184. E-mail: stan.smith@bus.ucf.edu

Applied Economics (M.A.A.E.)—Dr. Kasaundra Tomlin, BA 352, (407) 823-2601. E-mail: kasaundra.tomlin@bus.ucf.edu

Accounting (M.S.A.)—Dr. Linda J. Savage, BA 433, (407) 823-5661. E-mail: linda.savage@bus.ucf.edu

Human Resources / Change Management (M.S.M.)—Dr. Paul Sweeney, BA 335A, (407) 823-2925. E-mail: paul.sweeney@bus.ucf.edu

Management Information Systems (M.S.M.)—Dr. Paul Cheney, BA 308, (407) 823-3106. E-mail: paul.cheney@bus.ucf.edu

Taxation (M.S.T.)—Dr. Dale Bandy, BA 435, (407) 823-2964. E-mail: dbandy@bus.ucf.edu

College of Education

Elementary (M.Ed. & M.A.)—Dr. Donna Camp, ED 354, (407) 823-2010. E-mail: camp@pegasus.cc.ucf.edu

Secondary and K-12 (M.Ed. & M.A.)—Dr. Jeffrey Cornett, ED 345, (407) 823-2934. E-mail: cornett@mail.ucf.edu

Instructional Technology: Educational Media (M.Ed.)—Dr. Judy Lee, ED 205, (407) 823-6139. E-mail: jlee@mail.ucf.edu

Instructional Technology: Educational Technology (M.A.)—Dr. Glenda Gunter, ED 313, (407) 823-3502. E-mail: ggunter@bellsouth.net

Instructional Technology: Instructional Systems (M.A.)—Dr. Richard Cornell, ED 312, (407) 823-2053. E-mail: cornell@mail.ucf.edu

School Psychology (Ed.S.)—Dr. Carl Balado, ED 314, (407) 823-2054. E-mail: cbalado@mail.ucf.edu

School Psychology (Ed.S.), School Counseling—Dr. E. H. Robinson, ED 311, (407) 823-3819. E-mail: erobiso@mail.ucf.edu

Education (Ph.D.)—Dr. Michael Hynes, ED 146, (407) 823-0036. E-mail: hynes@mail.ucf.edu

Curriculum and Instruction (Ed.S. & Ed.D.)—Dr. Marcella Kysilka, ED 355, (407) 823-2011. E-mail: kysilka@pegasus.cc.ucf.edu

Educational Leadership (Ed.S. & Ed.D.)—Dr. William Bozeman, RP 215, (407) 384-2189. E-mail: bozeman@mail.ucf.edu

College of Engineering and Computer Science

Civil and Environmental Engineering (M.S., M.S.C.E., M.S.Env.E., Ph.D. & certificates)—Dr. Roger Wayson, ENGR 208, (407) 823-2841. E-mail: wayson@mail.ucf.edu

Computer and Electrical Engineering (M.S., M.S.E.E., M.S.Cp.E. & Ph.D.)—Dr. Michael Georgiopoulos, ENGR 407, (407) 823-5338. E-mail: michaelg@mail.ucf.edu

Computer Engineering (certificates)—Dr. Gwen Walton, ENGR 407, (407) 823-3276. E-mail: gwalton@mail.ucf.edu

Computer Science (M.S. & Ph.D.)—Dr. Ronald Dutton, CSB 263, (407) 823-2920. E-mail: dutton@cs.ucf.edu

Electrical Engineering (certificates)—Dr. Michael Georgiopoulos, ENGR 407, (407) 823-5338. E-mail: michaelg@mail.ucf.edu

Industrial Engineering and Management Systems (M.S., M.S.I.E. & certificates)—Dr. Linda Malone, ENGR 307B, (407) 823-2204. E-mail: lmalone@mail.ucf.edu

Industrial Engineering and Management Systems (Ph.D.)—Dr. Robert Armacost, ENGR 150, (407) 823-2619. E-mail: armacost@mail.ucf.edu

Mechanical, Materials & Aerospace Engineering (M.S.M.E., Ph.D. & certificates)—Dr. Alain Kassab, ENGR 381, (407) 823-5778. E-mail: kassab@mail.ucf.edu

College of Health and Public Affairs

Communicative Disorders (M.A.)—Dr. Michael Sweeney, Research Pavilion Suite 200, (407) 249-4798. E-mail: msweeney@mail.ucf.edu

Criminal Justice (M.S.)—Dr. K. Michael Reynolds, HPA 311, (407) 823-2603. E-mail: kreynold@pegasus.cc.ucf.edu

Crime Analysis (certificate)—Dr. K. Michael Reynolds, HPA 311, (407) 823-2603. E-mail: kreynold@pegasus.cc.ucf.edu

Gerontology (certificate)—Margaret Sauer, HPA 204, (407) 823-2114. E-mail: msauer@mail.ucf.edu

Health Sciences: Health Services Administration (M.S. & certificates)—Dr. Aaron Liberman, TR 534, (407) 823-3264. E-mail: aliberma@pegasus.cc.ucf.edu

Physical Therapy (M.S.)—Dr. Eileen Hamby, HPA 256, (407) 823-3470. E-mail: ptinfo@mail.ucf.edu

Molecular Biology and Microbiology (M.S.)—Dr. Robert Gennaro, BIO 330, (407) 823-5932. E-mail: gennaro@mail.ucf.edu

Nursing (M.S. & certificates)—TBA, HPB 220, (407) 823-2744. E-mail: gradnurs@mail.ucf.edu

Public Administration (M.P.A. & certificate)—Dr. Xiao Hu Wang, HPA 343, (407) 823-2604. E-mail: xwang@mail.ucf.edu

Nonprofit Management (certificate)—Dr. Mary Ann Felheim, (407) 823-2604. E-mail: mfeldhei@mail.ucf.edu

Planning (certificate)—Dr. K. Tom Liou, (407) 823-2604. E-mail: kliou@mail.ucf.edu

Public Affairs (Ph.D.)—Dean Belinda McCarthy, HPA 365A, (407) 823-0170. E-mail: mccarthy@mail.ucf.edu

Social Work (M.S.W.)—Dr. Kenneth Kazmerski, HPA 204, (407) 823-2114. E-mail: kenkaz@aol.com

School of Optics

Optics (M.S. & Ph.D)—Dr. Jim Moharam, CROL 208, (407) 823-6833. E-mail: moharam@creol.ucf.edu

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Office of Graduate Studies

Dr. Patricia J. Bishop, Interim Associate Vice President, (407) 823-3530; pbishop@mail.ucf.edu. Oversees all activities related to graduate studies on campus; reviews and recommends policies and procedures for graduate study at UCF, and, in cooperation with the college graduate coordinators and the Graduate Council and its subcommittees, coordinates new program proposals and changes to options or tracks.

Dr. Piotr Mikusinski, Senior Faculty Fellow, (407) 823-3530, piotrm@mail.ucf.edu. With Dr. Bishop, develops and coordinates relationships between UCF and local industry; assists with marketing projects and other special assignments.

Admissions/Registration

The Office of Graduate Studies guides students through the graduate admissions process for master's, specialist, and doctoral degree programs as well as graduate certificate programs and non-degree study. Graduate Studies processes all applications for students, handles name and address changes, and assists with students' transfer of credit into their program of study.

Tracy Jones, Associate Director, Admissions / Registration, (407) 823-5815, trjones@mail.ucf.edu

Nicole Regan, Coordinator Admissions / Registration, (407) 882-0065, nregan@mail.ucf.edu

Stacy O'Mara, Engineering and Optics Admissions Counselor, (407) 823-5692, somara@mail.ucf.edu

Carey Cunningham, Education Admissions Counselor, (407) 823-6199, ccunning@mail.ucf.edu

Kristin Root, Arts and Sciences / Computer Science Admissions Counselor, (407) 823-5712, kroot@mail.ucf.edu

Kristine McCoy, Health and Public Affairs Admissions Counselor, (407) 823-6443, kmccoy@mail.ucf.edu

Melanie Key, Business Administration Admissions Counselor, (407) 823-5693, mkey@mail.ucf.edu

Barbara Rodriguez, Non-degree-seeking Admissions Counselor, (407) 823-2731, barbara@mail.ucf.edu

Sonja Rosignol, Inquiry Specialist, (407) 823-5920, srosigno@mail.ucf.edu

Elaine Briggs, Program Assistant, Scanning

Carlene Grant, Graduate Studies Receptionist, (407) 823-2766, cgrant@mail.ucf.edu

Academic Records

Graduate Studies coordinates graduation certification for graduate students, processes record changes and petitions / appeals of graduate requirements and policies, processes change of grade requests, and serves as the point of contact for students, faculty, staff, and the public regarding graduate studies at UCF.

Joanne Muratori, Assistant Director, Academic Coordinator, (407) 823-6432, jmurator@mail.ucf.edu

Robin McCormick, Office Assistant, (407) 823-3530

Operations

Operations coordinates the production of the Graduate Catalog and the Graduate Studies website, as well as other Graduate Studies publications. This area also supervises general office operations and assists with marketing projects and other special assignments.

Debra Winter, Associate Director, Operations, (407) 823-3567, dwinter@mail.ucf.edu

Mary Bermudez, Administrative Assistant, (407) 823-5467, mbermude@mail.ucf.edu

Computer Support

The Computer Support area responds to external surveys concerning enrollment information, provides summary information for the programs concerning inquiry, admissions, and registration statistics, and designs and maintains database information important to the function of the Office of Graduate Studies. This area also develops programs and applications, and researches new hardware and software technology for Graduate Studies.

Solan Ngan, Technology Manager, nsolan@mail.ucf.edu

Leo Barrientos, Senior Computer Systems Support

Josh Thomas, Computer Programmer / Analyst

Thesis/Dissertation

The mission of the Thesis and Publications Office is to support students, faculty, and staff throughout the thesis / dissertation process and facilitate effective scholarly communications. The editor offers workshops on thesis / dissertation preparation and format review assistance.

Beth Milloy, Editor, (407) 823-2739; editor@mail.ucf.edu

Graduate Fellowships/Waivers

Graduate Studies provides support for graduate students through assistantships, tuition, and fellowships. UCF graduate students may be employed by their department as a Graduate Teaching Assistant, Graduate Research Assistant, or Graduate Assistant. The Fellowships Office assists students in applying for fellowships and in identifying other sources for financial support for graduate study. Graduate student travel fellowships are also available through this office.

Michelle Sudar, Fellowships Program Assistant, (407) 823-6497, msudarp@mail.ucf.edu

University Graduate Regulations

The following are minimum university-wide standards for graduate programs. Additional requirements for each graduate program are described in the individual college or school descriptions (see Arts and Sciences, Business Administration, Education, Engineering and Computer Science, Health and Public Affairs, School of Optics).

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 graduate degree program with no conditions or provisions and is seeking a graduate degree.

Provisional Graduate Student—a degree-seeking 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 will be attached to the admission that will have to be fulfilled in the first nine hours of a graduate program before the student can be made a Regular Graduate Student. Only 10 percent of all new students in any degree program may be Provisional. Provisional graduate students cannot, in general, receive graduate fellowships or tuition waivers.

Conditional Graduate Student—a degree-seeking student who meets BOR criteria for admission, but has not submitted all required documents. Conditions must be met by midterm of the first semester in order to register for future semester classes.

Restricted Graduate Student—a degree-seeking graduate student who meets BOR criteria, but does not meet program requirements to be accepted as a Regular Graduate Student. Restrictions will be attached to the admission that will have to be fulfilled before the student is made a Regular Graduate Student.

Non-degree-seeking—a student who has not been accepted into an academic program and is not seeking a graduate degree. Some students in this category are completing application requirements for a graduate program. Students who are allowed to take graduate courses in this category can only transfer nine credit hours into a graduate program.

Graduate Certificate Student—a student, either a degree-seeking graduate student or a non-degree-seeking student, enrolled in a graduate certificate program. Non-degree-seeking students enrolled in graduate certificate programs are not eligible for financial aid. If accepted into a graduate program, students in this status may, at the discretion of the program, transfer the credit hours from a graduate certificate program into a regular 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 students plead ignorance of the regulations or claim failure of the adviser to keep them 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. Department chairs, in consultation with their faculty and with the college dean, shall determine the effect on final examinations and other academic matters.

UCF Employment

Full-time graduate students may be offered the opportunity to work as graduate assistants. All graduate assistants (GTAs and GRAs) must work at least 10 hours per week, but not more than 20 hours per week. Students who want to work for more than one employer and / or for hours in excess of 20 hours per week must complete a Multiple Employment / Excess Hours Form (see http: / / www.graduate.ucf.edu for form). Exceptions to this policy may be granted by the Office of Graduate Studies and the Graduate Council for compelling reasons

Student FICA exemption—Graduate students who are enrolled at least part time (5 hours in spring / fall; 3 hours in summer; 1 hour of thesis or 3 hours of dissertation) will be exempt from FICA / Medicare taxes during pay periods that overlap with the academic term and during breaks of less than five weeks. Breaks longer than five weeks where graduate students are employed but not enrolled will result in withholding FICA / Medicare taxes.

Note: International students with F-1 Visas are prohibited from working in excess of 20 hours per week during fall and spring semesters.

Appeals

When unusual situations arise, petitions for exceptions to policy may be requested by the student. Requests for consideration of exceptions to departmental rules should be made in writing to the graduate program coordinator. A Graduate Petition Form should be used for this request. The graduate program coordinator may ask the department or program graduate committee to examine the necessary information and recommend a response to the petition. The graduate 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 will 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 college coordinator that the college reconsider the decision.

If the petition requires an exception to a college policy or rule, the student or department will request in writing that an exception be made at the college level. The graduate college coordinator may ask the graduate college committee to examine the petition at the request of the department or student once the department has made its recommendations. The graduate college 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 will 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 will request in writing that an exception be made at the university level. The Vice Provost and Dean 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 Vice Provost and Dean of Graduate Studies will determine whether or not the exception should be granted. The Provost and Vice President for Academic Affairs is the final authority on whether exceptions to university policies will be made.

General Requirements for All Graduate Programs

Program of Study and Academic Performance

A program of study is a listing of course work agreed to by the student and the degree program specifying course 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) can be obtained from the graduate program coordinator or graduate college coordinator, prepared and signed by the adviser and student, and given to the graduate program coordinator to be placed in the student's permanent file. It must comply with the catalog current at the time it is proposed. 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, students will be changed to academic provisional status for a maximum of nine semester hours. If students have not attained an overall graduate GPA of 3.0 in the program of study at the end of the nine semester hours, they will be reverted to nondegree 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 should be filed with the graduate program coordinator. (See "Appeals" in this chapter.)

No graduate-level courses with a grade of "D" **or lower** are acceptable in a program of study or, following admission to degree-seeking status, on a SASS audit. In addition, no 4000-level courses or transfer courses with a grade of "C" or lower are acceptable in the program of study. Once established, the program of study cannot be altered solely due to poor academic performance of the student.

Graduate students whose overall GPA falls below 2.0 will be reverted to nondegree status.

Maximum Hours of Unsatisfactory Grades

A student may earn a maximum total of six 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 six semester hours of unsatisfactory (more than six semester hours of "C" or unresolved "I") grades in a specified graduate program of study is reason for reversion to nondegree 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, dissertation, or research report hours. It is the student's responsibility to arrange with the instructor for the changing of the "I" grade. Both the new grade and the letter "I" will appear on the student's permanent record. Grades of "I" awarded after Fall 1997 must be resolved within one calendar year or prior to graduation, whichever comes first. Incompletes in regular course work left unresolved will be

changed to "F" if not changed in the allowed time period. 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. The exception to this is enrollment in thesis (XXX 6971) and dissertation (XXX 7980) hours where the incomplete grade will be allowed to continue until graduation. Incomplete grades cannot be used on the program of study. Students cannot receive an incomplete grade while supported on a UCF fellowship and continue to receive the fellowship.

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 nondegree 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 nondegree 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 nondegree 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 9 credit hours each semester, with 12 semester hours being the maximum load. During the summer term, full-time is 6 credit hours and half-time is 3 credit hours. In order to meet residency requirements, doctoral and specialist students must register for 9 hours in two contiguous terms. Master's students taking only thesis hours are required to enroll in at least 1 hour each semester after completion of regular course work and minimum required thesis hours are exhausted. Doctoral students are required to enroll in at least 3 hours each semester after completion of regular course work and minimum required dissertation hours are exhausted.

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. Post-baccalaureate or non-degree-seeking students should check with the colleges about their ability to enroll in 6000-level courses. 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. See also "Senior Scholars Program" in this chapter.

5000-Level Courses. Courses at the 5000 level may be utilized toward satisfying the graduate degree requirements and may be taken by graduate students. Non-degree-seeking students and seniors may enroll in 5000-level courses with permission from the program.

Other. Under special circumstances 4000-level courses may be applied toward a graduate degree, but not in excess of six 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 graduate 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 Graduate Degree

Graduate students should file an Intent to Graduate form with the graduate 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 registration for the term of anticipated graduation.

Application for Graduate Certificate

Those students, graduate or nondegree, who are completing a certificate must file a Completion of Certificate form with the graduate program coordinator by the last day of registration for the last course in the graduate certificate program. If the student does not complete certificate requirements in that term, a new form must be filed at the beginning of registration for the term of completion.

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 obtain the manual from the Thesis / Dissertation Editor in the Office of Graduate Studies, 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: / / www.graduate.ucf.edu / thesis / manual.htm.

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 Academic Calendar of the *Graduate Catalog*.

Certification for Degree or Certificate

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 comprehensive or other 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.

Readmission

To file for readmission, the student must complete a Reactivation / Readmission Application and mail it to Graduate Studies, or the student may fax (407-823-6442) or e-mail (graduate@mail.ucf.edu) Graduate Studies stating a desire for readmission for a particular term. Graduate Studies will consult with the program about readmission.

Graduate Certificate Programs

Graduate certificate programs are available at UCF to supplement an existing graduate program or to provide specialized knowledge in disciplines that complement the education of working professionals in the metropolitan area served by UCF. Many of our area employees have advanced graduate degrees and can enhance their education with specialized courses. Frequently a package of specialized courses that forms a certificate will increase employment credentials and lead to career enhancement.

It is the intent of these programs to be current, providing specialized and state-of-the-art content to area employees. Often certificate programs are offered using flexible and nontraditional delivery systems that provide the best service to the employees in this metropolitan area. Distributed learning, weekend courses, evening courses, and accelerated term courses are acceptable.

Certificate programs are often ideal for nondegree students who would like to sample graduate courses before committing to a graduate degree program. Certificate programs may round out a graduate degree program, providing a special emphasis in addition to a graduate degree. Frequently a certificate program can provide an interdisciplinary focus to an existing program of study to provide more depth and understanding to enhance the graduate program.

Any academic unit may propose a graduate certificate program that encompasses graduate courses in its graduate program. If an interdisciplinary certificate program is proposed, it must be acceptable to departments and faculty offering the courses and graduate programs on which the certificate program is based.

Only departments offering graduate degree programs are eligible to develop graduate certificate programs, although departments not offering graduate degrees could join a graduate program in offering an interdisciplinary certificate. College-wide graduate programs are also eligible to develop graduate certificate programs. Certificate programs will not be allowed without some connection to an existing graduate program. The program, wherever it is academically housed, must be clearly identified and labeled as a certificate program. The intent of the program must be specified in any department or college publications (print or Web based).

A faculty coordinator will be appointed for each certificate program. The coordinator will be responsible for certifying successful completion of the program's academic requirements. The Office of Graduate Studies will arrange for recording the completed certificate on the student's transcript. However, certificate recipients will not be recognized at commencement.

Each graduate certificate program coordinator shall deliver an annual report of program activity, including course offerings, applications, enrollment, and certificates awarded through normal reporting processes from the program coordinator to the chair, to the college curriculum committee, and then to the college dean. The Graduate Council Course Review and New Programs Subcommittee will review the summary report after college approval and no later than September 15 of each year. Sunset provisions shall apply to any graduate certificate program that is inactive for three consecutive years.

University Admission Standards

Students admitted to a graduate degree program or to post-baccalaureate status are eligible to take certificate programs. Those with bachelor's, master's, or doctoral degrees are eligible to enroll in certificate programs and must apply by submitting a separate non-degree-seeking application prior to enrollment in the last certificate course. Entry to a certificate program does not guarantee admission to a graduate program. However, once a person is accepted into a regular graduate program, credits from a UCF certificate program may be applied toward an existing graduate program with the consent of the program. Post-baccalaureate students who are enrolled in a certificate program are not eligible for tuition waivers, assistantships, fellowships, or federal financial aid. Students must apply for admission into a certificate program at any time prior to the completion of the last course in the certificate program by completing an application that designates the graduate certificate.

Course Requirements and Loads

A certificate program must comprise a minimum of nine semester hours and a maximum of 18. The course work must consist of an integrated and organized sequence of study.

No internship or independent study courses may be used in a certificate program. The use of practicum courses in certificate programs is not generally encouraged, but may be used in programs where there is a strong professional setting and on-campus faculty supervision. Alternative delivery programs are acceptable and encouraged.

A course may not apply toward more than one certificate program. Certificate students must take the full number of required hours. If an overlap of course work occurs between two or more certificate programs for the same student, the student must complete the total required hours by taking electives approved by the program.

All courses that are offered as part of a certificate program must be graduate-level courses. Students must earn course grades of "B" or better to get credit toward the certificate. Courses may be retaken to achieve a better grade.

Applicable Credits

Transfer of Credit

No graduate credit hours taken at other institutions can be applied to a graduate certificate program at UCF.

Recency of Credit

Graduate credit hours taken at UCF less than three years previously from a prior baccalaureate, master's, specialist, or doctoral degree may be applied toward a certificate, with the consent of the program.

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. 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. A research report may be required in a non-thesis option master's program.

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 six 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 (Brevard, Daytona Beach, South Orlando, Downtown Academic Center); or at geographical locations where UCF courses are being taught by regular UCF faculty members. Residence credits also include UCF courses offered through the World Wide Web.

Transfer of Credits Taken Before Enrolling at UCF
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
- Work taken in a graduate certificate program at UCF

No more than nine semester hours total of graduate credit may be transferred into the graduate program from UCF post-baccalaureate work or from other accredited institutions. More than nine semester hours (all of the hours taken in a graduate certificate program) can be used in a graduate degree program with the consent of the program.

Graduate programs are permitted to accept up to nine hours of graduate course work taken at UCF while an undergraduate student as part of an undergraduate program of study. Oversight of the appropriateness of and discretion for accepting such courses into a graduate program of study will be provided by the instructor, graduate program coordinator, and graduate college coordinator. The use of these hours of graduate course work in a graduate program of study is at the discretion of the college and program. This does not apply to undergraduate course work taken while an undergraduate student.

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 some instances, UCF will have conducted an independent evaluation of a nonaccredited institution. If judged to be equivalent, hours may be transferred from these schools. In all instances, only grades of B or better will be transferred.

Students who wish to take course work elsewhere while enrolled as a student at UCF must apply and be accepted as a Traveling Scholar. Credits earned as a Traveling Scholar are considered "resident" credits that are earned at UCF. Consult the "Traveling Scholar" section in this chapter for more information.

Senior Scholars Program

UCF undergraduates who successfully complete UCF graduate course work as part of their UCF undergraduate program are designated Senior Scholars. As Senior Scholars they are entitled to use up to nine hours of graduate credits toward a UCF graduate degree, with the consent of the program. Senior Scholars may include this honor on their resumes. Undergraduates wishing to participate in this program should consult their adviser.

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. Students who do not maintain continuous enrollment (missing enrollment at the university for a period of two major semesters [spring / fall], excluding summers) must file for readmission

to the university, although seven years is measured from when the student was first admitted to the program.

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 Adviser
It is the responsibility of the appropriate academic Dean of the college or the coordinator of the program to (1) determine whether an advisory committee or an adviser will be used and (2) approve the necessary appointments.

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

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

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. Two of the members must be faculty in the program. 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 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: / / www.graduate.ucf.edu / thesis / .

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 one credit hour each semester continuously during which this activity takes place after completion of regular course work and required minimum thesis hours. 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 committee members who do not approve of the thesis may choose to not sign the thesis approval sheet. Thesis defenses will be approved by a majority vote of the Thesis Advisory Committee. Further approval is required from the Dean or Dean designee and the Office of Graduate Studies before final acceptance of the thesis in fulfilling degree requirements.

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 that 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.

University 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 three-hour examination in their major area and one three-hour examination in an area of specialization. Curriculum and Instruction majors must successfully complete one three-hour examination in their teaching specialty and one three-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

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

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 (missing enrollment at the university for a period of two major semesters [spring / fall], excluding summers) must file for readmission to the university, although seven years is measured from when the student was first admitted to the program.

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 records in the program.

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) of 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 adviser in the program area. Changes in the program of study may be made at any time by the advisory committee.

Course Requirements

The course requirements for a doctoral degree will consist of lectures, seminars, discussions, independent research, and independent study. Each program of study will include a minimum of 72 semester hours of graduate credit beyond the baccalaureate degree, 57 semester hours of which must be exclusive of the dissertation, with at least 6 semester hours of course work taken at UCF outside the student's program area. A university-wide minimum of at least 15 hours of dissertation hours are required for all doctoral programs. Specific programs may require more.

Independent Study Hours
No more than 12 total semester hours of independent study (including those hours counted toward a master's degree) may be applied to a doctoral program of study.

Academic Standards

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

Special Degree Requirements

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

Residency Requirements

Each student is expected to complete two contiguous semesters in full-time graduate student status after acceptance into a doctoral program. Doctoral students must be registered a minimum of 9 semester hours during this time.

Transfer Credit

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

Graduate programs are permitted to accept up to nine hours of graduate course work taken at UCF while an undergraduate student as part of an undergraduate program of study. Oversight of the appropriateness of and discretion for accepting such courses into a graduate program of study will be provided by the instructor, graduate program coordinator, and graduate college coordinator. This does not apply to 4000-level course work taken while an undergraduate student.

Time Limitation for Degree Completion

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

Readmission

Students who do not maintain continuous enrollment (missing enrollment at the university for a period of two major semesters [spring / fall], excluding summers) must file for readmission to the university, although seven years is measured from when the student was first admitted to the program. To file for readmission, the student must complete a Reactivation / Readmission Application, or contact the Office of Graduate Studies by fax (407-823-6442) or e-mail (graduate@mail.ucf.edu) and state a desire for readmission for a particular term. Graduate Studies will consult with the program about readmission. For more information about readmission, refer to the "Admission to the University and Graduate Programs" chapter.

Doctoral students admitted to candidacy must continuously enroll in three hours of dissertation course work (XXX 7980) each semester until the dissertation is completed after completion of required minimum dissertation hours.

Examination Committee

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

Candidacy

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

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

Enrollment in Dissertation Hours
The student must continue to enroll for at least three semester hours of dissertation credit each semester after attaining candidacy status until the oral defense of the dissertation has been made after completion of regular course work and the required minimum number of dissertation hours. Post-candidacy enrollment is allowable for a maximum of four years subject to the seven-year time limitation.

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 prior to the Candidacy Examination. 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 Office of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee, or appoint a co-adviser.

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 obtain the manual from the Thesis and Publications Editor in the Office of Graduate Studies, 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://www.graduate.ucf.edu/thesis/.

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. Further approval is required from the Dean or Dean designee and the Office of Graduate Studies before final acceptance of the dissertation in fulfilling degree requirements.

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 adviser, who will initiate a visiting arrangement with the appropriate faculty member of the host institution. After agreement by the student's adviser and the faculty member at the host institution, graduate deans at both institutions will be fully informed by the adviser 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. 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.

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 for a total of six credit hours taken as a traveling scholar at another institution.

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.

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 230, P.O. Box 160112, Orlando,

FL 32816-0112; Phone 407-823-2766), and the graduate program coordinator must complete the Program of Study so that the credits can be entered into the student database. Credits earned at another institution while in Traveling Scholar status 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 except by prior approval of Graduate Studies.

International Visiting Scholars

The following policy and procedures allow departments to invite international visitors to study or participate in 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.

Visitors participating in the international scholars program who are required to audit courses at UCF must fill out the UCF Nondegree / Certification / Transient 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 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 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 visiting scholar'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. 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 may 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 Academic 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 in-state 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 located in the following states:

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

407-823-5815 (AD 230, P.O. Box 160112, Orlando, FL 32816-0112).

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 to receive an out-of-state tuition award. 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 McCoy, UF, 352-392-5834
Dr. Terry McCoy, UF, 352-392-0375
Dr. Robert Vitale, Miami-Dade Community College, 305-237-2533

Florida-Canada Institute
Dr. Warren McHone, UCF, 407-823-2629
Dr. Sean P. Smith, Palm Beach Community College, 561-367-4574

Florida-Caribbean Institute
Dr. Mark B. Rosenberg, FIU, 305-348-2894
Mr. Francisco Bertot, Daytona Beach Community College, 904-254-3091

Florida-China Institute
Dr. Henry O. K. Chen, UWF, 904-474-2665
Mr. Robert J. Ludwiczak, Brevard Community College, 407-632-1111
Ms. Miriam B. Stamps, USF, 813-974-6305

Florida-Costa Rica Institute
Dr. Erasmo G. Gerato, FSU, 904-644-1414
Ms. Carol Litrides, Valencia Community College, 407-855-9989

Florida-Eastern Europe Institute
Dr. Jean Kijek, UCF, 407-823-3647
Dr. Robert W. Westrick, Lake Sumter Community College, 352-365-3523

Florida-France Institute
Dr. Erasmo G. Gerato, FSU, 904-644-1414
Dr. Eugene Scruggs, USF, 813-974-4126
Dr. Robert Vitale, Miami-Dade Community College, 305-237-2533

Florida-Israel Institute
Dr. William B. Stronge, FAU, 561-367-2833
Dr. Benjamin Popper, Broward Community College, 954-475-6733
Ms. Nancy Q. Rosen, FAU, 954-351-4150

Florida-Japan Institute
Dr. Mark Orr, USF, 813-974-4090
Ms. Shigeko Honda, UWF, 904-474-3108
Dr. Glen E. Goltermann, UWF, 904-474-2144

Florida-Mexico Institute
Dr. Mark B. Rosenberg, FIU, 305-348-2894
Mr. Hugh Anderson, Polk Community College, 813-297-1026

Florida-West Africa Institute
Dr. Harriett A. Paul, FAMU, 904-599-8825
Dr. Roland E. Buck, UNF, 904-620-2600
Dr. Brenda Simmons, Florida Community College at Jacksonville, 904-633-8319

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 Associate Vice President for 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 Associate Vice President for 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 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 course work, 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, 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, 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, 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, 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, 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, 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 Office 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) 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.

(c) The *Graduate Studies Faculty and Staff Guide* 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" in the University Graduate Regulations section.)

Division of Student Development & Enrollment Services

Student Development & Enrollment Services (SDES) refers collectively to the division and its many functional units responsible for the administration and management of programs, services, facilities and activities designed to support and complement the educational mission of the university while simultaneously improving the student's total collegiate experience. In partnership with other university divisions and the community, the division fosters a philosophy that promotes an optimal student learning environment.

The guiding purpose of SDES is to provide excellence in student services integral to the development of a meaningful collegiate experience.

Key values in the division's organizational identity are: caring, commitment, collaboration, honesty, inclusiveness, innovation, integrity, loyalty, operational excellence, respect and trust.

The division administers programs involving orientation, advisement and academic exploration, registration and admissions, financial assistance, multicultural services, personal counseling, housing, health services, career development and placement, student activities and organizations, veterans affairs and a variety of academic development and retention and other special programs. These responsibilities are integral to the mission of the university, addressing the immediate needs of students and faculty while responding to the concerns of other constituencies such as business and industry, parents, alumni, and other educational institutions.

While it is convenient to divide the university and division into units for operational effectiveness and efficiency, students are not so easily compartmentalized. The recognition that each student is a whole and unique person encompasses the basic philosophy of the Division of Student Development and Enrollment Services. Perhaps this philosophy is best reflected in the mission statement of the division:

"The Student Development and Enrollment Services Division provides services through activities, programs and opportunities that establish a meaningful collegiate student learning experience.

This will be developed through a productive work environment that recognizes employee's contributions and teamwork.

The primary activities, programs and opportunities of Student Development and Enrollment Services contribute to enrollment growth, campus life and academic development support services for a diverse and talented student population.

The composition of student services will be based on assessed needs, targeted populations and institutional priorities.

Collaboration and partnerships will be a cornerstone within the Student Development and Enrollment Services Division to ensure broad support and quality outcomes."

Office of Judicial Programs

The Office of Judicial Programs is the primary source for students seeking information on nonacademic areas of the university. Additionally, the Director supervises the judicial affairs process and counsels students confronted with a variety of difficulties, referring students for specialized professional services as necessary. The Division of Student Development and Enrollment Services annually publishes the student handbook, *The Golden Rule*, which contains more detailed information on student life. Copies may be obtained in the SDES Suite, Room 282, Administration Building. Students are urged to take advantage of the many services and educational programs available through Judicial Programs and the Division of Student Development and Enrollment Services.

Student Government

Student Union 214, (407) 823-2191
Web address: http://www.ucfsga.com

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 enhance student life. These services currently include funding for legal services, computer labs, discount tickets to movie theaters and theme parks, free local calling on campus telephones, and funding for recreational services and Campus Activities Board programming. Money that 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 travel to conventions from the Student 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: Executive, Legislative, and Judicial. The Executive branch, composed of the Student Body President, Vice President, 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 a 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://www.ucfsga.com.

Graduate Student Council

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

Graduate students, regular and non-degree-seeking, 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 Resource Center, Room 155 • (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 Resource Center, Room 155. This service is by appointment only. No legal advice is given over the phone.

University Counseling and Testing Center

Student Resource Center, Room 203 • (407) 823-2811

The University Counseling and Testing Center, located in the Student Resource 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 Resource Center, Room 185 • (407) 823-2361
Web address: http://www.crc.ucf.edu

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, offers 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 a database information management system which can refer their resumes to interested employers. Full-time and part-time job postings are available to students in the CRC library in paper form, the 24-hour jobline KnightLink (407-823-6200), and on the CRC website at http://www.crc.ucf.edu. An employer information library can provide needed information. Career Development Coordinators are available to assist with individual career needs.

Housing and Residence Life

HAB 101 • (407) 823-4663

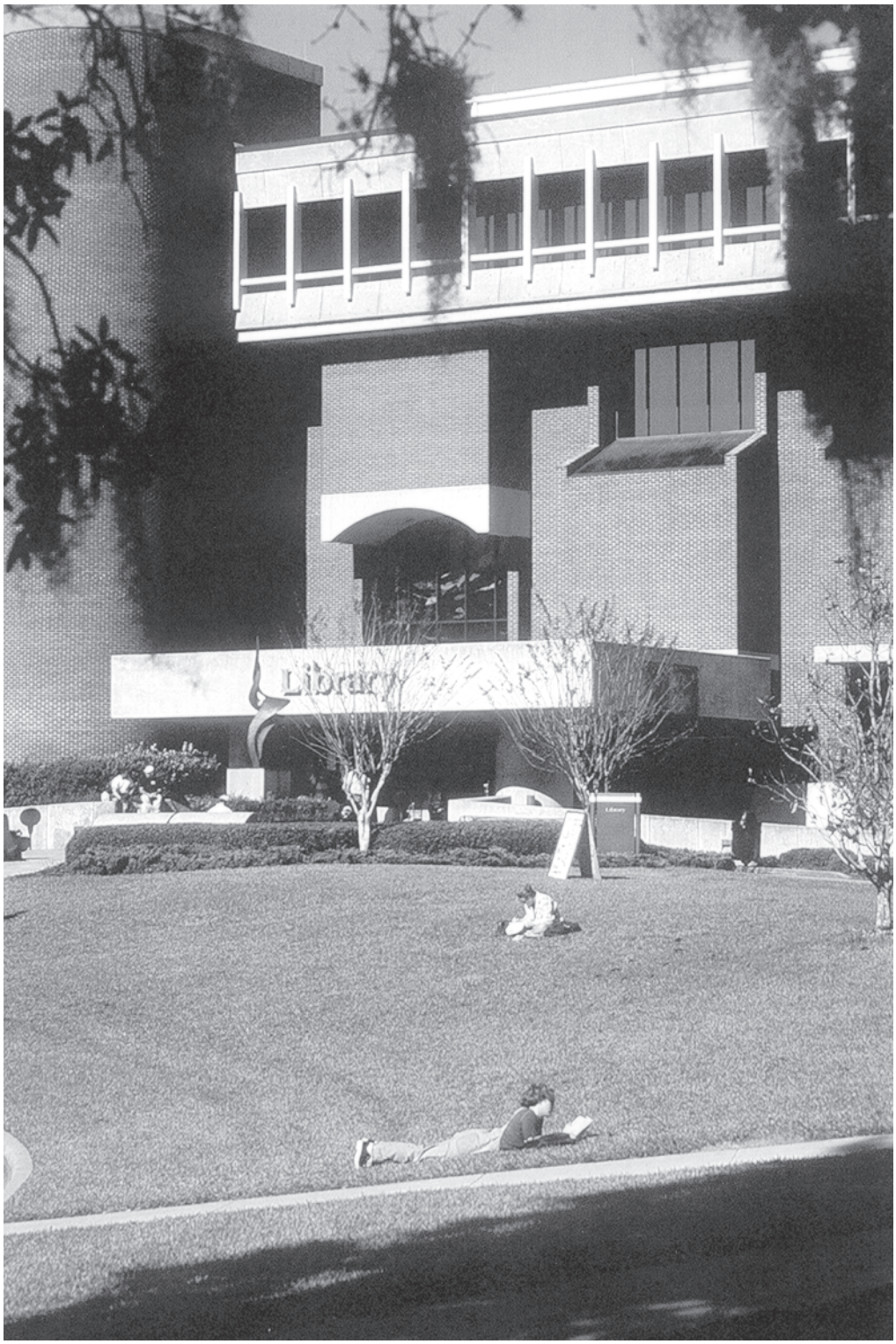
Regularly enrolled single students paying registration fees for a minimum of nine semester hours may apply for assignment to university residence, consisting of residence halls and apartment-style units. However, in the residence halls, priority is given to incoming freshmen, who occupy approximately 70 percent of the university's housing capacity, and current residents, who occupy most of the university's remaining spaces. Upper-level single students are given priority for assignment to the university's on-campus apartment-style residential facilities on a space-available basis. There is no on-campus married student housing.

Off-Campus Student Resource Center

Student Resource Center, Room 140 • (407) 823-2821

Currently, there is no off-campus housing specifically designated for graduate students only. The Off-Campus Student Resource Center can assist students in their search for off-campus housing accommodations. The center provides listings of off-campus apartments and resources for students needing to find roommates, storage, transportation, and furniture rental information.

Graduate students are encouraged to utilize the services offered by OCSRC, especially the Community Housing Guide, a 24-hour telephone system designed to accept or play recordings of housing options and roommate opportunities over the telephone. Call (407) 823-6700 to listen to ads and (407) 823-6699 to place an ad.


Library


Student Union

Student Health Services

Phone: (407) 823-2117

Recognizing the importance of lifestyle in health and the prevention of disease, Student Health Services (SHS) combines quality care for illness and accidents with an aggressive health education and lifestyle 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 physicians, advanced registered nurse practitioners, physician assistants, registered nurses, pharmacists, 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.

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, credit card, personal check, or charged to the student's account.

Optional Health and Accident Insurance may also be purchased by response to the mailers or by contacting the Division of Student Development and Enrollment Services 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, such as hospital referrals. Charges incurred outside the SHC are the responsibility of the student. 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).

When the SHC is not open, students can call the Police Department to obtain help for urgent needs.

By Board of Regents regulation, each student must demonstrate Rubella and Rubeola immunity prior to registration. Immunizations are made available within limited hours during orientations to help those who have been unable to receive immunization prior to that time.

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

Phone: (407) 823-2117
Web address: http://pegasus.cc.ucf.edu/~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 is partially funded through Activity and Service fees allocated by the Student Government.

Reservations for space in the Student Union 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
Web address: http://pegasus.cc.ucf.edu/~osa

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, Diversity Dialogue Consultants, and Leadership UCF. Other programs and services sponsored through this office include the Knights of the Roundtable and Family Weekend. 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.

Office of Non-Traditional and Evening/ Weekend Student Services

Director: Jameer Abass, AD 210, (407) 823-3111

The Office of Non-Traditional and Evening/Weekend Student Services is responsible for developing and implementing support services that will enhance the success of adult and evening/weekend students at the University of Central Florida. The office serves as an advocate for adult and evening/weekend students. It works in collaboration with academic and nonacademic departments within the university to promote the awareness of adult and evening/weekend students and works with students to solve problems and disseminate pertinent information.

Service Hours:

8:00 a.m. to 9:00 p.m.	Monday through Thursday Second-floor Administration Building, Education Building Lobby, College of Business Administration Information Center
8:00 a.m. to 5:00 p.m.	Friday (same locations as above)
8:00 a.m. to 4:00 p.m.	Monday through Friday Student Government Kiosk
10:00 a.m. to 2:00 p.m.	Saturday Student Government Kiosk
2:00 p.m. to 5:00 p.m.	Sunday Student Government Kiosk

Recreational Services

Located next to the UCF pool • (407) 823-2408

The Office of Recreational Services offers a variety of sports and recreational opportunities to the students of UCF and their immediate families and to UCF faculty and staff as well as Central Florida Research Park Recreation members. Recreation memberships may be purchased by the semester or by the year. These opportunities include intramural sports leagues and tournaments, organized recreation and fitness programs, unstructured open recreation, sports-related special events, and racquet stringing. Equipment check out at the Recreational Services Building and watercraft check out at Lake Claire Recreation area are also available.

International Student and Scholar Services

Director: Mr. Bassam Khoury, Barbara Ying Center 106A, (407) 823-2337

The International Student and Scholar Services office provides assistance and information to the University of Central Florida international community. Its main function is to assist international students and scholars attending UCF to adjust to the changing lifestyle in order to achieve their educational goals and gain a meaningful living experience in the United States. A wide range of special services is provided to help international students and scholars to maintain their nonimmigrant visa status. This is done by issuing and processing the necessary immigration documents such as I-20 A/B and IAP-66 and by interpreting relevant immigration rules and regulations. Counseling and assistance on personal, financial, academic, and cultural concerns are also provided to guide the international students and scholars within the university community so they may successfully pursue their academic programs and research. Another important role of the office is to advance the cause of international awareness and cross cultural understanding by the promotion of many social, cultural, and educational activities of the various international student clubs and organizations on campus and in the Orlando metropolitan area.

Further information may be obtained from the International Office, Barbara Ying Center, Building 71, or by calling (407) 823-2337.

Multicultural Academic and Support Services

Associate Director: Inez M. Ford, AD 145, (407) 823-2716

The office of Multicultural Academic and Support Services (MASS) 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. MASS offers personalized advising and support, monitors academic progress, and designs and coordinates cultural and social activities to assist multicultural students in realizing their academic, career, and personal goals. MASS serves as the focal point of operations in addressing the specific needs, issues, and concerns that confront multicultural students at UCF.

Student Disability Services

AD 149, P.O. Box 160161, Orlando, FL 32816-0161; (407) 823-2371

Student Disability Services provides information and orientation to campus facilities and services, assistance with classroom accommodations, assistance with course registration, disabled 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. Telephone (407) 823-2116, for 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. Hours are 7:45 a.m. to 5:15 p.m., Monday through Friday. The school conducts a recreational camp for elementary school children during summer term B.

Office of Veterans' Affairs

Student Resource Center, Room 132 • (407) 823-2707

The Office of Veterans' Affairs (OVA) is a center for all veterans and eligible dependents, 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.

The OVA evaluates and awards transfer credit for military training and education in accordance with Department of Veterans Affairs regulations and UCF policies. Credit is awarded for schools and courses only. Transfer credit is not awarded for experience, military skills level, and / or special certifications. In addition, no credit is awarded for Basic Military Training. Transfer credit is awarded per the recommendations of the ACE (American Council on Education) guide, based upon courses and / or training listed on the DD Form 214 or other official military records. U.S. Air Force veterans are asked to provide official copies of Community College of the Air Force transcripts to the Admissions office.

Students eligible for DVA education benefits may also be eligible for a VA Deferral of Tuition and Fees. The VA Deferment 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 halftime 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 halftime 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.

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, and more
- Free borrowing at the UCF Library (main branch)
- 15% discount on UCF logo items at local merchants, including 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.

12424 Research Parkway, Suite 140, Orlando, FL 32826
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.

UCF Public Safety and Police Department

Police Department, UCF, P.O. Box 163550, Orlando, FL 32816-3550; (407) 823-5555
UCFPD Web address: http://pegasus.cc.ucf.edu/~ucfpd
Parking Services Web address: http://pegasus.cc.ucf.edu/~parking

The UCF Police Department is a full-service law enforcement agency. The Patrol Division consists of police officers providing police services twenty-four hours a day, seven days a week. The officers patrol the campus on foot and in marked patrol cars. They are supplemented by additional police officers patrolling on mountain bikes and motorcycles.

The Investigations Unit consists of detectives that investigate all unsolved criminal cases. The Crime Prevention Unit presents Crime Prevention seminars for property protection and personal safety for the community. The Community-Oriented Policing program (COP) consists of five officers assigned to the UCF Housing areas. These officers work closely with the residents and housing staff in a "partnership" to reduce crimes in these areas. The Student Escort Patrol Service (SEPS) is an evening escort service for all individuals on campus. The Victim Services Unit helps victims with emotional support and practical assistance, informational and referrals, and also provides educational services. Parking Services has the responsibility of maintaining all parking facilities on the UCF campus, selling parking decals, and enforcing parking regulations.

The UCF Police Department provides a free brochure titled, "Police Service and Safety Guide," in accordance with the Federal Crime Awareness and Security Act of 1990; please call for your copy.

UCF Police Department Telephone Numbers

For general, nonemergency police information, call (407) 823-5555.
For emergency fire, medical, or police response, call 911.
Crime Prevention Unit—(407) 823-2165
Student Escort Patrol Service (SEPS)—(407) 823-2424
Victim Services Unit—(407) 823-6332 or (407) 823-6069
Parking Services—(407) 823-5812

University Bookstore

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

The University Bookstore is operated under a contractual agreement with Barnes and Noble. 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 at a cost of $3.00 or $6.00 if it is mailed.

Interdisciplinary Graduate Studies

The University of Central Florida strives to promote interdisciplinary cooperation across all aspects of the institution in order to create new and innovative partnerships that effectively respond to societal needs and appropriately prepare graduate students for a dynamic work environment. Currently, interdisciplinary graduate studies are offered in optics, gender studies, gerontology, and Maya studies.

School of Optics

The School of Optics offers a graduate program in optics, photonics, and laser education and research. It is one of only three independent optics academic departments in the nation. The School of Optics offers interdisciplinary graduate programs leading to master's and doctoral degrees in optics. The School also offers three graduate certificate programs in optics, lasers, and optical communications designed for working professionals as well as for science and engineering graduate students. The Center for Research and Education in Optics and Lasers (CREOL) is integrated in the school as its research arm. The School of Optics and faculty are the primary resources for the optical physics option in the M.S. and Ph.D. program in Physics and the electro-optics option in the M.S. and Ph.D. programs in Electrical Engineering. These two option programs are offered in partnership with academic departments. The faculty also actively participate in undergraduate and graduate teaching in the Physics, Electrical Engineering and Computer Science (EECS), Mechanical, Materials, and Aerospace Engineering (MMAE), and Chemistry Departments.

For more information about graduate programs in optics, refer to the School of Optics section of this catalog. For additional description of the Center for Research and Education in Optics and Lasers, see the "Research Opportunities" chapter in this catalog.

Women's Studies Program

In coordination with the Department of Sociology and Anthropology and the Department of English, the Women's Studies Program offers an interdisciplinary graduate certificate program in gender studies. This program provides a foundation in feminist theory and research focusing on the study of gender as a demographic and social variable affecting systems of meaning and the formation of social institutions. The program is open to both degree-seeking and non-degree-seeking graduate students. Most courses are offered at times that will accommodate part-time and working students.

Gender Studies Faculty

Program Coordinator: Shelley M. Park, FA 201H, (407) 823-2269.
E-mail: spark@pegasus.cc.ucf.edu

Gender studies faculty are affiliated with the Women's Studies Program and include faculty in Art, English, History, Philosophy, Psychology, Political Science, Sociology and Anthropology, and Women's Studies. For a full list of affiliated faculty, visit the website for the Women's Studies Program at http://pegasus.cc.ucf.edu/~womenst.

Graduate Certificate in Gender Studies

The graduate certificate in gender studies requires 15 semester hours at the graduate level, including courses from both the humanities and the social sciences. Admission is through application to Graduate Studies for admission to a certificate program. For details of the program, please refer to the program description in the College of Arts and Sciences section of this catalog.

Gerontology

In recognition of the special needs of elderly citizens, the University of Central Florida offers an interdisciplinary program leading to a Graduate Certificate in Gerontology. The Graduate Certificate in Gerontology is administered by the School of Social Work.

The program may be of particular interest to people presently employed in the aging field who have a baccalaureate or higher degree and who wish to increase their knowledge of gerontology. Graduate students who are enrolled in health sciences, psychology, social work, nursing, communicative disorders, or sociology, as well as in other areas, such as liberal arts, music education, physical education, or art education, may also find the certificate valuable.

Gerontology Faculty

Graduate Program Coordinator: Margaret Sauer, M.S.W., School of Social Work, HPA 204, (407) 823-2114.
E-mail: msauer@mail.ucf.edu
Web address: http://www.cohpa.ucf.edu/gerontology/
Phone: (407) 823-2215
Fax: (407) 823-5697

Gerontology faculty specialize in this field and are from the Department of Social Work in the College of Health and Public Affairs.

Graduate Certificate in Gerontology
The graduate certificate in gerontology requires 12 semester hours (4 courses) at the graduate level. Admission is through application to Graduate Studies for admission to a certificate program. For the details of the program, please refer to the program description in the College of Health and Public Affairs section of this catalog.

Maya Studies

Maya studies focuses on an area of growing local, national, and international concern—the ancient and contemporary peoples of Mexico, Guatemala, and Belize. The program is interdisciplinary with cognate offerings from History, Political Science, and Spanish. The program is further strengthened by a community partnership with the Orlando Museum of Art. The Maya Studies Graduate Certificate Program provides detailed and specialized knowledge of the ancient and contemporary Maya through a series of well-integrated courses.

Maya Studies Faculty
Graduate Program Coordinators: Diane Chase, HFA 406F, (407) 823-2227, Fax (407) 823-3026. E-mail: chase@mail.ucf.edu
Jay Corzine, HFA 402, (407) 823-2227, Fax (407) 823-3026. E-mail: hcorzine@pegasus.cc.ucf.edu
Web address: http://www.caracol.org/maya_certificate.htm

Arlen F. Chase, Ph.D., Professor of Anthropology
Diane Z. Chase, Ph.D., Professor of Anthropology
Marcela Del-Rio, Ph.D., Associate Professor of Foreign Languages and Literatures
Jose Fernández , Ph.D., Professor of Foreign Languages and Literatures, Professor of History, and Interim Associate Dean of the College of Arts and Sciences
Waltraud Morales, Ph.D., Professor of Political Science
Allyn Stearman, Ph.D., Professor of Anthropology and Dean of the Honors College
Diana Velez, Ph.D., Assistant Professor of History
Bruce Wilson, Ph.D., Assistant Professor of Political Science
Elayne Zorn, Ph.D., Assistant Professor of Anthropology
Andrea Kalis, M.A., Curator, Orlando Museum of Art

Graduate Certificate in Maya Studies
The graduate certificate in Maya studies requires 15 semester hours (5 courses) at the graduate level. Admission is through application to Graduate Studies for admission to a certificate program. For details of the program, please refer to the program description in the College of Arts and Sciences section of this catalog.

Teaching English to Speakers of Other Languages

Graduate Program Coordinator: Consuelo Stebbins, HFA 523, (407) 823-0087. E-mail: stebbins@pegasus.cc.ucf.edu

The College of Arts and Sciences and the College of Education offer an interdisciplinary master's degree in Teaching English to Speakers of Other Languages (TESOL). This program 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, research, 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.

For more information about the graduate program in TESOL, refer to the program description provided by the Department of Foreign Languages and Literatures in the College of Arts and Sciences section of this catalog.

College of Arts & Sciences

The College of Arts and Sciences consists of seventeen academic departments, thirteen of which offer graduate degrees: Biology, Chemistry, Communication, English, Foreign Languages and Literatures, History, Liberal Studies, 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
T. Frederick, Interim Associate Dean
H. Sweet, Associate Dean
J. Fernández, Associate Dean
L. Brodie, Assistant Dean

Advisement

The Graduate Studies Office in the College of Arts and Sciences assists students 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 the Graduate Studies Office in CAS 190K or by calling (407) 823-5167.

Programs

Doctor of Philosophy
Mathematics
Physics—Optical Physics Track
Psychology—Clinical, Human Factors, and Industrial and Organizational Tracks

Master of Science
Biology
Chemistry, Industrial—Forensic Science Track
Mathematical Science—Industrial Mathematics Track
Physics—Optical Physics Track
Psychology—Industrial and Organizational Track
Statistical Computing

Master of Arts
Communication—Mass and Interpersonal Tracks
English—Creative Writing, Literature, and Technical Writing Tracks
History
Liberal Studies
Political Science—Political Analysis and Public Policy Tracks
Psychology, Clinical
Sociology, Applied
Spanish
Teaching English to Speakers of Other Languages (TESOL)

Graduate Certificates
Conservation Biology
Domestic Violence
Gender Studies
Maya Studies
Professional Writing
Teaching English as a Foreign Language (TEFL)

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 admissions consideration in all graduate programs. Admission to graduate programs is based upon minimum Board of Regents criteria, as well as other factors such as work or internship experience, community service, research interests of prospective students, or personal interviews.

Each department is headed by a chair who reports to the dean of the college. A graduate program coordinator within each department is designated for each graduate program and can provide advice on questions about admission and degree requirements. Consult the individual degree program listings for detailed descriptions of requirements and courses.

Course Descriptions

The "Course Descriptions" section at the back of the catalog describes Florida's Statewide Course Numbering System. Graduate courses in directed / individual research, special topics, and thesis / dissertation preparation are listed under "Special Courses" on page 218. Other graduate courses are listed alphabetically by course prefix beginning on page 221.

Interdisciplinary Studies

The College of Arts and Sciences offers two interdisciplinary graduate certificate programs in Gender Studies and Maya Studies.

Graduate Certificate in Gender Studies

Graduate Program Coordinator: Shelley M. Park, HFA 201H, (407) 823-2269. E-mail: spark@pegasus.cc.ucf.edu

Gender Studies Faculty
Gender Studies Faculty are affiliated with the Women's Studies Program and include faculty in Art, English, History, Philosophy, Psychology, Political Science, Sociology and Anthropology, and Women's Studies. For a full list of affiliated faculty, visit the website for the Women's Studies Program at http://pegasus.cc.ucf.edu/~womenst.

Certificate Program

Gender Studies is an interdisciplinary graduate certificate program administered by the Women's Studies Program in coordination with the Department of Sociology and Anthropology and the Department of English. This program provides a foundation in feminist theory and research focusing on the study of gender as a demographic and social variable affecting systems of meaning and the formation of social institutions. The program is open to both degree-seeking and non-degree-seeking graduate students. Most courses are offered at times that will accommodate part-time and working students.

Certificate Requirements

The graduate certificate in Gender Studies requires 15 semester hours at the graduate level, including courses from both the humanities and the social sciences. Students may include only 3 hours (one course) from those marked with an asterisk below toward meeting the certificate requirements. Other courses may be approved as meeting requirements as new courses are added to the curriculum. Please check with the graduate program coordinator.

Required Course—3 Semester Hours
WST 5XXX Research Seminar in Gender Studies (3 hours)

Humanities—6 Semester Hours
AMH 5478 Colloquium: Women in American History (3 hours)
ARH 5478 Contemporary Women Artists (3 hours)
LIT 5389 Studies in Gender and Fiction Writing (3 hours)
ENC 5256 Gendered Rhetoric (3 hours)
*EUH 5937 Social Theory and Social History (3 hours)
*LIT 5097 Studies in Contemporary Fiction (3 hours)
LIT 5XXX Gender and the Medieval Text (3 hours)
LIT 5387 Captives, Housewives, and Coquettes (3 hours)
LIT 5397 Advanced Feminist Theories (3 hours)

Social Sciences—6 Semester Hours
CLP 6459C Sexuality, Marriage and Family (3 hours)
POS 6324 Women and Public Policy (3 hours)
SOW 5625 Social Work with Women (3 hours)
SYP 5562 Seminar on Domestic Violence (3 hours)
SYP 6563 Reactions to Domestic Violence (3 hours)
*SYP 6565 Elder Abuse and Neglect (3 hours)
*SYP 6561 Child Abuse in Society (3 hours)
SYD 6809 Seminar: Gender Issues (3 hours)

Minimum Hours Required for the Certificate—15 Semester Hours

* Students may include only three hours from those courses marked with an asterisk toward meeting the certificate requirements.

Note: Enrollment in EUH 5937, CLP 6459C, and SOW 5625 may be restricted. Please check with the instructor prior to registration.

Graduate Certificate in Maya Studies

Graduate Program Coordinators: Diane Chase, HFA 406F, (407) 823-2227, Fax (407) 823-3026. E-mail: chase@mail.ucf.edu
Jay Corzine, HFA 402, (407) 823-2227, Fax (407) 823-3026. E-mail: hcorzine@pegasus.cc.ucf.edu
Web address: http://www.caracol.org/maya_certificate.htm

Maya Studies Faculty
Arlen F. Chase, Ph.D., Professor of Anthropology
Diane Z. Chase, Ph.D., Professor of Anthropology
Marcela Del-Rio, Ph.D., Associate Professor of Foreign Languages and Literatures
Jose Fernández , Ph.D., Professor of Foreign Languages and Literatures, Professor of History, and Interim Associate Dean of the College of Arts and Sciences
Waltraud Morales, Ph.D., Professor of Political Science
Allyn Stearman, Ph.D., Professor of Anthropology and Dean of the Honors College
Diana Velez, Ph.D., Assistant Professor of History
Bruce Wilson, Ph.D., Assistant Professor of Political Science
Elayne Zorn, Ph.D., Assistant Professor of Anthropology
Andrea Kalis, M.A., Curator, Orlando Museum of Art

Certificate Program

The certificate program in Maya Studies focuses on an area of growing local, national, and international concern—the ancient and contemporary peoples of Mexico, Guatemala, and Belize. The program is interdisciplinary with cognate offerings from History, Political Science, and Spanish. The program is further strengthened by a community partnership with the Orlando Museum of Art. The Maya Studies Graduate Certificate Program provides detailed and specialized knowledge of the ancient and contemporary Maya through a series of well-integrated courses. Admission is through application to Graduate Studies for admission to a certificate program.

Certificate Requirements

The Certificate Program in Maya Studies requires five courses (15 hours) at the graduate level. Students must take two core (required) courses and three additional courses selected from a pool of 7 elective courses. Before taking an elective course, students must have taken at least one of the required courses or must have the instructor's consent to take the elective course.

Required Courses—6 Semester Hours
ANT 5168 The Ancient Maya (3 hours)
ANT 5324 Contemporary Maya (3 hours)

Elective Courses—9 Semester Hours
ANT 5166 Problems in Maya Studies (3 hours)
ANT 5167 Maya Hieroglyphs (3 hours)
ANT 5XXX Field Research in Maya Studies (3 hours)
ANT 5228 Maya Iconography (3 hours)
LAH 5937 Latin America's Colonial Legacy: The Maya (3 hours)
CPO 5XXX Contemporary Politics in the Maya Region (3 hours)
SPW 5XXX Modern Maya Literature (3 hours)

Minimum Hours Required for Certificate—15 Semester Hours

Biology

Chair of the Department: David T. Kuhn
Graduate Program Coordinator: John F. Weishampel, BIO 140, (407) 823-6634. E-mail: jweisham@mail.ucf.edu
Web address: http://pegasus.cc.ucf.edu/~biology/

Faculty
Professors Emeritus: L. L. Ellis, Ph.D.; J. L. Koevenig, Ph.D.
Professors: L. M. Ehrhart, Ph.D.; D. T. Kuhn, Ph.D.; J. A. Osborne, Ph.D.; F. F. Snelson, Jr., Ph.D.; I. J. Stout, Ph.D.; H. C. Sweet, Ph.D.; W. K. Taylor, Ph.D.; H. O. Whittier, Ph.D.
Associate Professors: D. H. Vickers, Ph.D.; J. F. Weishampel, Ph.D.
Assistant Professors: C. A. Bayer, Ph.D., Research; L. D. Rea, Ph.D.; L. H. von Kalm, Ph.D.; L. J. Walters, Ph.D.
Instructor: R. Vajravelu, Ph.D.

Master of Science in Biology

Application Deadlines

Fall admission	March 1*
Fall admission	July 15
Spring admission	October 15
Summer admission	April 15

* Students applying for fellowships or assistantships must apply for the fall semester by this date. For those not requiring financial assistance, the application deadline is July 15.

Admission

The deadline for application material for fall semester is March 1st with notification in April. The application deadline for spring semester is October 15th.

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 strongly encouraged but not required. The department requires international students and students whose native language is not English to have a minimum score of 230 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 18 hours of biological sciences, including ecology and genetics; organic chemistry with laboratory; and a course in calculus and statistics. After acceptance, minor deficiencies must be remedied by enrollment in the appropriate course at the first opportunity. Students receiving assistantships are required to maintain full-time graduate status in approved graduate courses 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 reexamination. 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, cell biology, development, genetics, 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. A graduate certificate in Conservation Biology is also offered. Qualified post-baccalaureate Conservation Biology students may apply to and be accepted into the Biology M.S. program.

Degree Requirements

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

Group A—12-14 Semester Hours
(one course in three of the five areas)
1. PCB 6046C Advanced Ecology (5 hours)
2. PCB 6675C Evolutionary Biology (4 hours)
3. PCB 6585C Advanced Genetics (5 hours)
4. PCB 6721 Comparative Animal Physiology (3 hours) OR PCB 6365 Environmental Physiology (3 hours)
5. PCB 5107C Advanced Cell Biology (4 hours) OR PCB 5256C Advanced Developmental Biology (4 hours)

Group B—8 Semester Hours
(both courses)
BSC 6938 Biology Seminar (2 hours)
BSC 6971 Thesis (6 hours)

Group C—8-10 Semester Hours
Restricted electives acceptable to the student's graduate advisory committee. Completion of a graduate certificate in Conservation Biology will satisfy electives in this category.

Minimum Hours Required for M.S.—30 Semester Hours

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

Group A—12-14 Semester Hours
(one course in three of the five areas)
1. PCB 6046C Advanced Ecology (5 hours)
2. PCB 6675C Evolutionary Biology (4 hours)
3. PCB 6585C Advanced Genetics (5 hours)
4. PCB 6721 Comparative Animal Physiology (3 hours) OR PCB 6365 Environmental Physiology (3 hours)
5. PCB 5107C Advanced Cell Biology (4 hours) OR PCB 5256C Advanced Developmental Biology (4 hours)

Group B—4 Semester Hours
(both courses)
BSC 6909 Research Report (2 hours)
BSC 6938 Biology Seminar (2 hours)

Group C—22-24 Semester Hours
Restricted electives acceptable to the student's graduate advisory committee.

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

Graduate Certificate in Conservation Biology

Graduate Program Coordinator: Dr. J. F. Weishampel, BIO 140, (407) 823-6634. E-mail: jweisham@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Students who wish to enroll in the Certificate Program should complete the Nondegree Application available at http://www.graduate.ucf.edu.

Applicants must also have strong Biology backgrounds, including course work in ecology and genetics. This fourteen-hour program, which can be completed in four semesters, emphasizes basic and applied Conservation Biology. The Department of Biology provides basic courses on campus, while scientists at Disney's Animal Kingdom offer applied courses on Disney property. This program provides an excellent opportunity for cross discipline training involving conservation theory in a classroom setting, with valuable field work provided in the laboratory portions of the Biology courses. Practical experience dealing with small animal populations is provided within Disney's unique zoological setting.

Students will be required to take all three courses in Group A, and at least one course each from Group B and Group C, for a total of fourteen hours.

Group A
EVR 5930 Seminar in Conservation Issues (1 hour)
PCB 5045 Conservation Biology (4 hours)
PCB 5XXX Conservation Genetics (4 hours)

Group B
ZOO 5463 Herpetology (4 hours)
ZOO 5475 Ornithology (4 hours)
ZOO 5486 Mammalogy (4 hours)
ZOO 5456 Ichthyology (4 hours)

Group C
ZOO 5XXX Research Methods for Animal Behavior (1 hour)
ZOO 5XXX Applied Conservation Biology (1 hour)
ZOO 5XXX Reproductive Management in Zoological Environments (1 hour)

Chemistry

Chair of the Department: Glenn N. Cunningham
Web address: http://www.cas.ucf.edu/chemistry/
Industrial Chemistry Graduate Program Coordinator: Kevin D. Belfield, Ph.D., CH 222, (407) 823-1028.
E-mail: kbelfiel@mail.ucf.edu
Web address: http://www.cas.ucf.edu/chemistry/
Forensic Science Graduate Track Coordinator: Jack Ballantyne, Ph.D., CH 223, (407) 823-0163.
E-mail: jballant@pegasus.cc.ucf.edu
Web address: http://reach.ucf.edu/~forensic

Faculty
Professors: C. A. Clausen, Ph.D.; G. N. Cunningham, Ph.D.; B. G. Fookes, Ph.D.; F. E. Juge, Ph.D., Associate Vice President; B. C. Madsen, Ph.D.; W. W. McGee, Ph.D.; D. H. Miles, Ph.D.; W. J. Tilstone, Ph.D.; R. Y. Ting, Ph.D.
Associate Professors: J. Ballantyne, Ph.D.; K. D. Belfield, Ph.D.; K. A. Cerqua-Richardson, Ph.D.; S. R. Elsheimer, Ph.D.; M. D. Hampton, Ph.D.
Assistant Professors: C. L. Geiger, Ph.D.; H. Matsui, Ph.D.; J. Paradis, Ph.D.; O. Phanstiel IV, Ph.D.; H. L. Price, Ph.D.

Master of Science in Industrial Chemistry

The Department of Chemistry offers a master's program in Industrial Chemistry and a track in Forensic Science.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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 and 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL), for those who are international or whose native language is not English. The departmental evaluation requires two letters of recommendation for both Industrial Chemistry and Forensic Science applicants. In addition, Forensic Science applicants must provide a resume with employment history. 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.

Industrial Chemistry Program

The Master of Science degree at the University of Central Florida is aimed at preparing students for careers in the chemical industry. The curriculum for the industrial chemistry program 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 for Industrial Chemistry Program

Required Core Courses—12 Semester Hours
CHM 6440 Kinetics and Catalysis (2 hours)
CHM 6710 Applied Analytical Chemistry (2 hours)
CHM 6938 Graduate 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 for Industrial Chemistry—12 Semester Hours
At least 9 of the total 12 semester hours must be taken from the following list (All elective courses must be approved by the student's advisory committee.):

CHM 5225 Advanced Organic Chemistry (3 hours)
CHM 5235 Applied Molecular Spectroscopy (3 hours)
CHM 5305 Applied Biological Chemistry (3 hours)
CHM 5450 Polymer Chemistry (3 hours)
CHM 5451L 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)
CHM / CHS Special topics courses

Thesis (CHM 6971)—6 Semester Hours

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

Forensic Science Track

A track in Forensic Science is provided to practicing professionals and full-time students who desire an advanced program of study in the forensic analysis of biological materials. The Forensic Science Track has a strong biochemistry-DNA focus to serve the needs of supervisory personnel in DNA sections of crime laboratories. The DNA Advisory Board has mandated that such personnel have advanced degrees.

The forensic science core courses are unique and were designed by practicing professionals for presentation as distributed learning courses using the World Wide Web. For more information, visit the Forensic Science Track website at: http://reach.ucf.edu/~forensic.

Degree Requirements for Forensic Science Track

Required Core Courses—12 Semester Hours
These courses are web-based with the exception of CHS 6535L and CHM 6938, which require approximately two weeks of on-campus residency at UCF.

CHS 6513 Quality Assurance and Bioinformation (3 hours)
CHS 6535 Forensic Analysis of Biological Materials (2 hours)
CHS 6535L Forensic Analysis of Biological Materials Lab (3 hours)
CHS 6536 Forensic Analysis of DNA Data (2 hours)
CHM 6938 Graduate Chemistry Seminar (2 hours)

Required Foundation Core Courses—12 Semester Hours*
These courses are offered at UCF. Working professionals taking the program part-time may, after checking with a program adviser, take these courses at a nearby university.

Category 1—Crime - Criminal Justice Courses** (3 hours)
Category 2—Forensic Data Analysis - Statistics/Experimental Design** (3 hours)
Category 3—Biological Chemistry - Biochemistry/Laboratory** (3 hours)
Category 4—Chemistry - Molecular Spectroscopy/Applied Biological Chemistry/Polymer Chemistry** (3 hours)

* Minimum number of hours needed to satisfy degree requirement. Students must take one advanced level (4000/5000) course in each of the four categories. Courses taken will be selected in conjunction with the Advisory Board.

** Students must satisfy prerequisite course requirements before taking foundation core courses. Consultation with an assigned faculty adviser should occur before registering for foundation core courses.

Directed Research (CHS 6918)—6 Semester Hours
A research project will be selected in conjunction with the student's advisory committee.

Minimum Hours Required for M.S.—30 Semester Hours

Nicholson School of Communication

Director of the School: Milan D. Meeske
Graduate Program Coordinator: Burt Pryor, COMM 248, (407) 823-5670 or 823-2681. E-mail: apryor@pegasus.cc.ucf.edu

Faculty
Professors: R. H. Davis, Ph.D.; F. E. Fedler, Ph.D.; M. D. Meeske, Ph.D.; M. T. O'Keefe, Ph.D.; B. Pryor, Ph.D.; R. F. Smith, M.A.; K. P. Taylor, Ph.D.
Associate Professors: J. F. Butler, Ph.D.; W. J. Hall, Ed.D.; J. Maunez-Cuadra, Ph.D.; J. B. O'Hara, Ph.D.; L. A. Tanzi, Ph.D.; E. B. Wycoff, Ph.D.
Assistant Professors: G. M. Bagley, M.A.; R. L. Barfield, Ph.D.; D. E. DeLorme, Ph.D.; F. L. Johnson, M.A.; S. G. Lawrence, Ph.D.; J. Metz, Ph.D.; M. A. Mitrook, M.A.; M. C. Santana, Ph.D

Master of Arts in Communication

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Admission

The Graduate Record Examination is required of all graduate students. Minimum 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. All applicants are required to submit a statement of academic and professional goals. The department requires international students and students whose native language is not English to have a minimum score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

Programs in Communication

The curriculum focuses on theoretical and applied perspectives of communication theory and research, with tracks in interpersonal and mass communication. Graduates derive benefits in a variety of academic and career directions, including entry into doctoral programs, advancement within existing career contexts, and the procurement of new career directions in the public and private sectors.

Degree Requirements

Students must select either the thesis or the comprehensive exam option. The thesis option requires 10 courses (30 hours) and the thesis (4 hours), for a total of 34 credits. The comprehensive exam option requires 11 courses (33 hours) and the comprehensive exams. The decision whether to write a thesis and defend it in an oral examination or to take the comprehensive exams should be made in consultation with the School of Communication graduate program coordinator. Typically, students entering or continuing professional careers following the M.A. would select the comprehensive exam option, while those who plan to enter doctoral programs would select the thesis option.

Core Requirements

Mass Communication Track—12 Semester Hours
MMC 6402 Mass Communication Theory (3 hours)
MMC 6445 Mass Media Research I (3 hours)
MMC 6446 Mass Media Research II (3 hours)
EDF 6401 Statistics for Educational Data (3 hours)

Interpersonal Communication Track—12 Semester Hours
COM 6XXX Interpersonal Communication (3 hours)
COM 6303 Communication Research I (3 hours)
SPC 6219 Modern Communication Theory (3 hours)
EDF 6401 Statistics for Educational Data (3 hours)

Restrictive Electives for Both Tracks
18 hours, Thesis Option; 21 hours, Comprehensive Exam Option

COM 6121 Communication Management (3 hours)
COM 6304 Communication Research II (3 hours)
COM 6468 Communication and Conflict (3 hours)
COM 6106 International Communication (3 hours)
COM 6XXX Studies in Persuasion (3 hours)
MMC 6202 Legal and Ethical Issues for Communication (3 hours)
MMC 6407 Visual Communication Theory (3 hours)
MMC 6567 Seminar in New Media (3 hours)
MMC 6600 Media Effects and Audience Analysis (3 hours)
MMC 6606 Advertising and Society (3 hours)
MMC 6612 Communication and the Government (3 hours)
MMC 6XXX Crisis Public Relations (3 hours)
SPC 6442 Small Group Communication (3 hours)

Special topics, independent studies, 5000-level courses, and courses taken outside the Nicholson School of Communication may be counted as restricted electives, as approved by the graduate program coordinator.

English

Chair of the Department: Dawn Trouard
Graduate Program Coordinator: John Schell, HFA 302D, (407) 823-5254. E-mail: schell@pegasus.cc.ucf.edu

Faculty

Professors: D. R. Jones, Ph.D.; S. E. Omans, Ph.D.; J. F. Schell, Ph.D.; G. J. Schiffhorst, Ph.D.; K. L. Seidel, Ph.D., Dean of the College of Arts and Sciences; D. L. Stap, Ph.D.; D. Trouard, Ph.D.

Associate Professors: B. Barnes, Ph.D.; J. Bartkevicius, Ph.D.; K. L. Bell, Ph.D.; P. Dombrowski, Ph.D.; J. J. Donnelly, Ph.D.; J. Hemschemeyer, M.A.; S. Hubbard, M.F.A.; A. Lillios, Ph.D.; C. Rodrigues Milanes, Ph.D.; P. J. Rushin, M.A.; M. E. Sommer, Ed.D.; M. Flammia, Ph.D.; E. Smith, Ph.D.

Assistant Professors: J. D. Applen, Ph.D.; M. Bowdon, Ph.D.; J. Campbell, Ph.D.; L. Casmier-Paz, Ph.D.; A. Davidson, Ph.D.; J. Enteen, Ph.D.; D. Gillette, Ph.D.; P. Hammons, Ph.D.; M. Kamrath, Ph.D.; K. Kitalong, Ph.D.; J. Leiby, M.F.A.; L. Logan, Ph.D.; M. Marinara, Ph.D.; B. Mauer, Ph.D.; K. Meehan, Ph.D.; D. Morgan, Ph.D.; B. Young, Ph.D.

Master of Arts in English

Application Deadlines

Fall admission	June 15
Spring admission	December 1
Summer admission	May 1

Admission

Minimum requirements for admission are a baccaluareate degree, a grade point average (GPA) of 3.0 for the last 60 semester hours earned as an undergraduate, a score of 1000 or better on the combined verbal and quantitative sections of the Graduate Record Examination (GRE), two letters of recommendation, a writing sample, and approval by the Graduate Committee of the Department of English. Students must prove proficiency in a foreign language at the first-year level prior to completing the degree program. International students must score at least 233 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

Creative writing students must submit (by March 1 for fall term) a portfolio of fiction, poetry, drama, or creative nonfiction that is acceptable to the faculty. A student with a baccalaureate degree in a subject other than English will be required to take graduate survey courses in British and American literature.

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. A student with a baccalaureate degree in a subject other than English will be required to take graduate survey courses in British and American literature.

Technical writing students are expected to have strong writing skills; the faculty may require entering students to take ENC 3241 to improve their writing skills. Students must also have some minimum technical writing exposure, either from their education or work; the faculty may require entering students to take ENC 4293 to prepare them for graduate work in technical writing.

If applicants seek financial support, they must complete their application packages before April 1 for fall term. Otherwise, the recommended deadline dates are June 15 for fall term, December 1 for spring term, and May 1 for summer 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) complete 6 additional hours in 6000-level literature courses.

Required Courses—21 Semester Hours
ENG 5009 Methods of Bibliography and Research (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 at 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. Course Option
The candidate will also complete 6 additional hours in 6000-level literature courses.

Minimum Hours Required for M.A.—33 Semester Hours

English—Creative Writing Track

Each student must complete at least 33 hours, including 6 hours of writing workshops. Near the end of the degree program, each candidate will write a creative thesis.

Required Creative Writing Courses—6 Semester Hours
CRW 5020 Graduate Writers' Workshop (3 hours)
CRW 6025 Graduate Writing Workshop (3 hours)

Restricted Creative Writing Electives—6 Semester Hours
CRW 5020 Graduate Writers' Workshop (3 hours) *May be repeated for credit*
CRW 5056 Form and Theory of Nonfiction (3 hours)
CRW 5932 Teaching Creative Writing (3 hours)
CRW 5937 Special Topics Seminar

CRW 6025 Graduate Writing Workshop (3 hours) *May be repeated for credit*

Required Literature Courses—6 Semester Hours
LIT 5039 Studies in Contemporary Poetry (3 hours)
LIT 5097 Studies in Contemporary Fiction (3 hours)

Literature Electives—6 Semester Hours
LIT 6009 Literary Genre (3 hours)
LIT 6105 World Literature (3 hours)
LIT 6365 Movements in Literature (3 hours)
LIT 6506 Major Authors (3 hours)

Electives—3 Semester 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, that will meet both departmental and university requirements for the thesis. 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 6918 (3 hours), completing a formal thesis or project approved by the faculty.

Required Courses—15 Semester Hours
ENC 5214 Production and Publication Methods (3 hours)
ENC 5337 Modern Rhetorical Theory (3 hours)
ENC 6217 Technical Editing (3 hours)
ENC 6261 Technical Writing: Theory and Practice (3 hours)
ENG 5009 Methods of Bibliography and Research (3 hours)

Restricted Electives—9 Semester Hours
ENC 5219 Graphics in Technical Writing (3 hours)
ENC 5306 Persuasive Writing (3 hours)
ENC 5344 Proposal Writing (3 hours)
ENC 6244 Teaching Technical Writing (3 hours)
ENC 6292 Project Management for Technical Writers (3 hours)
ENC 6296 Computer Documentation (3 hours)

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

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 3 hours of credit.

B. Special Project
The candidate will enroll in ENC 6918, Directed Research, for 3 hours of credit 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

Graduate Certificate in Professional Writing

Graduate Program Coordinator: Dr. John Schell, HFA 302D, (407) 823-5254. E-mail: schell@pegasus.cc.ucf.edu

The Certificate Program in Professional Writing is open to students with a baccalaureate degree or higher from an accredited university. The fifteen-hour program, which can be completed in four semesters, studies the theory and practice of organizational writing.

Required Courses—9 Semester Hours
ENC 5337 Modern Rhetorical Theory (3 hours)
ENC 5237 Writing for the Business Professional (3 hours)
ENC 5XXX Editing Professional Writing (3 hours)

Electives—6 Semester Hours
ENC 5306 Persuasive Writing (3 hours)
ENC 5344 Proposal Writing (3 hours)
ENC 5XXX Current Topics in Professional Writing (3 hours)
ENC 5XXX Developing Professional Writing Projects (3 hours)
ENC 5XXX The Writer's Marketplace (3 hours)
ENC 5XXX Teaching Professional Writing (3 hours)
ENC 5XXX Writing / Consulting: Theory and Practice (3 hours)
ENG 5009 Methods of Bibliography and Research (3 hours)
LIN 5XXX English Grammar and Usage (3 hours)

Graduate Certificate in Gender Studies

See College of Arts & Sciences, Interdisciplinary Studies.

Foreign Languages & Literatures

Chair of the Department: TBA
Graduate Program Coordinator, Spanish: Delmarie Martinez, HFA 523, (407) 823-3431.
E-mail: dmartine@pegasus.cc.ucf.edu
Graduate Program Coordinator, TESOL: Consuelo E. Stebbins, HFA 523, (407) 823-0088.
E-mail: stebbins@pegasus.cc.ucf.edu

Faculty
Professor Emeritus: C. N. Micarelli, Ph.D.
Professors: A. V. Cervone, Ph.D.; J. B. Fernández, Ph.D.
Associate Professor: M. Del-Río, Ph.D.; K. Smith, Ph.D.
Assistant Professors: H. López-Cruz, Ph.D.; D. Martínez, Ph.D.; M. Matus-Mendoza, Ph.D.; C. Stebbins, Ph.D.; A. Villanueva, Ph.D.

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

Application Deadlines

Fall admission	June 1
Spring admission	December 1
Summer admission	March 1

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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL). All applicants must also submit three letters of recommendation.

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 both thesis and non-thesis options. A total of 36 semester hours of course work for the non-thesis option or 30 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 6 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— 9 hours
Total—24 Semester Hours

The remaining elective hours of course work are 6 hours for the thesis option and 12 for the non-thesis option. The students must choose electives from the additional, available courses listed below in conjunction with their faculty adviser. The aim of the selections should be to complement the acquisition of knowledge in the particular area of Hispanic studies chosen.

Course Requirements

Part I—Research Methods—3 Semester Hours
SPN 5937 Research Methods (3 hours)

Part II—Spanish Language Study—6 Semester Hours
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)

Part III—Hispanic Culture and Civilization—6 Semester Hours
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)

Part IV—Hispanic Literature—9 Semester Hours
*SPW 5825 Seminar Series (May be repeated for credit with different topics) (3 hours)
SPW 6405 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 6216 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

Part V—Methodology (Elective Courses)
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 and Latin America and on 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 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 Graduate Committee has developed a reading list made up of the major Peninsular and Latin American works with which the student must be familiar. The comprehensive examination will be based on the reading list and the courses which the student has taken. A one-hour oral examination will follow a written examination. This examination will al-

low the student to expand more readily on particular points of culture, literature, and linguistics, and also to show ability in the use of the spoken language.

Master of Arts in TESOL

The Master of Arts in TESOL (Teaching English to Speakers of Other Languages) 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, research, 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.

Application Deadlines

Fall admission	June 15
Spring admission	November 1
Summer admission	March 15

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 850 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 220 (computer-based test; or equivalent score on the paper-based test) 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 6250 Applied Linguistics in ESOL (3 hours)
TSL 6440 Problems in Evaluation in ESOL (3 hours)
TSL 6540 Issues in Second Language Acquisition (3 hours)

Thesis Option—9 Semester Hours

Electives (6 hours)
TSL 6971 (3 hours)

Non-Thesis Option—15 Semester Hours

Electives (15 hours)

Electives

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 5937 Issues in TEFL (3 hours)
TSL 6940 ESOL Practicum (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)

Graduate Certificate in Teaching English as a Foreign Language

Graduate Program Coordinator: Dr. Consuelo Stebbins, HFA 523, (407) 823-0088. E-mail: stebbins@pegasus.cc.ucf.edu

Considering the fact that English has become the gateway to many international and technical jobs, as well as for entrance into institutions of higher education, the number of people interested in learning English has a second or third language is increasing steadily.

With the rising demand for English instructors comes the increasing need for individuals qualified to teach English as a Foreign Language. The majority of overseas English language schools require their teachers to be certified in Teaching English as a Foreign Language (TEFL).

The TEFL certificate program provides students with specialized knowledge and skills to teach English as a Foreign Language in overseas settings. The program focuses on the fundamentals of EFL teaching principles and methodology, linguistics, materials / curriculum development, and testing.

Required Courses—12 Semester Hours
TSL 5345 Methods of ESOL Teaching (3 hours)
TSL 5XXX Issues in TEFL (3 hours)
TSL 6142 Critical Approaches (3 hours)
TSL 6250 Applied Linguistics in ESOL (3 hours)

Graduate Certificate in Maya Studies

See College of Arts & Sciences, Interdisciplinary Studies.

History

Chair of the Department: Richard C. Crepeau
Graduate Program Coordinator: Shirley A. Leckie, HFA 554, (407) 823-2224 or 823-6467. E-mail: sleckie@pegasus.cc.ucf.edu
Graduate Program E-mail: hisgrad@pegasus.cc.ucf.edu
Web address: http://www.

Faculty
Professors: T. Colbourn, Ph.D.; R. C. Crepeau, Ph.D.; J. B. Fernandez, Ph.D.; E. F. Kallina, Jr., Ph.D.; S. A. Leckie, Ph.D.; B. F. Pauley, Ph.D.
Associate Professors: C. E. Adams, Ph.D.; J. L. Evans, Ph.D.
Assistant Professors: S. P. Adams, Ph.D.; C. Austin, Ph.D.; R. J. Beiler, Ph.D.; M. S. Doran, Ph.D.; C. Friend, Ph.D.; T. D. Greenhaw, Ph.D.; J. S. Perry, Ph.D.; D. Velez, Ph.D.; E. Walker, Ph.D.; H. Zhang, Ph.D.
Visiting Instructors: J. Clark, Ph.D.; F. Cremonese, M.A.; A. Goffin, Ph.D.; E. Macdonald, M.A.; D. Schuster, M.A., L. Walters, Ph.D.

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 Classical history, Early Christianity, African history, American cultural and social history, local history, the South, the American Civil War, the American frontier, women and gender roles, Asian history, Middle-Eastern history, twentieth-century mass movements, Nazism and anti-Semitism in Central Europe, Latin American history, British history, and Russian history, as well as other areas.

Master of Arts in History

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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, a 3.0 GPA in history courses, 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. International students and students whose native language is not English must score at least 233 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 a GPA of 3.0 in their history courses, 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 non-degree-seeking students. To be admitted into the graduate program, however, they must earn a GPA of 3.3 or better in the graduate-level history courses they take 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, they must submit three letters of recommendation from former professors who can address their ability to undertake graduate-level history courses.

Degree Requirements

The Master of Arts in History requires 36 semester hours with no graduate credit given for any grade lower than "B."

Required Courses—12 to 15 Semester Hours
HIS 6159 Historiography (3 hours)
HIS 6XXX History Capstone Course (3 hours)
HIS 6971 Thesis (6-9 hours)

Area of Concentration—18 Semester Hours
(Eastern or Western Hemisphere)

Outside Area of Concentration in History—6 Semester Hours

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

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

Examination Requirements

Each candidate for the Master of Arts in History must pass written examinations in two fields upon conclusion of regular course work and before beginning a thesis. These examinations must be taken and passed as part of the requirements for the capstone course. Each student will also submit a thesis prospectus and preliminary bibliography, which the three members of the student's thesis committee judge acceptable as the preliminary step to beginning the thesis.

Minimum Hours Required for M.A.—36 Semester Hours

Graduate Certificate in Maya Studies

See College of Arts & Sciences, Interdisciplinary Studies.

Liberal Studies

Graduate Program Coordinator: Elliot Vittes, Ph.D.; HFA 207B, (407) 823-2745. E-mail: mls@mail.ucf.edu
Web address: http://www.cas.ucf.edu/mls

Master of Arts in Liberal Studies

The Master of Arts in Liberal Studies Degree Program awards an interdisciplinary degree that incorporates three core courses as a common basis of study. The core courses bring together knowledge from various fields, traditions, and cultures, enhancing and extending the educational experience. The program is intended to develop research skills, substantive knowledge, critical thinking, and advanced skills, through the diverse concentrations of study. Individualized advising, carefully selected classes and program construction, and a commitment to the student are central to this program.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Admission

The Graduate Record Examination (GRE) is required for all graduate students. Minimum requirements for admission consideration are the standard university criteria of a 3.0 grade point average (GPA) for the last 60 attempted semester credit hours 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. International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL). In addition, applicants must submit three letters of recommendation (one from a professor).

Degree Requirements

Degree-seeking students in the Liberal Studies Program may elect to follow either a thesis or a non-thesis course of study. The degree of Master of Arts is conferred when the student has fulfilled the requirements of either the thesis or non-thesis option.

Required Courses—9 Semester Hours
IDS 6308 Ways of Knowing (3 hours)
IDS 6351 Critical Thinking and Writing (3 hours)
IDS 6669 Interdisciplinary Approaches to Research (3 hours)

Concentration—18 Semester Hours
A minimum of 18 semester hours of course work must be completed. Course selection is done in consultation and with approval of the Program Director.

Thesis Option—6 Semester Hours
Successful completion of an approved elective or directed research, and a minimum of 3 semester hours of thesis credit, and a successful completion of a thesis are required.

Non-Thesis Option—6 Semester Hours
Six semester hours of approved 6000-level electives and passing a comprehensive written examination are required.

Minimum Hours Required for M.A.—33 Semester Hours

Concentrations

These concentrations include formally identified courses of study, certificate programs, and individualized courses of study.

American History
American Studies
Art and Society
Business and Government Writing
Communication
English
European, Asian, and African History
The Hispanic World
The Human Condition
International Studies
Political Science
Psychology
Public Policy Analysis
Race, Ethnicity, and Class
Sociology
Spanish

Graduate Certificate Programs

Conservation Biology
Crime Analysis
Domestic Violence
Education
Gender Studies
Gerontology
Health Care Information Systems
Managed Care
Maya Studies
Medical Group Management
Nonprofit Management
Public Administration
Risk and Quality Management

Note: The M.A. in Liberal Studies degree program stipulates that a majority of the 33 required credit hours be earned in traditional liberal arts courses.

Mathematics

Chair of the Department: John R. Cannon
Graduate Program Coordinator: Ahmed Zayed, MAP 212, (407) 823-3989. E-mail: zayed@pegasus.cc.ucf.edu

Faculty

Professors: L. C. Andrews, Ph.D.; L. H. Armstrong, Ph.D.; R. C. Brigham, Ph.D.; J. R. Cannon, Ph.D.; L. Debnath, Ph.D.; P. Hilton, Ph.D., Distinguished Professor; P. Mikusinski, Ph.D.; R. N. Mohapatra, Ph.D.; G. D. Richardson, Ph.D.; B. K. Shivamoggi, Ph.D.; M. D. Taylor, Ph.D.; K. Vajravelu, Ph.D.; A. I. Zayed, Ph.D.

Associate Professors: J. M. Anthony, Ph.D.; R. M. Caron, Ph.D.; S. R. Choudhury, Ph.D.; M. N. Heinzer, Ph.D.; X. Li, Ph.D.; C. P. Rautenstrauch, Ph.D.; R. S. Rodriguez, Ph.D.; D. K. Rollins, Ph.D.

Assistant Professors: C. Hopen, Ph.D.; R. C. Jones, Ph.D.; A. Katesvich, Ph.D.; H. M. Martin, Ph.D.; M. Y. Pensky, Ph.D.; F. L. Salzmann, Ph.D.; A. Tovbis, Ph.D.; Y. Zhao, Ph.D.

Instructor: R. Pyle, M.S.

Visiting Instructors: L. Dunlop, M.S.; M. Langfield, M.S.

Joint Appointees: T. Clarke, Ph.D., Associate Faculty; R. Dutton, Ph.D., Professor of Computer Science; L. Hoffman, Ph.D., Associate Professor of Statistics; A. J. Kassab, Ph.D., Associate Professor of Engineering; D. W. Nicholson, Ph.D., Professor of Engineering; R. L. Phillips, Ph.D., Professor of Engineering

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.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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. The department requires international students and students whose native language is not English to have a minimum score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 non-degree-seeking status, although only nine hours in this status can be transferred into a graduate program.

Admission to the 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

There are two options for the master's degree, thesis and non-thesis. In either option, a student should find an adviser who participates in designing a program of study. A program of study is presented to either the Graduate Curriculum Committee or the graduate program coordinator for approval.

Electives

Electives should be chosen in consultation with the graduate program coordinator or the student's thesis adviser 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 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. If a student takes MAP 4363 (Applied Boundary Value Problems I), then MAP 5435 (Advanced Mathematics for Engineers) cannot be applied toward the graduate program of study.

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. An oral defense of the thesis will be required. It is strongly recommended that the student select a thesis adviser by the completion of 18 semester hours of course work.

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)

Minimum Hours Required for M.S. with Thesis Option—30-31 Semester Hours

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 examination will be supervised by a committee composed of the adviser 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. with Non-Thesis Option—36-37 Semester Hours

Industrial Mathematics Track

A track in Industrial Mathematics is offered to prepare graduate students to pursue careers in industry by providing them with a high quality of professional training in branches of mathematics that are valuable to high-technology industry. Graduates of the program will be able to pursue a wide variety of jobs at the local and national levels.

This track offers a thesis or non-thesis option. In either option, a student will work with an adviser to design a program of study. A program of study is presented to either the Graduate Curriculum Committee or the program coordinator for approval. If a student has an industry sponsor, the student's program of study will be developed in consultation with a representative from his sponsoring company. Students are expected to obtain hands-on experience by working at sponsoring companies during summer semesters.

There are several courses required as pre-requisites to this track. Those courses are as follows: Calculus with Analytic Geometry I, II, and III; Differential Equations; Elementary Linear and Matrix Algebra (or a course equivalent); Numerical Calculus (or a course equivalent); and Statistics.

Required Courses
MAP 5407 Applied Mathematics I (3 hours)
MAP 5XXX Mathematical Modeling (3 hours)
MAP 5XXX Scientific Computing (3 hours)
MAP 5385 Applied Numerical Mathematics (3 hours)
MAP 6111 Mathematical Statistics (3 hours)

Electives
Electives should be chosen in consultation with the graduate program coordinator or the student's adviser. A list of elective courses can be obtained from the graduate 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.

Minimum Hours Required for M.S.—30-36 Semester Hours

Thesis Option
The thesis option requires 27 credit hours of courses, including the required courses and 3 credit hours of thesis. The student must take at least 15 credit hours from the Mathematics Department and at least 6 credit hours from outside the department (with the approval of the advisor or the graduate program coordinator). It is recommended that the theses subjects have potential for industrial applications. An oral defense of the thesis will be required.

Non-Thesis Option
The non-thesis option requires 36 credit hours of courses, including the required courses and a comprehensive examination. The student must take at least 21 credit hours from the Mathematics Department and at least 9 credit hours from outside the department (with the approval of the advisor or the graduate program coordinator). The comprehensive examination will be given in the final semester of the student's program of study, based on the program of study. The examination will be supervised by a committee composed of the advisor and at least two other faculty members from the Department of Mathematics. A pass/fail grade is given on the examination; and it may be repeated twice if necessary.

Doctor of Philosophy in Mathematics

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 program coordinator. If a student takes MAP 4363 (Applied Boundary Value Problems I), then MAP 5435 (Advanced Mathematics for Engineers) cannot be applied toward the graduate program of study.

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 3 hours of an approved computer language are required. The language and computer courses may have been taken at any point in the student's post-secondary career.

Core Courses—18-19 Semester Hours
MAA 5210 Topics in Advanced Calculus (4 hours)
MAA 6404 Complex Analysis (3 hours)
MAA 6306 Real Analysis (3 hours)
MAP 5336 Ordinary Differential Equations and Applications (3 hours)
MAP 5407 Applied Mathematics I (3 hours)
MAS 5145 Advanced Linear Algebra and Matrix Theory (3 hours)

Electives—42 Semester Hours

Dissertation—15 Semester Hours

Minimum Hours Required for Ph.D.—75-76 Semester Hours

Examinations

In accordance with university requirements, a prospective doctoral student has to successfully pass the following examinations:

- Qualifying Examination
- Candidacy Examination
- Dissertation Defense

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

The qualifying examination is a written examination that will be administered twice a year. Students must obtain permission from the Graduate Program Coordinator to take the examination. 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 adviser. Finding a dissertation adviser is the responsibility of the student and should be done as soon as possible. In consultation with the dissertation adviser, the student should form an advisory committee. The dissertation adviser 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 no more than two times.

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

Chair of the Department: Lee E. Eubank
Office: FA 205, (407) 823-2869

Music Education

Prospective students may contact: Mary Palmer, Faculty Adviser, COE 351, (407) 823-3397

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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

Chair of the Department: Brian P. Tonner
Graduate Program Coordinator: Michael Johnson, MAP 310, (407) 823-5199. E-mail: graduate@physics.ucf.edu
Web address: http://www.physics.ucf.edu

Faculty

Professors: S. K. Bose, Ph.D.; J. J. Brennan, Ph.D.; L. Chow, Ph.D.; R. A. Llewellyn, Ph.D.; J. E. Neighbor, Ph.D.; H. P. Saha, Ph.D.; B. P. Tonner, Ph.D.

Associate Professors: J. S. Bolemon, Ph.D.; M. D. Johnson, Ph.D.; W. Luo, Ph.D.; R. E. Peale, Ph.D.; A. Schulte, Ph.D.

Assistant Professor: N. G. Barlow, Ph.D.; L. Chernyak, Ph.D.; R. VanFleet, Ph.D.

Visiting Assistant Professor: M. Dogariu, Ph.D.; J. Evans, Ph.D.

Adjunct Professors: N. Baranova, Ph.D.; I. Kimel, Ph.D.; J. Shivamoggi, Ph.D.

Joint Appointees: M. Bass, Ph.D., Professor of Optics; B. H. T. Chai, Ph.D., Professor of Optics; L. R. Elias, Ph.D., Professor of Optics; M. C. Richardson, Ph.D., Professor of Optics; S. Shivamoggi, Ph.D., Professor of Mathematics; W. T. Silfvast, Ph.D., Professor of Optics; M. J. Soileau, Ph.D., Professor of Optics and Vice President for Research; G. I. Stegeman, Ph.D., Cobb-Hooker Eminent Scholar Chair of Optical and Laser Sciences and Engineering; E. W. Van Stryland, Ph.D., Professor of Optics; B. Zel'dovich, Ph.D., Professor of Optics; P. Delfyett, Ph.D., Associate Professor of Optics; D. J. Hagan, Ph.D., Associate Professor of Optics; A. Kar, Ph.D., Associate Professor of Optics; G. Li, Ph.D., Associate Professor of Optics

The Department of Physics offers a Master of Science degree and a Doctor of Philosophy degree. Research opportunities are available in condensed matter physics, nanostructure devices, surface science, optical physics, complex systems, biophysics, and atomic and molecular physics. The graduate degree program has a track in optical physics.

Application Deadlines

Fall admission	February 15*
Fall admission	July 15

* Students applying for fellowships or assistantships must apply for the fall semester by this date. For those not requiring financial assistance, the application deadline is July 15.

Admission

The Graduate Record Examination (GRE) is required of all applicants, and the Physics Subject Test of the GRE is recommended. 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. International students and students whose native language is not English must score at least 220

(computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 July 15.

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 tracks in general physics or optical physics. In both tracks, there are thesis and non-thesis options for the master's degree. All master's students must take 18 semester hours of core courses, identical to the Ph.D. core courses. The thesis option requires 9 additional semester hours of electives, plus a minimum of 6 semester hours of thesis and a satisfactory defense. 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 is selected:

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

Optical Physics Track
OPS 5XXX Interference and Diffraction
EEL 6560 Laser Engineering
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 tracks in general physics or 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. The remaining 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 is selected:

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

Optical Physics Track
OPS 5XXX Interference and Diffraction
EEL 6560 Laser Engineering
PHY 6447 Quantum Optics

Elective Courses—12 Semester Hours
PHY 5431 Optical Properties of Materials (3 hours)
PHY 6353 Accelerator Physics (3 hours)
PHY 6355 Physics of Free Electrons (3 hours)
PHY 6434 Nonlinear Optics (3 hours)
PHY 6435 Nonlinear 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 7423 Physics of Nanostructures (3 hours)
PHZ 5304 Nuclear and Particle Physics (3 hours)
PHZ 5405 Condensed Matter Physics (3 hours)
PHZ 5505 Plasma Physics (3 hours)
PHZ 6156 Advanced Computational Physics (3 hours)
PHZ 6204 Atomic and Molecular Spectroscopy (3 hours)
PHZ 6234 Atomic Physics (3 hours)
PHZ 6425 Condensed Matter Physics II (3 hours)
PHZ 6426 Condensed Matter Physics I (3 hours)

Courses from the program or track core courses may be used as electives, as may approved graduate courses from other departments. 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 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 the track, 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

Chair of the Department: Robert L. Bledsoe
Graduate Program Coordinator: Dwight Kiel, HFA 415, (407) 823-2608. E-mail: psgrad@pegasus.cc.ucf.edu

Faculty
Professors: R. Bledsoe, Ph.D.; R. Handberg, Ph.D.; P. H. Pollock, Ph.D.; W. Q. Morales, Ph.D.
Associate Professors: T. S. Fine, Ph.D.; D. Kiel, Ph.D.; J. R. Lilie, Ph.D.; S. A. Lilie, Ph.D.; M. E. Vittes, Ph.D.
Assistant Professors: K. Hamann, Ph.D.; A. Jewett, Ph.D.; J. Knuckey, Ph.D.; D. Lanier, Ph.D., J.D.; D. McCoy, Ph.D.; H. Sadri, Ph.D; B. Wilson, Ph.D.

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.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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 graduate 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.

International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 professional expertise in a policy specialty or enhancing their current sphere of knowledge.

After being admitted (either as regular or conditional), students must meet with one of the graduate advisers 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 National Politics (3 hours)
POT 6007 Seminar in Political Theory (3 hours) AND
INR 6007 Seminar in International Politics (3 hours) OR
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—12 Semester Hours

Three special topics courses—9 Semester Hours
POS 6938 American Politics (3 hours)
POT 6XXX Political Theory (3 hours)
INR 6XXX International Relations (3 hours)
CPO 6XXX Comparative Politics (3 hours)
PUP 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:

Core Requirements—15 Semester Hours
PUP 6007 Public Policy Analysis (3 hours)

Two special topics courses—6 Semester Hours
INR 6086 International Public Policy (3 hours)
POS 6324 Women and Public Policy (3 hours)
PUP 6938 Science Policy (3 hours)
PUP 6938 Social Policy (3 hours)
PUP 6938 Foreign and Defense Policy (3 hours)

Elective—3 Semester Hours

Thesis—6 Semester Hours

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

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

After completion of the 24 hours of course work in the chosen track, the student will form a committee of three advisers 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 graduate 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 graduate 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.

Graduate Certificate in Maya Studies

See College of Arts & Sciences, Interdisciplinary Studies.

Psychology

Chair of the Department: John M. McGuire
Associate Chair: D. W. Abbott
Clinical Psychology Ph.D. Graduate Program Coordinator: Mark D. Rapport, PH 409J, (407) 823-2974.
E-mail: mrapport@mail.ucf.edu
Clinical Psychology M.A. Graduate Program Coordinator: Bernard J. Jensen, PH 302C, (407) 823-2157.
E-mail: bjensen@pegasus.cc.ucf.edu
Industrial/Organizational Psychology Ph.D. Graduate Program Coordinator: Eugene Stone-Romero, PH 309F, (407) 823-2544.
E-mail: estone@pegasus.cc.ucf.edu
Industrial/Organizational Psychology M.S. Graduate Program Coordinator: William Wooten, PH 409G, (407) 823-3478.
E-mail: wwooten@pegasus.cc.ucf.edu
Human Factors Psychology Graduate Program Coordinator: Eduardo Salas, PH 302H, (407) 823-2552.
E-mail: esalas@pegasus.cc.ucf.edu
Graduate Program Coordinator, Daytona Beach Area Campus: Bernard J. Jensen (see above)
Web address: http://pegasus.cc.ucf.edu/~psych/

Faculty

Professors: D. W. Abbott, Ph.D.; W. A. Burroughs, Ph.D.; R. D. Gilson, Ph.D.; J. C. Hitt, Ph.D., President; J. M. Koonce, Ph.D., Director of CAHFA; J. M. McGuire, Ph.D.; B. B. Morgan, Jr., Associate Dean, Ph.D.; M. D. Rapport, Ph.D.; E. J. Rinalducci, Ph.D.; J. B. Rollins, Ph.D., Director, Daytona Beach Campus; E. Salas, Ph.D.; E. Stone-Romero, Ph.D.; M. H. Thomas, Ph.D.; R. D. Tucker, Ph.D.; A. Y. Wang, Ph.D.

Associate Professors: B. I. Blau, Ph.D.; C. A. Bowers, Ph.D.; J. C. Brophy, Ph.D.; R. D. Fisher, Ph.D.; C. L. Hanson, Ph.D.; B. J. Jensen, Ph.D.; M. Mouloua, Ph.D.; E. C. Shirkey, Ph.D.; J. A. Smither, Ph.D.; P. M. Tell, Ph.D.; W. Wooten, Ph.D.

Assistant Professors: M. E. Dunn, Ph.D.; S. T. Dunn, Ph.D.; C. Frederick, Ph.D.; B. A. Fritzsche, Ph.D.; C. Negy, Ph.D.; K. Renk, Ph.D.; V. Sims, Ph.D.; J. L. Weaver, Ph.D.

Instructors: M. H. Newlin, Ph.D.; M. J. Lavooy, Ph.D.; K. Mottarella, Psy.D.

Visiting Instructor: M. Chin, Ph.D.

The Psychology Department offers graduate programs in three areas: Industrial and Organizational, Human Factors, and Clinical Psychology. Terminal master's degree programs are offered in Clinical psychology and Industrial and Organizational psychology. The Ph.D. degree in psychology has three tracks: Clinical, Human Factors, and Industrial and Organizational psychology.

Master of Arts in Clinical Psychology

The Master of Arts degree program in clinical psychology is offered at the Daytona Beach area campus and is concerned with the application of psychological principles to individuals. The two primary areas of emphasis include assessment or evaluation skills, and intervention or psychotherapy skills. 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. M.A. graduates have been involved in mental health service delivery through individual, marital, family, and group psychotherapy, as well as crisis intervention and other specialized therapeutic procedures. The program curriculum is consistent with the educational criteria for licensure as a Mental Health Counselor in the state of Florida.

Admission into the clinical master's program is 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 [if held]) considered in admission's decisions. Many applicants who meet minimum university requirements may not be admitted to the program.

Application Deadlines

Fall admission	February 15*
Fall admission	July 15
Spring admission	September 15

* Students applying for fellowships or assistantships must apply for the fall semester by this date. For those not requiring financial assistance, the application deadline is July 15.

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Applicants must satisfy 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. International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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.

All requested material should be submitted by February 15 (for Fall admission) and September 15 (for Spring admission) for full consideration. Materials submitted after these deadlines will be considered, but the likelihood of admission may be reduced. A department admissions committee reviews each student's credentials and may invite 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 in another content area and completion of 15 semester hours of undergraduate psychology courses prior to matriculation. It is preferred that the courses be selected from the following areas: abnormal psychology; developmental (lifespan preferred) or child psychology; personality theories; learning; physiological psychology; and courses in research methods and statistics.

Degree Requirements

The M.A. degree program in Clinical Psychology is a two-year, six-semester program for full-time students, with summer course work required in both years. Part-time students should plan their curriculum carefully in consultation with their advisor. The program consists of a minimum of 60 semester hours of work as follows:

Academic Course Work—48 Semester Hours
CLP 5166 Advanced Abnormal Psychology (3 hours)
CLP 6181 Psychological Theories of Substance Abuse Treatment (3 hours)
CLP 6191 Cross-Cultural Psychotherapy (3 hours)
CLP 6321 Psychotherapy in Community Settings (3 hours)
CLP 6441 Introduction to Individual Psychological Assessment (3 hours)
CLP 6456 Individual Counseling - Theory and Practice (3 hours)
CLP 6457 Group Psychotherapy (3 hours)
CLP 6458 Behavior Therapy (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)
CLP 6943 Clinical Practicum (2 hours)
DEP 5057 Developmental Psychology (3 hours)
PSY 6216 Advanced Research Methodology I (4 hours)
*MHS 6020 Mental Health Care Systems (3 hours)
*SDS 6330 Career Development (3 hours)

* These courses are offered in the Mental Health Counseling Track in the Counselor Education Program of the College of Education

Internship—12 Semester Hours
(See description below.)
CYP 6948 Psychology Internship (12 hours)

Minimum Hours Required for M.A.—60 Semester Hours

Clinical Internship Requirement
The purpose of the internship requirement is to provide the M.A. candidate in Clinical Psychology with a comprehensive, practical-based experience under direct supervision. A public agency or nonprofit institution with nondiscriminatory practices is the prototype. The intern is assigned to an acceptable agency for a total of 1000 hours during three consecutive academic semesters (20 hours per week for 16 weeks during Fall and Spring Terms, and 30 hours per week for 12 weeks during the Summer Term). An additional commitment of two hours per week is required for the interns to meet as a group with a departmental faculty member for review, feedback, and discussions. A major portion of intern training is in the area of psychotherapy / counseling. The intern also engages in differential diagnosis and participates in a wide variety of psychological assessment procedures.

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. Satisfactory completion of the following courses is generally required prior to internship: CLP 5166, CLP 6191, CLP 6321, CLP 6441, CLP 6456, CLP 6458, CLP 6943., and MHS 6020. Internship placements are assigned by the program coordinator.

Interns are provided with a system for maintaining accurate accounts of their activity during the week. In addition, an Internship Evaluation form is completed by both the intern and supervisor(s) each semester.

Examination
The culminating academic experience in this non-thesis program is completed in the following way:

Case Presentation. During their final semester of internship training, students must present a case that incorporates an integration of assessment data and its interpretation, theoretical conceptualization, treatment planning, course of therapy, and available outcome data. Students are to write a paper on the case (ensuring ethical consideration of confidentiality issues) and present it to their faculty internship supervisor for final approval.

Master of Science in Industrial/ Organizational 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.

Application Deadline

Fall admission only February 1

Admission

The Graduate Record Examination (GRE) is required of all graduate students. Applicants must satisfy 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. International students and students whose native language is not

English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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.

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, for a minimum of 18 upper division hours in psychology.

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 37 semester hours of work. The required courses, which are scheduled primarily in the evenings to accommodate working students, are as follows:

Academic Course Work—29 Semester Hours
INP 6058 Job and Task Analysis (3 hours)
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 6094 Current Topics in Industrial/Organizational Psychology (3 hours)
INP 6939 Applied Problems in Industrial/Organizational Psychology (3 hours)
PSY 6216 Advanced Research Methodology I (4 hours)
PSY 6308 Psychological Testing I (4 hours)
PSY 6318 Applied Testing and Selection (3 hours)

Practicum—3 Semester Hours
INP 6946 Industrial Psychology Practicum I (3 hours)

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

Minimum Hours Required for M.S.—40 Semester Hours

Comprehensive Examination
All students in the Industrial/Organizational (l/O) program must pass a comprehensive 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.

Practicum placements are initiated with a behavioral agreement between the graduate student and the organization. Behavioral agreements and performance objectives are jointly decided by the supervising faculty member, the organization representative, and the student. 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 Psychology

The Psychology Department offers a Ph.D. in Psychology with three tracks. One track, Clinical Psychology, emphasizes the ability of psychologists to design, conduct, and apply clinical research in administration, treatment, teaching, and supervision. The second track, Human Factors, seeks to develop the capacity to design, conduct, and apply human factors research in a variety of professional settings. The third track, Industrial and Organizational Psychology, develops competency through research and training for the application of psychological principles to organizations. Each of these tracks is patterned on the scientist-practitioner model of the American Psychological Association (APA).

Clinical Psychology Track

A Clinical Psychology doctoral track is offered to those with a baccalaureate or master's degree in psychology or an allied area. Admission to the Ph.D. program is based on an overall assessment of an applicant's potential for successfully completing the program and making a contribution to the discipline of Clinical Psychology.

The advent of managed care has resulted in significant changes in the mental health care delivery system and the

role of clinical psychologists in that system. It is believed that Ph.D. psychologists will be utilized less for the delivery of psychotherapy and more for performing professional duties such as administration, development of programmatic treatments, program evaluation, supervision, and research. Thus, there is a need to change the training for the professional roles of the clinical psychologist of the twenty-first century. The Ph.D. track in Clinical Psychology is designed to respond to these changing roles by inclusion of unique, niche course work and practica in the areas of administration, supervision, treatment development, and teaching. In combination with these unique emphases, traditional training in research methods, experimental psychology, psychotherapy and psychological assessment prepares students for their careers in the changing mental health care field.

Consistent with the mission of a major metropolitan university, the Clinical Psychology Ph.D. track at UCF takes advantage of, and builds upon, a multitude of community partnerships. One specific example of programmatic efforts to develop partnerships with community agencies is our "clinic without walls." This concept utilizes existing public and private health service delivery resources in the Central Florida area as training sites.

Accreditation by the American Psychological Association is not immediately available to new programs. Therefore, this program, which admitted its first students in the fall of 1998, is not yet accredited. However, the Department of Psychology will move toward full accreditation of the Clinical Ph.D. as soon as possible.

Application Deadline

Fall admission only January 15

Admission

The Graduate Record Examination (GRE) is required of all applicants. The Psychology Subject Test portion of the GRE is not required. To be considered for acceptance, all applicants must meet the university minimum admission criteria of a quantitative-verbal score of 1000 on the GRE or a GPA of at least 3.0 for the last 60 semester hours of attempted work for the baccalaureate degree. Due to the competitive nature of the application process (we receive many applications but can only accept a small number of students each year), strong candidates are likely to meet criteria that are more stringent than those listed here. Strong candidates are also likely to have both research and fieldwork experience. Students whose native language is not English will be required to submit scores of at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL). Previous graduate work will be considered on a case-by-case basis (including acceptance of a previously completed master's thesis). A maximum of 30 semester hours may be transferred for credit.

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 application form
- Evidence of successful completion of undergraduate course work in statistics and general areas of psychology noted below
- Official scores on the Graduate Record Examination (GRE; 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 course work
- A resume and written statement outlining the applicant'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 January 15. Acceptance decisions are made only in the spring semester for admission in the following fall of each year. A department admissions committee reviews the applicants' 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 or graduate courses in statistics/research methods, and six additional upper division courses in core content areas of psychology (i.e., personality theories, abnormal psychology, learning, physiological psychology, developmental psychology, social psychology).

Degree Requirements

The Clinical Ph.D. track is designed to be completed in five years and includes a one-year predoctoral internship to be completed off-campus. It is designed to be a full-time program, with some summer enrollment expected. There are a total of 106 semester hours of courses, practica, and research requirements in the track as detailed below. Courses are presented in sequential fashion and students entering with a baccalaureate degree will earn the M.S. degree enroute to the Ph.D. A master's thesis and a dissertation, which represents a significant contribution to the discipline, are both required. Successful completion of the Candidacy Examination is required prior to initiation of dissertation research.

Psychology Foundation Courses—12 Semester Hours
DEP 5057 Developmental Psychology (3 hours)
SOP 5059 Advanced Social Psychology (3 hours)
PSY 5604 History and Systems of Psychology (3 hours)
PSB 5005 Physiological Psychology (3 hours)

Research Courses—35 Semester Hours
PSY 6216 Advanced Research Methodology I (4 hours)
PSY 6217 Advanced Research Methodology II (4 hours)
PSY 6946 Research Practicum (taken 3 times @ 2 hours; 6 hours)
PSY 6971 Thesis (6 hours)
PSY 7980 Doctoral Dissertation (15 hours)

Clinical Courses—35 Semester Hours
CLP 6191 Cross-Cultural Psychotherapy (3 hours)
CLP 6441C Individual Psychological Assessment I (3 hours)
CLP 6445C Individual Psychological Assessment II (3 hours)
CLP 6456C Individual Counseling - Theory and Practice (3 hours)

PSB 6446 Advanced Abnormal and Clinical Psychopharmacology (3 hours)
CLP 6932 Ethical and Professional Issues in Mental Health Practices (3 hours)
CLP 6943 Clinical Practicum (taken 4 times @ 2 hours; 8 hours)
CLP 6949 Predoctoral Internship (6 hours)
Clinical Treatment Elective (3 hours)

Unique/Niche Courses—12 Semester Hours
EXP 6938 Teaching Seminar (3 hours)
CLP 6491C Treatment Development (3 hours)
CLP 6944 Clinical Supervision Seminar / Practicum (3 hours)
PSY 6933 Administration Seminar / Practicum (3 hours)

Electives—12-13 Semester Hours
Research Methods Elective (3 or 4 hours)
Non-Psychology Electives (2 @ 3 hours; 6 hours)
Other Elective—Psychology or Non-Psychology (3 hours)

Minimum Hours Required for the Ph.D.—106 Semester Hours

Examinations
The Candidacy Examination will consist of a major area paper. The purpose of the paper is to enable students to develop and demonstrate a broad understanding of course material and an ability to apply the concepts and knowledge acquired in the first two years of the Ph.D program. The major area paper will be a comprehensive review of the literature in the student's primary area of interest. The paper will include a broad overview and integration of applicable theoretical concepts and relevant empirical literature. Students will be required to orally present and defend the paper to a committee of at least three members, one of whom will be the student's major adviser. The Candidacy Examination will normally be completed in the fall semester of the third year. There will be no Qualifying Examination in the Clinical Ph.D. track.

The American Psychological Association requires that graduate training tracks undertake student evaluation procedures at least annually, and provide written feedback to students. Because clinical psychology involves the provision of mental health services to the public, special care must be taken to ensure that students possess the requisite interpersonal sensitivity and skill. As a result, evaluation procedures within this track will focus not only on academic performance but also on: clinical proficiency; ethical and professional conduct; response to supervision; interpersonal behavior; and intrapersonal functioning. The Clinical Psychology Committee reserves the right to drop from the track students who continue to exhibit serious difficulties in these behavioral domains and do not respond to feedback and efforts at remediation.

Human Factors Psychology Track

A Ph.D. professional's degree track in Human Factors Psychology is offered to those with a baccalaureate or master's degree in psychology or an allied area. The track 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 track has been accredited by the Human Factors and Ergonomics Society. A variety of research, consulting, and internship arrangements are included in the track.

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 adviser's authorization. A dissertation representing a significant research contribution to the field is required.

Application Deadline

Fall admission only	January 25

Admission

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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

In addition, students will not normally be admitted to the track 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.

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 the deadline. 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. Students are advised that the degree is designed to be obtained in 3-4 years of full-time study from the baccalaureate level and in 2-3 years from the master's level.

Degree Requirements

The Doctor of Philosophy degree in Psychology, Human Factors requires a total of 90 semester hours of graduate study.

Fall (Year 1)—13 Semester Hours
EXP 5256 Human Factors I (3 hours)
PSY 6216 Advanced Research Methodology I (4 hours)
EXP 6506 Human Cognition and Learning (3 hours)
SOP 5059 Advanced Social Psychology (3 hours)

Spring (Year 1)—13 Semester Hours
EXP 5257 Human Factors II (3 hours)
PSY 6217 Advanced Research Methodology II (4 hours)
EXP 5208 Sensation and Perception (3 hours)
PSB 5005 Physiological Psychology (3 hours)

Fall (Year 2)—12 Semester Hours
EXP 6255 Human Performance (3 hours)
INP 6317 Organizational Psychology and Motivation (3 hours)
EIN 5248C Ergonomics (3 hours)
Elective* (3 hours)

Spring (Year 2)—9 Semester Hours
Elective* (3 hours)
Elective* (3 hours)
Elective* (3 hours)

Fall (Year 3)—10 Semester Hours
EIN 6258 Human Computer Interaction (3 hours)
EXP 5258 Human Factors III (3 hours)
PSY 6218 Advanced Research Methodology III (4 hours)

Spring (Year 3)—9 Semester Hours
EXP 6938 Teaching Seminar (3 hours)
EXP 6116 Visual Performance (3 hours) OR
EXP 6126 Psychoacoustics (3 hours)
Elective*(3 hours)

Fall (Year 4)—7 Semester Hours
PSY 7980 Doctoral Dissertation (6 hours)
EXP 6XXX Professional Issues Seminar (1 hours)

Spring (Year 4)—9 Semester Hours
PSY 7980 Doctoral Dissertation (9 hours)

Internship—6 Semester Hours
Sometime during the last two years students will be required to complete an internship.
EXP 6946 Human Factors Internship (6 hours)

Ph.D. Awarded in Human Factors Psychology

* **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.

Electives
DEP 5007 Developmental Psychology (3 hours)
EIN 6938 Human-Computer Interaction: Usability Evaluation (3 hours)
EIN 6938 Ergonomics in Virtual Environments (3 hours)
EXP 6XXX Human Factors in an Aging Society (3 hours)
EXP 6XXX Aviation Psychology (3 hours)
EXP 6541 Advanced Human-Computer Interaction (3 hours)
EXP 6XXX Team Training (3 hours)
PPE 5055 Personality Theories (3 hours)
PSY 5937 HCI Design: Team Approach (3 hours)

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.

Program Requirements
Other program requirements, including comprehensive exam, internship, courses, and research productivity, are detailed in the *Human Factors Graduate Student Handbook*. The handbook is provided to each student upon admission.

Industrial and Organizational Psychology Track

The Industrial and Organizational (I&O) doctoral program is restricted to individuals who have a baccalaureate or master's degree in Psychology or in a closely related field. Admission to the program is based upon an overall assessment of the applicant's potential for completing it and for making significant contributions to the science and / or practice of I&O Psychology.

The doctoral program in I&O Psychology provides students with training that is consistent with the scientist-practitioner model. As a result of this training the student will be prepared to pursue a rewarding career in either academia (university-based teaching and research) or industry (e.g., consulting). A key assumption of the program is that irrespective of an individual's career path (academic, applied, etc.), he or she must be a highly competent scientist who can contribute to both the science and practice of I&O Psychology.

I&O students receive training in the 21 areas of competence that are detailed in the Guidelines for Education and Training at the Doctoral Level in Industrial / Organizational Psychology, an official publication of the Society for Industrial and Organizational Psychology, Division 14 of the Ameri-

can Psychological Association. These areas include (a) work motivation theory, (b) organization theory, (c) organizational development theory, (d) attitude theory, (e) career development theory, (f) decision making, (g) human performance / human factors, (h) assessment of individual differences, (i) small group theory, (j) performance appraisal and feedback, (k) criterion theory and development, (l) personnel selection, placement, and classification, (m) research methods, (n) statistical methods, (o) job and task analysis, (p) individual assessment, and (q) training theory, program design and evaluation. Primary training in these areas is accomplished through doctoral level study. Note, however, that training in selected areas may also take place through such activities as independent study, supervised field experiences, basic and applied research experiences, on-job-training, and observational learning (modeling). It may also take place through either course work or other educational experiences associated with Master's level training in I&O Psychology or a closely-related field.

Students in the program are required to complete a common set of courses in I&O Psychology and related areas (e.g., social, personality, and cognitive), but may develop a high level of expertise in a specific area through other courses, independent study, and research activities. In addition, students are expected to be actively involved in research with I&O area faculty throughout their period of study.

Some students who are admitted to the I&O doctoral program may have taken graduate-level courses at UCF or another university. The plan of study for such students may be modified to take such course work into account.

A dissertation is required of all students in the program. The research associated with the dissertation must be empirical in nature. Moreover, it must make an important contribution to the field of I&O Psychology.

Although it is not required, a student may earn a Master's degree in I&O Psychology en route to the Ph.D. Students who choose to earn the master's degree must have their plan of study approve by the I&O Program Committee.

Detailed information about the program and its requirements can be found in the I*ndustrial and Organizational Psychology Student Handbook.* It is provided to all students in the I&O Program.

Faculty Resources

The Department of Psychology has five I&O Psychologists and over 25 psychologists in other areas (e.g., Experimental, Human Factors, Clinical, Cognitive, and Social). In addition, there are several I&O psychologists in the Department of Management who can contribute to the education and training of I&O doctoral students. Moreover, there are other faculty in the Department of Management who have expertise in such areas as human resource management, organizational theory, and business policy and strategy.

Application Deadline

Fall admission only February 1

Admission

Students who seek admission to the I&O Program are expected to meet the following general requirements:

- An undergraduate degree in psychology or a closely-related field. Applicants must have taken a set of undergraduate or graduate-level courses in Psychology that are sufficiently broad to prepare them for graduate-level study in I&O Psychology. The set must include courses in research methods and statistics.
- Admission to the Ph.D. program is competitive. Successful applicants are expected to have an outstanding academic record.
- The Graduate Record Examination must be completed by all applicants. In general, applicants should have a combined verbal and quantitative score of at least 1100. Exceptions to this general rule may be made for applicants who have an outstanding undergraduate grade point average.
- Students who have other than English as their native language must complete the Test of English As a Foreign Language (TOEFL) and achieve a sufficiently high score to demonstrate that they have the ability to complete all I&O Program requirements at a normal pace and without remediation. The minimum university requirement is at least 220 (computer-based test; or equivalent score on the paper-based test).

In order to be considered for admission, applicants must provide the following items to the Graduate Studies Office (P.O. Box 160112, Orlando, FL 32816-0112) in a single packet:

- A completed UCF Graduate Degree Program Application Form.
- Evidence of completion (or near completion) of an undergraduate degree in Psychology or a closely-related field. The program of study must be such as to prepare the applicant for doctoral-level study in the I&O program.
- An official Graduate Record Examination score report showing scores on the verbal and quantitative portions of the examination. The examination must have been taken within five years of the date of the submission of the Application Form.
- Official transcripts showing grades for all undergraduate and graduate level courses taken by the applicant at all colleges and / or universities.
- A resume detailing the applicant's prior activities in the areas of education, work, and research.
- A written statement detailing how doctoral training in I&O Psychology will contribute to the applicant's career-related goals and aspirations.
- Three letters of recommendation must be submitted. At least two of these must be from college or university professors who are familiar with the applicant. One may be from a non-academic professional who knows the applicant and has a valid basis for commenting on his or her capacity to complete a doctoral program in I&O Psychology.

All of the above materials must be submitted by February 1 of the year for which the applicant seeks admission to the program. Admissions decisions are generally made by the second week in March and applicants are notified of their

status shortly thereafter. Note that admissions to the program are restricted to the fall semester of each academic year.

Degree Requirements

The doctoral program in I&O Psychology requires approximately four years of full-time study. The first three years are devoted to course work and the final year to the doctoral dissertation.

After completing all required course work students are required to pass a comprehensive Qualifying Examination. This examination may be taken a maximum two times. Failure to pass the examination on both occasions will result in the student being dropped from the program.

Having passed the Qualifying Examination, the student may begin dissertation-related research. After the completion of this research the student must then pass an oral examination, i.e., a dissertation defense.

Program-related Courses
The I&O Program requires a minimum of 72 semester hours of graduate study. The nature of this study is determined by the I&O Area Program Committee. For the typical student, the 72 hours of study will be distributed as follows:

Required I&O Area Courses—39 Semester Hours
INP 7XXX Industrial Psychology I (3 hours)
INP 7XXX Industrial Psychology II (3 hours)
INP 7XXX Organizational Psychology I (3 hours)
INP 7XXX Organizational Psychology II (3 hours)
INP 7XXX Current Topics in Industrial and Organizational Psychology (2 hours per semester for a total of 16 hours)
PSY 6216 Advanced Research Methods I (4 hours)
PSY 6217 Advanced Research Methods II (4 hours)
PSY 6218 Advanced Research Methods III (3 hours)

Required Psychology Field Courses—3 Semester Hours
SOP 5059 Advanced Social Psychology (3 hours)

Elective Psychology Field Courses—9 Semester Hours
Three courses from the following set. These courses in this set are determined by the student in conjunction with his or her advisor. Note, however, that all courses in the set must be approved by the I&O Program Committee. The courses may include:

EXP 5208 Sensation and Perception (3 hours)
EXP 5445 Psychology of Learning and Motivation (3 hours)
EXP 6255 Human Performance (3 hours)
EXP 6506 Human Cognition and Learning (3 hours)
PPE 5055 Personality Theories (3 hours)
PSB 5005 Physiological Psychology (3 hours)
PSY 5604 History and Systems of Psychology (3 hours)

Other Elective Courses—6 Semester Hours
Two courses from the following set. These courses in this set are determined by the student in conjunction with his or her advisor. Note, however, that all courses in the set must be approved by the I&O Program Committee. The courses may include:

EXP 5256 Human Factors I (3 hours)
EXP 5257 Human Factors II (3 hours)
INP 6058 Introduction to Job and Task Analysis (3 hours)
INP 6215 Assessment Centers and Leadership (3 hours)
INP 6605 Training and Performance Appraisal (3 hours)
MAN 6285 Change Management (3 hours)
MAN 6305 Human Resources Management (3 hours)
MAN 6311 Advanced Topics in Human Resources Management (3 hours)
MAN 6395 Management Development and Coaching (3 hours)
PSY 6318 Applied Testing and Selection (3 hours)
PSY 6908 Directed Independent Studies (3-6 hours)

Dissertation—15 Semester Hours
PSY 7980 Doctoral Dissertation (15 hours)

Sociology & Anthropology

Chair of the Department: Jay Corzine
Graduate Program Coordinator: David Gay, HFA 417D, (407) 823-2227. E-mail: dgay@pegasus.cc.ucf.edu
Web address: http://pegasus.cc.ucf.edu/~appsocio/

Faculty
Professor: J. Corzine, Ph.D.
Associate Professors: I. J. Cook, Ph.D.; D. R. Dees, Ph.D.; D. A. Gay, Ph.D.; L. Huff-Corzine, Ph.D.; J. P. Lynxwiler , Ph.D.; J. Morris, Ph.D.; E. Mustaine, Ph.D.
Assistant Professors: K. Baird-Olson, Ph.D.; T. Dietz, Ph.D.; J. Jasinski, Ph.D.; S. Keeton, Ph.D.; K. Tyler, Ph.D.; M. Winton, Ph.D.

The Department of Sociology and Anthropology offers a master's degree program in applied sociology and a graduate certificate program in domestic violence.

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. In addition to concentrated studies in deviant behavior and community policy, the program offers a specialty area in Domestic Violence. A primary focus of the program is the variety of deviant behaviors in society with special attention given to the Central Florida area and the different community policies that have evolved to confront these problems. 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, domestic violence, 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.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Admission

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) or an undergraduate GPA of 3.0 or better in the last 60 attempted semester hours of their undergraduate degree and a minimum GRE score of 900 (quantitative and verbal sections only). 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. International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 non-degree-seeking student and acceptance into this degree-granting program. Consult the graduate program coordinator whenever questions arise.

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—12 Semester Hours
SYA 5625 ProSeminar (3 hours)
SYA 6126 Social Theory (3 hours)
SYA 6305 Social Research (3 hours)
SYA 6455 Research Analysis (3 hours)

Electives—12 Semester Hours
Students will select a minimum of 12 semester hours of (non-restricted) electives in consultation with their faculty adviser. No more than 6 hours may be taken in UCF graduate programs outside the department.

Thesis Option—6 Semester Hours
A minimum of 6 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—6 Semester Hours
All of the department's graduate courses are research-oriented seminars; however, in lieu of the thesis, students must take 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 project in the selected area of specialization.

Minimum Hours Required for M.A.—30 Semester Hours

Graduate Certificate in Domestic Violence

Graduate Program Coordinators: David A. Gay, HFA 417F, (407) 823-2227. E-mail: dgay@pegasus.cc.ucf.edu
Jay Corzine, HFA 402, (407) 823-2227.
E-mail: hcorzine@pegasus.cc.udf.edu

The Department of Sociology and Anthropology offers a Sociology Graduate Certificate in Domestic Violence for persons working or planning to work in the domestic violence field or whose occupational responsibilities include contacts with the victims or perpetrators of domestic violence. The program addresses domestic violence definitions, causes, consequences, and prevention strategies from a sociological perspective. By analyzing the social forces contributing to domestic violence, professionals working in social service, mental health, medical, law enforcement, legal and educational fields will increase their knowledge and skills in developing, implementing, and evaluating intervention strategies.

Certificate Requirements

All required courses are offered regularly in the evenings or on Saturdays on the main campus of UCF as well as on the Daytona Beach and South Orlando area campuses. By taking one course per term, students may complete the graduate certificate program in any four consecutive terms. Non-degree-seeking students as well as those in other graduate programs can enroll in any of the Domestic Violence Certificate courses without needing to be admitted into the M.A. Program in Applied Sociology. All courses, however, will be accepted as part of the master's degree.

Required Courses—6 Semester Hours
SYP 5562 Seminar in Domestic Violence: Theory, Research and Social Policy (3 hours)
SYP 6563 Reactions to Domestic Violence (3 hours)

Electives—6 Semester Hours
Choose two of the following courses:
SYA 6657 Program Design and Evaluation (3 hours)
SYP 6565 Seminar in Elder Abuse and Neglect (3 hours)
SYP 6561 Child Abuse in Society (3 hours)

Minimum Hours Required for Certificate—12 Semester Hours

Graduate Certificate in Maya Studies

See College of Arts & Sciences, Interdisciplinary Studies.

Statistics

Chair of the Department: Ibrahim Ahmad
Graduate Program Coordinator: James R. Schott, CCII 205, (407) 823-2797. E-mail: jschott@pegasus.cc.ucf.edu
Web address: http://www.cas.ucf.edu/statistics/

Faculty

Professors: I. A. Ahmad, Ph.D.; M. E. Johnson, Ph.D.; G. D. Richardson, Ph.D.; J. R. Schott, Ph.D.
Associate Professors: L. L. Hoffman, Ph.D.; D. Nickerson, Ph.D.; M. Wang, Ph.D.
Assistant Professor: L. Gou, Ph.D.; M. Jamshidian, Ph.D.; W. Liu, Ph.D.; M. Pensky, Ph.D.; Y. Zhang, Ph.D.
Instructors: C. E. Cutchins, M.S.; S. C. Schott, M.S.
Associate in Statistical Computing: J. W. Pepe, M.S.

Master of Science in Statistical Computing

The master's 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. Additional information about the program, the department, and its faculty can be found on our webpage at http://www.cas.ucf.edu/statistics/.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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. International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 non-degree-seeking status and later admitted to regular status once all deficiencies have been eliminated, although only nine hours taken as a non-degree-seeking student will count toward a graduate degree.

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 5205 Experimental Design (3 hours)
STA 6106 Statistical Computing I (3 hours)
STA 6236 Regression Analysis (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)

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 adviser. 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

College of Business Administration

The College of Business Administration offers four master's programs and one doctoral program. All graduate programs in business administration are accredited by the American Assembly of Collegiate Schools of Business (AACSB). The four professional programs leading to the master's degree are: Master of Business Administration, Master of Science in Accounting, Master of Science in Taxation, and Master of Arts in Applied Economics. 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 in Brevard County. Classes in Daytona are taught at the UCF Building on the campus of Daytona Beach Community College. Also offered is a Doctor of Philosophy (Ph.D.) in Business Administration.

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 enters 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 of Graduate Programs
R. C. Ford, Associate Dean of Undergraduate Programs
E. T. Ellis, Associate Dean
B. Quaintance, Brevard Campus Coordinator, (407) 632-0098
J. H. Potts, Daytona Campus Coordinator, (904) 255-7423, ext. 4071

Faculty

School of Accounting

Director of the School: A. J. Judd, Ph.D.
Professors: H. Anderson, Ph.D.; C. D. Bailey, Ph.D.; D. D. Bandy, Ph.D., C. G. Avery Professor; R. Roberts, Ph.D., Burnett Eminent Scholar Professor; T. G. Evans, Ph.D.; J. H. Potts, Ph.D.; J. H. Salter III, Ph.D., Ernst & Young Professor
Associate Professors: P. Dwyer, Ph.D.; P. M. Goldwater, Ph.D.; W. L. Johnson, Ph.D.; A. J. Judd, Ph.D.; C. F. Kelliher, Ph.D.; T. E. Phillips, Ph.D.; P. B. Roush, Ph.D.; L. J. Savage, Ph.D.; J. K. Welch, Ph.D.
Assistant Professors: D. Bobek, Ph.D.; L. Mahoney, Ph.D.

Economics

Interim Chair of the Department: D. A. Hosni, Ph.D.
Professors: R. A. Hofler, Ph.D.; W. W. McHone, Ph.D.; F. A. Raffa, Ph.D.; B. Rungeling, Ph.D.
Associate Professors: B. M. Braun, Ph.D.; A. E. Day, Ph.D.; W. E. Gibbs, Ph.D.; D. A. Hosni, Ph.D.; J. Lee, Ph.D.; T. L. Martin, Ph.D.; R. L. Pennington, Ph.D.; M. Soskin, Ph.D.; K. R. White, Ph.D.; J. A. Xander, Ph.D.
Assistant Professors: R. Agarwal, Ph.D.; C. Co, Ph.D.; J. A. Elston, Ph.D.; C. Gallett, Ph.D.; J. List, Ph.D.; B. Sen, Ph.D.; K. M. Tomlin, Ph.D.

Finance

Chair of the Department: J. M. Cheney, Ph.D.
Professors: D. F. Scott, Jr., Ph.D., Chair in American Private Enterprise; S. D. Smith, Ph.D., SunTrust Banking Chair
Associate Professors: R. Ajayi, Ph.D.; S. M. Atkinson, D.B.A.; S. F. Borde, Ph.D.; J. M. Cheney, D.B.A.; R. Lamb, Ph.D., Visiting Associate Professor; S. Michelson, Ph.D.; N. K. Modani, Ph.D.; H. Park, Ph.D.; R. Ramanlal, Ph.D.; W. C. Weaver, Ph.D.; A. M. Whyte, Ph.D.; D. Winters, Ph.D.
Assistant Professors: A. K. Byrd, Ph.D.; Y. Choi, Ph.D.; J. H. Gilkeson, Ph.D.; G. E. Porter, Ph.D.

Management

Chair of the Department: P. Sweeney, Ph.D.
Professors: M. Ambrose, Ph.D.; L. W. Fernald, Jr., D.B.A.; R. C. Ford, Ph.D. and Associate Dean; J. S. Harrison, Ph.D.; R. C. Huseman, Ph.D.; H. R. Jones, Ph.D.; T. L. Keon, Ph.D., Dean of the College of Business Administration; W. Leigh, Jr., Ph.D.; M. Schminke, Ph.D.; D. L. Stone, Ph.D.; P. Sweeney, Ph.D.
Associate Professors: W. A. Bogumil, Jr., Ph.D.; W. G. Callarman, D.B.A.; C. M. Ford, Ph.D.; S. Goodman, Ph.D.; M. A. Gowan, Ph.D.; F. F. Jones, Ph.D.; M. Uhl-Bien, Ph.D.
Assistant Professors: B. Barringer, Ph.D.; D. O. Neubaum, Ph.D.

Management Information Systems
Chair of the Department: P. H. Cheney, Ph.D.
Professors: P. H. Cheney, Ph.D.; W. Leigh, Ph.D.
Associate Professor: S. Goodman, Ph.D.
Assistant Professors: T. Hess, Ph.D.; R. Johnson, Ph.D.; T. Roberts, Ph.D.
Instructors: S. Halfhill, Ph.D.; L. Kern; T. McNair; E. Odisho

Marketing
Chair of the Department: R. E. Michaels
Professors: D. L. Davis, D.B.A.; P. L. Gillett, Ph.D.; R. E. Michaels, Ph.D.; G. W. Paul, Ph.D.; R. S. Rubin, Ph.D.
Associate Professors: J. Allen, Ph.D.; D. A. Fuller, Ph.D.
Assistant Professors: M. Arnold, Ph.D.; S. Das, Ph.D.; R. Echambadi, Ph.D.; J. I. Ganesh, Ph.D.; M. Luckett, Ph.D.; R. Pimentel, Ph.D.; K. L. Reynolds, Ph.D.; J. C. White, Ph.D.
Instructor: B. Quaintance, M.B.A.

Programs

Doctor of Philosophy in Business Administration
Accounting, Finance, Management, and Marketing Tracks

Master of Arts in Applied Economics

Master of Business Administration
Executive M.B.A.
Executive M.B.A. in Health Services Administration

Master of Science in Accounting

Master of Science in Management
Human Resources/Change Management Track
Management Information Systems Track

Master of Science in Taxation

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., M.S.M., and M.A.A.E. only, essays and three recommendations—must be received in the Office of Graduate Studies by admission deadline. 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 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 (minimum score of 500). 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 233 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL). The TSE may be required if deemed necessary by faculty recommendation.

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, M.S. in Management, 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. Under special circumstances, and with the permission of the Associate Dean for Graduate Studies in the College of Business Administration, six (6) hours in one semester may be taken as a non-degree-seeking student (only courses from the M.B.A. professional core are allowed). The student must have a 3.25 GPA from an AACSB accredited school, and must take the GMAT during that semester.

An applicant will not be considered for admission to any graduate program 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.

Non-degree-seeking, post-baccalaureate students may take up to nine hours of foundation business core courses with special permission of the Associate Dean for Graduate Programs.

Application Deadlines for Master's Programs

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

NOTE: Students applying for fellowships should apply for admission at least one month before the application deadline. Contact the Fellowships Office in Graduate Studies (AD 230) for more information (gradfaid@mail.ucf.edu or 407/823-6497).

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

Graduate Program Coordinator: R. C. Ford, BA 240, (407) UCF-2385
Brevard Campus Graduate Program Coordinator: B. Quaintance, (407) 632-0098
Daytona Campus Graduate Program Coordinator: J. H. Potts, (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 in Brevard County. 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 professional core of the Master of Business Administration program must be completed in four consecutive years. If a course falls outside the four-year rule, the student will be required to retake the course.

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—28 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 2233 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 emphasis in one of the following academic areas: accounting, economics, finance, management, marketing; or specialized areas of information systems, entrepreneurship, or international business.

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.

Electives—9 Semester Hours
Electives may be taken in accounting, economics, finance, marketing, management, or information systems management. One elective course may be taken outside the College of Business Administration with permission of the graduate 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 courses listed below:

FIN 6475 Business Valuation (3 hours)
GEB 6115 Entrepreneurship (3 hours)
MAN 6299 Creative and Innovative Management (3 hours)
MAR 5941 Small Business Consulting (3 hours)

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 (one of the Professional Core courses).

FIN 6314 Management of Financial Institutions (3 hours)
FIN 6326 Commercial Bank Management (3 hours)
FIN 6425 Asset Management and Financial Decisions (3 hours)
FIN 6475 Business Valuation (3 hours)
FIN 6506 Analysis of Investment Opportunities (3 hours)
FIN 6507 Seminar in Investments (3 hours)
FIN 6627 International Financial Management (3 hours)

Human Resources Management
An M.B.A. specialization in human resources management requires MAN 6305 Human Resources Management (3 hours), MAN 6311 Advanced Topics in Human Resources Management (3 hours), and three hours of restricted graduate electives chosen from those listed below:

MAN 6285 Change Management (3 hours)
MAN 6385 Strategic Human Resource Management (3 hours)
MAN 6395 Management Development and Coaching (3 hours)
MAN 6448 Conflict Resolution and Negotiation (3 hours)

International Business
An M.B.A. specialization in international business requires six hours of restricted graduate electives in addition to GEB 6365 International Business Environment (3 hours). Students may take their six hours from the following courses.

ACG 6255 International and Multinational Accounting (3 hours)
ECO 6705 Seminar in International Economics (3 hours)
FIN 6627 International Financial Management (3 hours)
INR 6007 Seminar in International Politics (3 hours)

Management Information Systems
An M.B.A. specialization in management information systems requires a minimum of nine hours selected from the courses listed below. Other approved ISM 6000-level courses may be substituted with the approval of the Department Chair.

ISM 6121 Advanced Systems Analysis and Design (3 hours)
ISM 6155 Advanced Database Administration (3 hours)
ISM 6305 Information Resource Management (3 hours)
ISM 6345 Seminar in Management Information Systems (3 hours)
ISM 6347 Expert Systems for Business Applications (3 hours)
ISM 6XXX Management of Telecommunications (3 hours)

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 Marketing Policy (3 hours). Students may take their nine hours of elective courses in marketing from the following courses.

MAR 6077 Contemporary Marketing Problems (3 hours)
MAR 6406 Sales Management and Control (3 hours)
MAR 6456 Advanced Industrial Marketing Management (3 hours)
MAR 6616 Marketing Research Methods (3 hours)
MAR 6845 Services Marketing (3 hours)

Minimum Hours Required for M.B.A.—33-63 Semester Hours

Executive MBA Program

Interim Director: Sylvia Caceres, BA 237, (407) UCF-2448. E-mail: sylvia.caceres@bus.ucf.edu

The Executive MBA Program offered by the University of Central Florida is designed to prepare executives and managers for the challenges they will face as they continue their career progression to positions of top leadership. The skills they develop and refine during this program will help them to achieve their full career potential and become an increasingly valuable organizational member.

The EMBA program is comprised of eleven courses and two off-campus residencies. The courses, delivered in the executive classroom at the Executive Development Center in the College of Business Administration, are designed to expose participants to new methods, concepts, and tools that will enhance their business and leadership skills. Innovative teaching methodologies such as team-based projects, interdisciplinary case studies, simulations, debating-the-issues activities, and self-assessment exercises are used to enhance the learning experience.

Each of the off-campus residencies is designed for very specific purposes. The first residency, at the beginning of the program, prepares participants for the academic and intellectual challenges of the EMBA faculty. The mid-program residency provides participants a rejuvenating change of pace and includes special sessions and guest speakers from around the country.

Residency I—Kick-Off Retreat

Session I
Economic Analysis of the Firm (ECO 6115)
Statistical Methods for Business Decisions (ECO 6416)

Session II
Managerial Accounting Analysis (ACG 6425)
Information Resources Management (ISM 6305)

Session III
Financial Analysis and Management (FIN 6406)
Marketing Policy (MAR 6816)

Residency II—Mid-Program Retreat

Session IV
Organizational Behavior and Development (MAN 6245)
International Business Environment (GEB 6365)

Session V
Creative and Innovative Management (MAN 6299)
Business Policy and Responsibility (MAN 6721)
Contemporary Strategic Issues (GEB 6918)

NOTE: The EMBA curriculum is constantly being revised and improved to reflect the demands and expectations of the business community, and courses and subjects may be different for future classes.

Executive MBA in Health Services Administration

Graduate Program Coordinator: Myron Fottler, Ph.D., TR 534, (407) 823-5531. E-mail: fottler@mail.ucf.edu

In this rapidly changing and highly competitive environment, current and relevant knowledge will become one of the few sustainable competitive advantages for heath care managers. Those who wish to succeed in this dynamic environment will need to master new tools and techniques and gain new competencies. This program is specifically designed for proven health care professionals who seek to achieve their career potential. In today's competitive environment, corporate leaders and senior executives increasingly understand that those who shape the future of their organizations are those who accept the challenge of continuing their education.

Applicants must meet the following requirements:

- Have a minimum of five years of increasingly responsible and relevant health care industry experience
- Possess a minimum of a bachelor's degree from a SACS accredited college or university
- Submit a Graduate Management Admissions Test (GMAT) score minimum of 500 from a test taken within the past five years and a grade point average of 3.0
- Participate in a personal interview with the faculty
- Submit a completed application with an essay detailing the student's goals as a result of this program

The EMBA in Health Services Administration is comprised of eleven courses and two off-campus residencies. Each of the off-campus residencies is designed for very specific purposes. The first residency, at the beginning of the program, prepares participants for the academic and intellectual challenges of the EMBA-HSA faculty. The mid-program residency provides participants a rejuvenating change of pace and includes special sessions and guest speakers.

The program requires 17 consecutive months to complete. This time is divided into five academic sessions of six weekends each and two off-campus four-day residencies. The schedule is carefully structured to avoid any holiday conflicts.

Residency I—Kick-Off Retreat

Session I
Economic Analysis of the Firm (ECO 6115)
Statistical Methods for Business Decisions (ECO 6416)

Session II
Managerial Accounting Analysis (ACG 6425)
Information Resources Management (ISM 6305)

Session III
Financial Analysis and Management (FIN 6406)
Marketing Policy (MAR 6816)

Residency II—Mid-Program Retreat

Session IV
Organizational Behavior and Development (MAN 6245)
Health Care Management I (HSA 6107)

Session V
Strategic Planning (MAN 6721)
Issues and Trends in the Health Care Industry (HSC 6636)
Health Care Finance (PHC 6160)

NOTE: The EMBA in Health Services Administration is constantly being revised and improved to reflect the demands and expectations of the health care community. The courses and subjects may be different for future classes.

The next EMBA-HSA program begins January 2001, with graduation occurring 17 months later in May of the following year.

Master of Science in Management

The Master of Science in Management (MSM) degree is offered by the College of Business Administration. The MSM provides an alternative to the MBA degree for students who desire intensive specialized study and the development of a high level of professional proficiency in a functional area of business. These areas currently include human resources / change management and management information systems.

Students completing the MSM track in human resources / change management will be prepared to work in organizations in such areas as human resources strategic planning, organizational effectiveness, staffing, compensation, and employee relations.

Students completing the MSM track in management information systems will be prepared to work in organizations in such areas as management information systems, telecommunications, and electronic commerce.

Human Resources/Change Management Track

Graduate Program Coordinator: Paul Sweeney, Ph.D., BA 335A, (407) UCF-2925. E-mail: paul.sweeney@bus.ucf.edu

The Human Resources / Change Management Track of the Master of Science in Management program offers an alternative to students who want to pursue graduate study in business, but who also desire a focus on management. The program is designed to appeal to those currently in management positions who want to develop additional expertise, as well as those who seek to move into the management track as a vehicle for career advancement.

The program is based on the belief that successful change involves aligning a firm's people and process with an ever-changing environment. As a result, the goals of our program are to provide you with the knowledge required to successfully anticipate, plan, and carry out changes. One main component of the program will be a focus on developing practices and methods that align human resources activities with organizational strategies. The second component will help you develop skills in recognizing the need for change, the factors that improve a firm's ability to absorb change, along with effective and appropriate responses to those changes.

Students with a wide variety of backgrounds, including those with degrees in economics, education, hospitality, nursing, psychology, and business, are encouraged to apply to this program. Students without an undergraduate degree in

business must take a series of background courses in management, accounting, finance, and marketing. Those who have these background courses may begin immediately in the core courses and elective courses listed below.

Required Courses—18 Semester Hours
MAN 6285 Change Management (3)
MAN 6305 Human Resource Management (3)
MAN 6311 Advanced Human Resources (3)
MAN 6325 Applied Research Tools (3)
MAN 6395 Management Development and Coaching (3)
MAN 6915 Applied Field Research Project (3)

Elective Courses—12 Semester Hours
MAN 6116 Managing a Diverse Workforce (3)
MAN 6286 Advanced Change Management (3)
MAN 6323 Human Resource Information Systems (3)
MAN 6385 Strategic Human Resource Management (3)
MAN 6448 Conflict Resolution and Negotiation (3)
MBA Core Class
Other 6000-level Approved Electives (e.g., Industrial and Organizational Psychology)

Management Information Systems Track

Graduate Program Coordinator: Paul Cheney, Ph.D., BA 308, (407) UCF-3106. E-mail: paul.cheney@bus.ucf.edu

The Management Information Systems Track of the Master of Science in Management program prepares students in the technical and managerial topics essential for a successful career in the information technology (IT) field. This field is characterized by rapid advances in technology (hardware, software, telecommunications), intense international competition, faster product life cycles, and complex and specialized markets. In such turbulent environments, the information requirements of organizations are becoming increasingly more challenging. Individuals are needed who can design and management large and complex information systems and who can communicate effectively with customers and management. Our goal is to develop IT specialists who are attuned to the latest principles, methods, and techniques of both technology and management. Forward-looking companies must invest wisely in IT and the human expertise necessary to make them competitive and successful in the future. The MSM / MIS program at the University of Central Florida is designed to meet the challenge of producing individuals who are capable of leading such companies successfully into the future.

Prerequisites
Required prerequisites in the technology and business areas may be taken concurrently with core and elective courses. Courses taken to fulfill prerequisite requirements do not count toward the 30 semester hours of degree requirements in the MSM / MIS program.

- **Technology Fundamentals—**Two semesters of a high-level programming language (e.g., Visual Basic, Pascal, Java, COBOL, C, C++, ADA) or substantial programming experience.
- **Business Fundamentals—**Students must have a basic background in business fundamentals. These prerequisites can be satisfied with previous undergraduate or graduate courses from an accredited institution. Evidence of educational background must be shown in the following areas: accounting, economics, finance, marketing, and statistics.

Degree Requirements
The MSM / MIS program is composed of three parts: the Business Core, the Management Information Systems Core, and approved electives. These courses prepare the student to assume both managerial and technical leadership roles in their careers. Students with extensive experience in one or more of the course areas may waive the appropriate courses and substitute another elective with the approval of the program coordinator.

Business Core—12 Semester Hours
The Business Core consists of two courses from the Department of Management and two 6000-level electives from a discipline in the College of Business Administration. These courses allow students to foster their managerial capabilities for careers in the Information Technology field. All students must take (with approval of the MSM / MIS program coordinator) MAN 6245 Organizational Behavior, MAN 6305 Human Resource Management, and two additional 6000-level courses. Examples of such courses include:

ACG 6405 Accounting Information Systems II (3 hours)
ACG 6425 Managerial Accounting Analysis (3 hours)
ECO 6115 Economic Analysis of the Firm (3 hours)
FIN 6406 Financial Analysis and Management (3 hours)
MAN 6285 Change Management (3 hours)
MAN 6385 Strategic Human Resource Management (3 hours)
MAR 6616 Marketing Research Methods (3 hours)

This is a partial list of courses that could be used to fulfill this degree requirement. Courses at the 5000-level or courses outside the College of Business Administration may be taken with the approval of the MSM / MIS program coordinator.

Management Information Systems Core—12 Semester Hours
The following four courses provide a solid understanding of state-of-the-art research and practice in the area of management information systems.

ISM 6121 Advanced Systems Analysis and Design (3 hours)
ISM 6155 Advanced Database Administration (3 hours)
ISM 6305 Information Resource Management (3 hours)
ISM 6XXX Management of Telecommunications (3 hours)

Electives—6 Semester Hours
Elective courses may include:

ISM 6XXX Electronic Commerce (3 hours)
ISM 6345 Seminar in Management Information Systems (3 hours)
ISM 6547 Expert Systems for Business Applications (3 hours)
ISM 6946 MIS Practicum (3 hours)

Master of Science in Accounting

Graduate Program Coordinator: L. J. Savage, BA 433, (407) UCF-5661 or UCF-2871. E-mail: linda.savage@bus.ucf.edu

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. The program also prepares students to qualify for the CPA examination. (This program satisfies the requirements of the State Board of Accounting.)

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 adviser, may select an area of specialization in Management, Public, Tax, General, or Not-for-Profit Accounting. Following is a list of required courses and restricted electives.

Degree Requirements

Required Courses—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—15 Semester Hours
Two graduate courses from within the School of Accounting.
Three graduate courses from other disciplines in the College of Business Administration.

Foundation Core—49 Semester Hours
The courses included in the foundation core are listed below. A recent UCF accounting undergraduate degree satisfies the foundation core requirement. Other recent related business administration course work may partially or fully satisfy this requirement. Any deficiencies must be satisfied before advanced course work can be taken.

ACG 3101 Intermediate Financial Accounting I (3 hours)
ACG 3111 Intermediate Financial Accounting II (3 hours)
ACG 3361 Cost Accounting I (3 hours)
ACG 4203 Advanced Accounting (3 hours)
ACG 4401 Accounting Information 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 2100C Computer Fundamentals for Business (3 hours)
ECO 5005* Economic Concepts (3 hours)
ECO 5415* Statistics for Business and Economics (3 hours)
FIN 5405* Financial Concepts (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.

Students who have not completed ACG 3501 Financial Accounting for Governmental and Nonprofit Organizations, or equivalent, must complete ACG 6519 Seminar in Governmental and Nonbusiness Accounting and Auditing prior to graduation.

Students 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

Graduate Program Coordinator: Dale Bandy, BA 435, (407) UCF-2964 or UCF-2871. E-mail: dbandy@bus.ucf.edu

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. 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 adviser. 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 adviser 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—49 Semester Hours
The courses included in the foundation core are listed under the Master of Science in Accounting degree requirements. A recent UCF accounting undergraduate degree satisfies the foundation core requirement. Other recent related business

administration course work may partially or fully satisfy this requirement. Any deficiencies must be satisfied before advanced course work can be taken.

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

Graduate Program Coordinator: K. Tomlin, BA 352, (407) UCF-2601. E-mail: kasaundra.tomlin@bus.ucf.edu

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

Degree Requirements

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

Prerequisites—12 Semester Hours
The following prerequisites (or equivalents) should be completed before enrolling in 6000-level graduate courses:

ECO 3401 Quantitative Business Tools I (3 hours)
ECO 5005 Economic Concepts (3 hours)
ECO 5415 Statistics for Business and Economics (3 hours)
MAC 1105 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.

End of Program—6 Semester Hours
All candidates for the M.A. in Applied Economics degree must complete an end-of-program option. This requirement can be met by any of the following three equivalent options: 1) Thesis, 2) Graduate internship, 3) Non-thesis option. All candidates must satisfactorily complete a comprehensive, end-of-program, final examination.

Thesis Option
Six credit hours of thesis may be used to complete the M.A. in Applied Economics degree. The student must register for a total of six semester hours of ECO 6971. The candidate may fulfill this requirement by completing a formal thesis on a topic selected in consultation with the candidate's advisory committee and meeting both departmental and university requirements. The final examination consists of an oral examination over the thesis.

Graduate Internship
Six credit hours of graduate internship may be used to complete the M.A. in Applied Economics degree. The student must register for a total of six semesters hours of ECO 6946. The candidate may fulfill this requirement by completing an internship consisting of work in a business or governmental agency and an end-of-project, thesis-quality report. The final examination consists of an oral examination over the end-of-project report.

Non-Thesis Option
Candidates choosing the course work only option will be required to pass a written or oral examination covering economic theory and six hours of elective course work to complete the M.A. in Applied Economics. The final examination covers the nine-hour economics core theory (ECO 6115, ECO 6206, and ECO 6416) and the six-hour field or area from the career-oriented electives. Students are strongly recommended to take ECO 6115 and ECO 6206 in their first or second term. Students will have to demonstrate knowledge from ECO 6115 and ECO 6206 on the written final examination. Written exams under the non-thesis option may not be waived.

Minimum Hours Required for M.A.A.E.—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 (3 hours)
ECO 6266 Business Cycles and Forecasting (3 hours)
ECP 6705 Managerial Economics (3 hours)
FIN 6406 Financial Analysis and Management (3 hours)
FIN 6425 Asset Management and Financial Decisions (3 hours)
FIN 6506 Analysis of Investment Opportunities (3 hours)
FIN 6627 International Financial Management (3 hours)

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 (3 hours)
ECO 6505 Public Finance and Fiscal Policy (3 hours)
ECP 6205 Labor Economics (3 hours)
ECP 6405 Industrial Organization and Performance (3 hours)
ECP 6605 Economics of Urban and Regional Problems (3 hours)
ECP 6705 Managerial Economics (3 hours)
REE 6306 Corporate Real Estate Investment Decision-Making (3 hours)
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 (3 hours)
ECO 6424 Econometrics (3 hours)
ECP 6705 Managerial Economics (3 hours)
MAN 6546 Quantitative Models for Business Decisions (3 hours)
MAR 6616 Marketing Research Methods (3 hours)

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 (3 hours)
ECS 6015 Economic Development (3 hours)
FIN 6627 International Financial Management (3 hours)
INR 6007 Seminar in International Politics (3 hours)

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 (3 hours)
ECS 6015 Economic Development (3 hours)
EIN 5117 Management Information Systems I (3 hours)
EIN 6258 Human Computer Interaction (3 hours)
EVT 6267 Vocational Program Planning, Development, and Evaluation (2-4 hours)
ISM 6121 Systems Analysis and Development (3 hours)
MAN 6245 Organizational Behavior and Development (3 hours)
MAN 6305 Personnel Resources Administration (3 hours)
PAD 6417 Human Resource Management (3 hours)

Doctor of Philosophy in Business Administration

Contact the Office of Student Support, BA 240, (407) UCF-2184

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.

Application Deadline

Fall admission only	May 15*

* Students applying for financial assistance should apply by February 1.

Admissions

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 a score of 233 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) 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. Admissions will generally be made only for fall semester, every other year; however, exceptions may be made in some cases.

All required application documents including application, official transcripts, and GMAT test scores must be received in the Office of Graduate Studies (AD 144) by the university's deadline, May 15. Consideration for financial assistance will begin for applications received by February 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 will consist of the following:

Area and Range of Semester Hours Required
Preparation and Courses:
- MBA degree or equivalent[1] —30 hours
- Major—12-21 hours
- Minor / Support Area—6-9 hours
- Research Tools[2] —12-15 hours
- Teaching[3]—0-3 hours

Candidacy Examination[4]
Dissertation[5]—24 hours
Total Semester Hours Required— 84-96 hours

1. Each track may specify different requirements for this category. Consult the doctoral graduate program coordinator for a specific major.
2. All doctoral students are required to take two applied statistics courses. Other research tool courses will be specified by the track.
3. Each track will require some education related to teaching. It may take the form of classes, noncredit seminars, mentoring, or a teaching requirement. Consult the doctoral graduate program coordinator for a specific major.
4. 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 exam, and fulfilling the residency requirement.
5. The student must successfully defend a written dissertation proposal in an oral examination conducted by the student's advisory / dissertation committee. The final defense of the successful dissertation will require a final oral examination that concentrates on, but is not limited to, the student's dissertation defense.

The general expectations for each major follow. Each program is tailored to the needs of the individual student and may require work that is not included in the following descriptions.

Accounting Track

Foundation Body of Knowledge—30 Semester Hours
For Accounting, this requirement may be satisfied in any of these ways: (a) M.S.A., (b) M.S.T., (c) master's degree from an accredited program plus CPA, or (d) a Florida 150-hour CPA that includes certain accounting courses deemed essential by the Accounting Ph.D. graduate program coordinator or the student's advisory committee.

Accounting Major Concentration— 16 Semester Hours
ACG 7157 Seminar in Financial Accounting Research (3 hours)
ACG 7887 Accounting Research Forum (4 hours) (Workshop, 1 hour credit per semester)
ACG 7915 Directed Research in Accounting (3 hours)
Two other seminars from the following:
ACG 7399 Seminar in Behavioral Accounting Research (3 hours)
ACG 7699 Seminar in Auditing Research (3 hours)
TAX 7066 Seminar in Doctoral Tax Research (3 hours)

Minor/Support Area— 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:

Computer Science	Marketing
Economics	Mathematics
Engineering	Political Science
Finance	Psychology
Management	Sociology
	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 (3 hours)
GEB 7910 Research Methods in Business (3 hours)
QMB 7565 Applied Statistical Business Decision Models (3 hours)

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

Computer Science	Mathematics
Economics	Psychology
Engineering	Sociology
Management Science	Statistics

Candidacy Examination
The student must successfully complete a comprehensive Candidacy Examination. This examination has written and oral parts, and covers the candidate's program of study. Students are admitted to candidacy after satisfying all general degree requirements, passing the comprehensive examination, fulfilling the residency requirement, and successfully defending a written dissertation proposal in an oral examination conducted by the student's advisory / dissertation committee.

Dissertation— 24 Semester Hours

Minimum Hours Required for Ph.D.— 85 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.

Finance Track

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, and (c) graduate courses in financial management, investments, financial institutions, and international finance.

Finance Major Concentration—12 Semester Hours
FIN 7807 Corporate Finance Theory (3 hours)
FIN 7813 Seminar in Financial Markets and Institutions (3 hours)
FIN 7816 Investment Theory (3 hours)
FIN 7930 Seminar in Finance (3 hours)

Minor/Support Area—6 Semester Hours
ECO 7116 Microeconomic Theory (3 hours)
ECO 7205 Macroeconomic Theory (3 hours)

Research Tools—12 Semester Hours
ECO 7433 Econometrics (3 hours)
ECO 7424 Applied Models I (3 hours)
ECO 7425 Applied Models II (3 hours)
ECO 7428 Time Series (3 hours)

Teaching Requirement—0-3 Semester Hours
The requirements for the teaching component of the doctoral degree will be developed with the doctoral graduate program coordinator based on the student's experience.

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—24 Semester Hours

Minimum Hours Required for Ph.D.—84 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.

Management Track

Foundation Body of Knowledge—30 Semester Hours
In Management, the foundation body of knowledge includes the Common Body of Knowledge in an MBA degree or its equivalent from an AACSB-accredited school.

Management Major Concentration—21 Semester Hours
Students must select a major concentration from Management with a 21 hour minimum.

MAN 7275 Organizational Behavior (3 hours)
MAN 7207 Organization Theory (3 hours)
MAN 7776 Business-level Strategic Management (3 hours)
OR
MAN 7777 Corporate-level Strategic Management (3 hours)
MAN 7900 Directed Readings in Management (to be determined by the student's doctoral study advisory committee) (3 hours; taken two times for a total of 6 hours)

In addition, two courses from the following are required:

ISM 7029 Doctoral Seminar in MIS (3 hours)
MAN 7776 Business-level Strategic Management (if not taken to satisfy one of the requirements listed above) (3 hours)
MAN 7777 Corporate-level Strategic Management (if not taken to satisfy one of the requirements listed above) (3 hours)
MAN 7939 Special Topics Seminar: Human Resources Management (3 hours)
Other management electives as they are developed for the program

Minor/Support Area—6 Semester Hours
Students may select a minimum of six hours, typically within 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 or other disciplines with the advice and consent of the respective departments and advisory committee:

Accounting	Marketing
Communication	Psychology
Economics	Sociology
Finance	Statistics

Research Tools—12 Semester Hours
The research tools requirement is intended to ensure a thorough exposure to research methods. All candidates are expected to demonstrate knowledge of statistical methods as well as usage of statistical packages, including design, analysis, and interpretation of results.

ECO 7424 Applied Models I (3 hours)
ECO 7425 Applied Models II (3 hours)
An additional 6 hours of research tools courses must be approved by the student's advisory committee. Examples of courses that will satisfy this requirement include GEB 7910, STA 5205, PSY 6216, PSY 6217, PSY 6308, and ECO 6424.

Teaching Requirement
Students are required to teach a minimum of 3 semester hours of class instruction under the direct supervision of a faculty member. As appropriate, students will also be required to attend teaching development workshops and seminars.

Candidacy Examination
The student must successfully complete a comprehensive Candidacy Examination. This examination has written and oral segments covering the candidate's program of study. Students are also subject to examination within the minor concentration. Students are admitted to candidacy after satisfying all general degree requirements, passing comprehen-

sive examination requirements, and fulfilling the residency requirement.

Dissertation—24 Semester Hours

Minimum Hours Required for Ph.D.—93 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.

Marketing Track

Foundation Body of Knowledge—30 Semester Hours
In Marketing, the foundation body of knowledge includes the Common Body of Knowledge of the master's in Business Administration or its equivalent from an AACSB-accredited school.

Marketing Major Concentration—12 Semester Hours
MAR 7575 Seminar in Consumer Behavior (3 hours)
MAR 7638 Seminar in Marketing Theory, Scaling, and Measurement (3 hours)
MAR 7666 Seminar in Marketing Models (3 hours)
MAR 7807 Seminar in Marketing Strategy (3 hours)

Minor/Support Area—6 Semester Hours
Advanced Research Concentration:
MAR 7919 Doctoral Research

The Marketing doctoral curriculum requires advanced work in an area of concentration. This work will be done after the student is admitted to candidacy. The minimum number of hours required is six. The purpose of this advanced work is to allow students to focus on an area of interest, which optimally will be the focal area and / or the catalyst for the dissertation research. Students may repeat the course for credit and may take multiple 3-hour courses simultaneously within a semester. Prior to taking MAR 7919 students are required to have completed the four marketing doctoral major concentration courses and the marketing comprehensive examination. Likely topical areas are:

Advanced Marketing Strategy
Advanced Consumer Behavior
International Marketing
Business to Business Marketing
Behavioral Models in Sales Force Management

Research Tools—15 Semester Hours
ECO 6424 Econometrics (3 hours)
ECO 7424 Applied Models I (3 hours)
ECO 7425 Applied Models II (3 hours)

Teaching Requirement—3 Semester Hours
The requirements for the teaching component of the doctoral degree will be developed with the doctoral graduate program coordinator based on the student's experience.

Candidacy Examination
The student must successfully complete a comprehensive Candidacy Examination. This examination has written and oral segments, covering the candidate's program of study. Students are also subject to examination within the minor concentration. Students are admitted to candidacy after satisfying all general degree requirements, passing comprehensive exam requirements, fulfilling the residency requirement, and successfully defending a written dissertation proposal in an oral examination conducted by the student's advisory / dissertation committee.

Dissertation—24 Semester Hours

Minimum Hours Required for Ph.D.—90 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.

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. The Doctor of Philosophy in Education degree should be available in Fall 2000, pending SUS Board of Regents approval. 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
Jennifer M. Platt, Associate Dean
Michael C. Hynes, Associate Dean
Helen Stewart-Dunham, Brevard Campus Coordinator, (407) 632-1111, ext. 65533
Anne Wimmer, Daytona Beach Campus Coordinator, (904) 255-7423, ext. 4058
Karen Hatcher, Lake / Sumter Campus Coordinator, (352) 787-3747, ext. 633

Faculty

Educational Foundations

Chair of the Department: K. L. Biraimah

Professors: D. J. Baumbach, Ed.D.; K. L. Biraimah, Ph.D.; R. A. Cornell, Ed.D.; C. D. Dziuban, Ph.D.; T. S. Kubala, Ed.D.; M. L. Kysilka, Ph.D.; R. R. Lange, Ph.D.; G. W. Orwig, Ed.D.

Associate Professors: K. W. Allen, Ph.D.; G. Gunter, Ph.D.; S. L. Hiett, Ph.D.; L. C. Holt, Ed.D.; J. R. Lee, Ed.D.; A. J. Miller, Ed.D.; T.J. Sullivan, Ed.D.; G. West, Ph.D.; L. Witta, Ph.D.; A. T. Wood, Ph.D. *Assistant Professors:* S. Condly, Ph.D.; T. Crouse, Ed.D.; R.W. Gustafson, Ph.D.; C. J. Hutchinson, Ed.D.; J. S. Kaplan, Ph.D.;

Associate Graduate Faculty, Florida Gulf Coast University: D. A. Pataniczek, Ph.D.; C. M. Hewitt-Gervais, Ph.D.

Associate Graduate Faculty: E. Short, Ph. D., Professor Emeritus, Georgia Southern University

Instructional Programs

Interim Chair of the Department: J. W. Cornett

Professors: T. Blair, Ph.D.; W. C. Bozeman, Ph.D.; D. K. Brumbaugh, Ed.D.; M. C. Hynes, Ph.D., Associate Dean, Director of Lockheed Martin / UCF Academy; A. R. Joels, Ph.D.; M. A. Lynn, Ed.D.; M. J. Palmer, Ed.D.; S. L. Robinson, Ph.D., Dean

Associate Professors: J. S. Allen, Ed.D.; J. H. Armstrong, Ed.D.; D. J. Camp, Ph.D.; J. W. Cornett, Ph.D.; R. M. Everett, Ph.D.; D. W. Gurney, Ph.D.; M. H. Hopkins, Ph.D.; L. R. Hudson, Ph.D.; J. A. Johnson, Ph.D., Associate Director of Lockheed Martin / UCF Academy; D. Magann, Ed.D.; J. A. Middleton, Ed.D.; B. Murray, Ph.D.; K. Murray, J.D., Ph.D.; S. E. Ortiz, Ed.D.; R. F. Paugh, Ed.D.; G. Pawlas, Ph.D.; M. K. Romjue, Ph.D.; B. W. Siebert, Ph.D.; S. E. Sorg, Ph.D.; L. Tubbs, Ed.D.;, K. Williams, Ph.D.; C.P. Wilson, Ed.D.

Assistant Professors: S. Atkins Ph.D.; T. Brewer, Ph.D.; E. F. Clifford, Ph.D.; P. Crawford, Ph.D.; A. Sweeney, Ph.D.

Associate Graduate Faculty, Florida Gulf Coast University: C. F. Carter, Ed.D.; V. J. Dimidijian, Ph.D.; C. W. Engle, Ed.D.; L. Golian, Ed.D.; L. C. Hartle, Ph.D.; E. Hyun, Ph.D.; S. C. Mayberry, Ed.D.; T. C. Valesky, Ed.D.

Associate Graduate Faculty, UCF College of Engineering: L. Chew, Ph.D.

Human Services and Wellness

Chair of the Department: W. Wienke, Ed.D.

Professors: J. L. Olson, Ph.D.; J. M. Platt, Ed.D., Associate Dean; E. H. Robinson, Ph.D.; F. D. Rohter, Ph.D.; W. Wienke, Ed.D.

Associate Professors: T. Angelopoulos, Ph.D.; C. R. Balado, Ed.D.; R. M. Bollet, Ed.D.; L. Cross, Ph.D.; P. E. Higginbotham, Ed.D.; M. Lue, Ph.D.; M. Miller, Ed.D.; J. W. Powell, Ed.D. ; M. Young, Ph.D.

Assistant Professors: M. Blanes, Ph.D.; D. Ezell, Ph.D.; B.G. Hayes, Ph.D.; R. Hines, Ph.D.; D. Jones, Ph.D.; M. Little, Ph.D.; H. P. Martin, Ed.D.; D. L. Mitchell, Ed.D.; S. Pankaskie, Ph.D.; S. Y. Smalley, Ph.D,; G. Taub; Ph.D.; D. Woodson, Ph.D.

Associate Graduate Faculty, Florida Gulf Coast University: M. S. Green, Ed.D.; M. Issacs, Ph.D.

Programs

Doctoral Degrees
Educational Leadership (Ed.D.)
Education (Ph.D., *pending SUS Board of Regents approval*)
- Counselor Education (School Counseling) Track
- Curriculum and Instruction (Ed.D.) Track
- Elementary Education Track
- Exceptional Education Track
- Instructional Technology Track
- Mathematics Education Track

Education Specialist Degrees
Curriculum and Instruction
Educational Leadership
School Psychology
- School Counseling Track
- School Psychology Track

Master's Degrees
Art Education
Counselor Education
- Mental Health Counseling Track
- School Counseling Track

Curriculum and Instruction, *pending SUS Board of Regents approval*
Educational Leadership
- Curriculum and Instruction
- Student Personnel Administration in Higher Education Track

Elementary Education
- Primary Track
- Mathematics Education Track

English Language Arts Education
Exceptional Education
- Varying Exceptionalities Track

Instructional Technology
- Educational Media Track
- Educational Technology Track
- Instructional Systems Track

Mathematics Education
Music Education
Physical Education
Reading Education
Science Education
- Biology Track
- Chemistry Track
- Physics Track

Social Science Education
Vocational Education

Graduate Certificates
Community College
Initial Teacher Professional Preparation
Pre-Kindergarten Handicapped Endorsement
Teaching Excellence

Doctoral Programs

The College of Education offers the Ph.D. in Education (pending SUS Board of Regents approval for Fall 2000) with tracks in Counselor Education (School Counseling), Elementary Education, Exceptional Education, Instructional Technology, and Mathematics Education. The Ph.D. in Education is a research-oriented degree appropriate for educators from school districts, businesses, industry, educational agencies, and other educational settings who need a strong research base in their careers. It is the intent of this program to be interdisciplinary, allowing flexibility for students who will work in research clusters and learning communities with faculty on education-related research. Programs of study can be designed for those educators who seek teacher education positions in a research university or research-oriented education positions in business and industry. (Please note that the previously offered Ph.D. in Curriculum and Instruction Program has been discontinued.)

Doctor of Education (Ed.D.) programs are offered in two areas. One is Educational Leadership for students who are interested in management and leadership positions in educational organizations. Professional experience and potential are important considerations for admission to the Educational Leadership Program. 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.

The Curriculum and Instruction as well as the Educational Leadership doctoral programs (Ed.D) are offered on the main campus and selected off-campus sites. There is a collaborative effort between UCF and Florida Gulf Coast University in Fort Myers to serve the educational community in southwest Florida. Likewise, to serve the Daytona Beach community, the programs are offered through the UCF campus at Daytona Beach Community College.

Admission Policy

Admissions will occur two times a year, fall and spring. Completed files must be on campus by September 20 for spring admission screening and February 20 for fall admission screening. Admitted students may begin course work during the first new semester after admission. There is a special December 20 deadline for applicants to the doctoral program offered for residents of southwest Florida at Florida Gulf Coast University. New admissions for the Daytona program are accepted for specially announced dates only (call 904-259-4460 for more information about this program).

Application

Completed application files must include: a completed UCF graduate application form, including transcripts from all previously attended post-secondary schools, three letters of recommendation (should include those that will provide professional and academic information), a professional re-

sume, and a statement of professional goals. Other information may be requested after the file is started. An interview is normally requested of applicants as part of the review process. Admission decisions are made based on the total of information provided to the admission committee.

Admission Requirements

Applicants must qualify for graduate admission to the university. The requirements include:

- An undergraduate GPA on the last 60 attempted semesters hours of 3.0 (on a 4.0 scale);
- A master's degree from an accredited institution; and
- A minimum score of 1000 on the General Graduate Record Examination (verbal/ quantitative scores combined)
- A score of 220 (computer-based test or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) if the applicant is an international student

Additionally, applicants for the doctoral degrees in the College of Education must

- Have completed at least three years of full-time teaching or comparable experience; and
- Be recommended for admission by the appropriate doctoral program admission committee. (Recommendations are based on compatibility of the applicant's goal statements and the particular doctoral program, the strength of the recommendation letters, the applicant's past record of professional accomplishments, the applicant's apparent potential for academic success, and the applicant's perceived potential for professional success.)

NOTE: These programs are competitive and meeting minimum university requirements does not guarantee admission. 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 admission. Admittance in one doctoral program does not guarantee admittance in another. Each doctoral program reserves the right to review the applicant's files and interview applicants for admission.

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 may include only 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 adviser and graduate 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 Education fellowship programs must have completed application files by December 20. 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 20 for the following academic year.

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 more than two major consecutive terms (fall and spring or spring and fall), including summer unless working on the dissertation. Doctoral students working on the dissertation must be continuously enrolled in dissertation research every semester until successfully defended. 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 at least 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 Candidate

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 as well as course work may need to be repeated.

Dissertation

Dissertations are required in all doctoral programs. College of Education candidates will follow the APA (American Psychological Association) guidelines.

Doctor of Philosophy in Education

This program is planned to be offered in Fall 2000, pending SUS Board of Regents approval.

Ph.D. Graduate Program Coordinator: M. C. Hynes, ED 146, (407) UCF-0036. E-mail: hynes@mail.ucf.edu

Application Deadline

Fall admission	December 20*
Fall admission	February 20

* Students applying for fellowships or assistantships should apply for admission by this date.

Degree Requirements

Prerequisites
Master's degree in education with an emphasis related to one of the five tracks in the Ph.D. program: Counselor Education (School Counseling), Elementary Education, Exceptional Education, Instructional Technology, and Mathematics Education, including master's level competency in educational research and statistics.

Core Courses—24 Semester Hours
IDS 7XXX Issues and Research in Education (3 hours)
IDS 7XXX Research Cluster Seminar (3 hours)
IDS 7XXX Research Seminar (variable credit and repeatable, 6 hours)
EDF 7475 Qualitative Research Methods in Education (3 hours)
EDF 7403 Quantitative Research Methods in Education (3 hours)
EDF 7463 Analysis of Survey, Record and other Qualitative Data (3 hours)
IDS 7XXX Capstone Symposium (3 hours)

Specialization—51 Semester Hours (minimum)
Courses in the respective tracks and cognate courses allied to the tracks from other colleges and departments in the university. An internship (3 hours, minimum) is required as part of the tracks.

Dissertation—24 Semester Hours (minimum)
Doctoral students must present a prospectus for the dissertation to the doctoral adviser, prepare a proposal and present to the dissertation committee, and defend the final research submission with the dissertation committee.

Candidacy

To enter candidacy for the Ph.D., students must have an overall 3.0 GPA on all graduate work included in the planned program and pass all required examinations.

Candidacy Examinations
- Examinations must be completed prior to admission to candidacy.
- Examinations will be scheduled by the student and major adviser. The Associate Dean for Graduate Studies and Research must be notified of the date and location of the exam 30 days in advance.
- All Ph.D. candidates will be required to complete two examinations:
  Research in the Specialization—8-hour written examination
  Specialization—3-hour oral examination
  Students must be enrolled in the university during the semester an examination is taken.

Doctor of Education in Curriculum and Instruction

Ed.D. Graduate Program Coordinator: M. L. Kysilka, ED 355, (407) UCF-2011. E-mail: kysilka@mail.ucf.edu

This program provides doctoral education for the education practitioner who desires a more in-depth understanding of curricular theory.

Application Deadlines

Fall admission	February 20
Spring admission	September 20
FGCU admission (summer)	December 1
Daytona admission	Announced dates

Please contact the Coordinator of the Daytona doctoral program for information about the admission deadlines for new students: W. Bozeman, RP 215, (407) 384-2189. E-mail: bozeman@mail.ucf.edu.

Degree Requirements

Prerequisites—9 Semester Hours
EDG 6223 Curriculum Theory and Organization (3 hours)
EDF 6401 Statistics for Educational Data (3 hours) (or equivalent)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Curriculum/Instruction Core—12 Semester Hours
EDF 7232 Analysis of Learning Theories in Instruction (3 hours)
EDG 7221 Advanced Curriculum Theory (3 hours)
EDG 7356 Models of Teaching and Instructional Theory (3 hours)
EDG 7692 Issues in Curriculum (3 hours)

All core courses and the core examination must be completed in the first six semesters of enrollment in the doctoral program.

Specialization Area—45 Semester Hours (minimum)
Includes selected courses in Curriculum, Instruction, Foundations, Educational Leadership, and Community College

Research and Data Analysis—6 Semester Hours
EDF 7403 Quantitative Foundations of Educational Research (3 hours)
EDF 7463 Analysis of Survey, Record, and Other Qualitative Data (3 hours)

Dissertation—21 Semester Hours (minimum)
Doctoral students must present a prospectus for the dissertation to the doctoral adviser, prepare a proposal and present to the dissertation committee, and defend the final research submission with the dissertation committee.

Candidacy

To enter candidacy for the Ed.D., students must have an overall 3.0 GPA on all graduate work included in the planned program and pass all required examinations.

Candidacy Examinations
- Examinations must be completed prior to admission to candidacy.
- Examinations will be scheduled near the tenth week of the fall and spring semesters. Summer examinations will be scheduled for the sixth week of the term.
- All Curriculum and Instruction Ed.D. (Doctor of Education) candidates will be required to write examinations:
  Specialization / Teaching Field—5-hour examination
  Curriculum / Instruction Core—3-hour examination
  Research / Data Analysis—3-hour examination
  Students must be enrolled in the university during the semester an examination is taken.

Doctor of Education in Educational Leadership

Graduate Program Coordinator: W. Bozeman, RP 215, (407) 384-2189. E-mail: bozeman@mail.ucf.edu

The purpose of this program is to provide further education for those aspiring to leadership positions in education. The general program of study leading to the Ed.D. degree in Educational Leadership permits students to concentrate their doctoral study in either K-12 or higher education administration. Specific program information may be found on the Educational Leadership web page at http://pegasus.cc.ucf.edu/~educlead/content.html.

Application Deadlines

Fall admission	February 20
Spring admission	September 20
FCGU admission (summer)	December 1
Daytona admission	Announced dates

Please contact the Coordinator of the Daytona doctoral program for information about the admission deadlines for new students: W. Bozeman, RP 215, (407) 384-2189. E-mail: bozeman@mail.ucf.edu.

Degree Requirements

Prerequisite Courses
(as necessary)

Educational Leadership Core Courses—16 Semester Hours
EDA 7192 Educational Leadership (4 hours)
EDA 7195 Politics, Governance, and Financing of Educational Organizations (3 hours)
EDA 7205 Planning, Research, and Evaluation Systems in Educational Administration (3 hours)
EDA 7225 Educational Personnel, Contracts, and Negotiations (3 hours)

Cognate Courses—6 Semester Hours (minimum)

Area of Specialization—15 Semester Hours (minimum)

Research and Data Analysis—12 Semester Hours (minimum)
EDF 7403 Quantitative Foundations of Educational Research (3 hours)
EDF 7463 Analysis of Survey, Record, and Other Qualitative Data (3 hours)

Dissertation—21 Semester Hours (minimum)
Doctoral students must present a prospectus for the dissertation to the doctoral adviser, prepare a proposal and present to the dissertation committee, and defend the final research submission with the dissertation committee.

Candidacy

To enter candidacy for the Ed.D., students must have an overall 3.0 GPA on all graduate work included in the planned program and pass all required examinations.

Candidacy Examinations
- Examinations must be completed prior to admission to candidacy.
- Examinations will be scheduled near the tenth week of the fall and spring semesters. Summer examinations will be scheduled for the sixth week of the term.
- All Educational Leadership Ed.D. candidates will be required to write examinations:
  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.

Education Specialist Programs

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 fields of School Psychology or School Counseling.

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. When a recipient of an Ed.S. degree is accepted for a doctoral program, the respective doctoral advisery committee will determine the amount of applicable credit earned in the Ed.S. for the doctoral program. 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
- A minimum score of 220 (computer-based test or equicalent score on the paper-based test) on the Test of English as a Foreign Language if the applicant is an international student 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. Transfer credit decisions are made by the respective graduate program coordinators and the specialization advisers 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. Courses taken as an undergraduate student may not be used for transfer unless the credit was graduate level and 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 non-degree-seeking. Students who are reverted to non-degree-seeking 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.

Education Specialist in Curriculum/ Instruction and Education Specialist in Educational Leadership

Graduate Program Coordinator, Curriculum and Instruction: M. L. Kysilka, ED 355, (407) UCF-2011.
E-mail: kysilka@pegasus.cc.ucf.edu

Graduate Program Coordinator, Educational Leadership: W. Bozeman, RP 215, (407) 384-2189.
E-mail: bozeman@mail.ucf.edu

Application Deadlines

Fall admission	February 20
Spring admission	September 20

Admissions Policy

Admissions will occur two times a year, fall and spring. Completed files must be on campus by September 20 for spring admission screening and February 20 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 Program in Curriculum and Instruction or Educational Leadership is separate from admission to the Doctoral Program. Upon completion of the Education Specialist degree, the candidate may apply for admission to a doctoral program.

General 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.

Curriculum and Instruction Degree Requirements

Area I—Curriculum and Instruction Core (9 Semester Hours)
EDF 7232 Analysis of Learning Theories in Instruction (3 hours)
EDG 7221 Advanced Curriculum Theory (3 hours)
EDG 7356 Models of Teaching and Instructional Theory (3 hours)

Area II—Specialization (21 Semester Hours)
EDA 6061 Organization and Administration of Schools (3 hours)
EDA 6232 Legal Aspects of School Operation (3 hours)
EDA 6240 Educational Financial Affairs (3 hours)
EDA 6260 Educational Systems Planning and Management (3 hours)
EDA 6931 Contemporary Issues in Educational Leadership (3 hours)
EDS 6123 Educational Supervisory Practices I (3 hours)
EDS 6130 Educational Supervisory Practices II (3 hours)

Area III—Measurement and Evaluation (6 Semester Hours minimum)
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 7403 Quantitative Foundations of Educational Research (3 hours)
EDF 7463 Analysis of Survey, Record, and Other Qualitative Data (3 hours)

Educational Leadership Degree Requirements

Area I—Educational Leadership Core (13 Semester Hours)
EDA 7192 Educational Leadership (4 hours)
EDA 7101 Organizational Theory in Education (3 hours)
EDA 6946 Internship (3 hours)
EDA 6973 Thesis—Specialist (3 hours)

Area II—Specialization (21 Semester Hours)
EDA 6061 Organization and Administration of Schools (3 hours)
EDA 6232 Legal Aspects of School Operation (3 hours)
EDA 6240 Educational Financial Affairs (3 hours)
EDA 6260 Educational Systems Planning and Management (3 hours)
EDA 6931 Contemporary Issues in Educational Leadership (3 hours)
EDS 6123 Educational Supervisory Practices I (3 hours)
EDS 6130 Educational Supervisory Practices II (3 hours)

Area III—Corequisities/Electives (3 Semester Hours minimum)
EDF 6401 Statistics for Educational Data (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDG 6223 Curriculum Theory and Organization (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)

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.

Education Specialist in School Psychology

Web address: http: / / pegasus.cc.ucf.edu / ~edserv /

The School Psychology Program has two tracks. The School Psychology Track is designed for students who wish to become licensed School Psychologists, and the School Counseling Track is appropriate for students with a master's degree who wish to become eligible for a School Counseling certification. These are distinct tracks with very specific programming to meet the respective licensing requirements of each area. Completion of one track will not result in eligibility for licensing in the other area.

School Psychology Track

Graduate Program Coordinator: C. Balado, ED 314, (407) UCF-2054. E-mail: cbalado@mail.ucf.edu

The Education Specialist degree program in School Psychology is a unique specialization in psychology and education. This program is based on two assumptions. 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. Also, 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 for the School Psychology Track in this degree program.

The program involves formal preparation and practical experiences focusing on psychological foundations (human development, learning and motivation), psychoeducational assessment, exceptional students, remediation or intervention techniques, counseling skills, as well as 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.

Application Deadline

Fall admission only March 1

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. For more information, visit our website: pegasus.cc.ucf.edu / ~edserv / .

Area A: Core—12 Semester Hours
EDF 6401 Statistics for Educational Data (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EEX 5051 Exceptional Children in the Schools (3 hours)
EDP 6056 Advanced Educational Psychology (3 hours)

Area B: Specialization—53 Semester Hours
SPS 6601 Introduction to Psychological Services in Schools (3 hours)
SPS 6606 School Consultation Techniques (3 hours)
SPS 6608 Seminar in School Psychology (3 hours)
SPS 6801 Developmental Basis of Diverse Behavior (3 hours)
SPS 6225 Behavior / Observation Analysis of Classroom Interactions in Schools (3 hours)
SPS 6703 Child and Adolescent Deviant Behavior and Treatment (3 hours)
SPS 6931 Ethical and Legal Issues in School Psychological Services (3 hours)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
SPS 6191 Individual Psychoeducational Diagnosis I (4 hours)
SPS 6192 Individual Psychoeducational Diagnosis II (4 hours)
SPS 6125 Infant Development Assessment (3 hours)
SPS 6194 Assessment of Special Needs (3 hours)
SPS 6206 Psychoeducational Interventions (3 hours)
SPS 6175 Cultural Diversity and Nonbiased Assessment (3 hours)
SPS 6909 Research Report I and II (6 hours)

Total Minimum Semester Hours Required—53 Semester Hours

Area C: Practicum and Internship—18 Semester Hours
SPS 6946 Practicum in School Psychology I (3 hours)
SPS 6946 Practicum in School Psychology II (3 hours)
SPS 6949 School Psychology Internship I & II (12 hours)

Pre- or Corequisites: (DOE Certification)
EDA 6061 Organization and Administration of Schools (3 hours)
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours)

School Counseling Track

Graduate Program Coordinator: E. H. Robinson, ED 311, (407) UCF-3819. E-mail: erobiso@pegasus.cc.ucf.edu

The School Counseling track of the Education Specialist program in School Psychology is designed for a very specific audience. This track is open to certified teachers who hold an education master's degree in an area other than school counseling. This track provides, within the degree program, courses for initial certification in school counseling.

Application Deadlines

Fall admission March 1
Spring admission October 1

Admissions

To be considered for admission to the School Counseling track, an applicant must secure, complete, and submit an application by the deadline (October 1 for spring term admission, March 1 for fall term admission) 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. The College of Education reserves the right to refuse student entrance or terminate a student after admission to the School Counseling track, 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.

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.
- Complete a portfolio and receive approval by Counselor Education faculty.
- Pass comprehensive written examinations satisfactorily.

Minimum hours required for M.A.—63 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)
MHS 6220 Individual Psychoeducational Testing I (3 hours)

Area B: Specialization—30 Semester Hours
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
MHS 6420 Counseling Special Populations (3 hours)
MHS 6500 Group Procedures and Theories in Counseling (3 hours)
MHS 6780 Ethical and Legal Issues (3 hours)
SDS 6330 Career Development (3 hours)
SDS 6411 Counseling with Children and Adolescents (3 hours)
SDS 6620 Organization and Administration of School Counseling and Guidance Programs (3 hours)

Area C: Professional Clinical Experience—9 Semester Hours
MHS 6800 Practicum in Counselor Education (3 hours)
MHS 6830 Counseling Internship I (3 hours)
MHS 6830 Counseling Internship II (3 hours)

Area D: Electives
Thesis or two electives approved by the adviser

Master's Programs

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 educator who wishes to update and extend knowledge of their present teaching field.

Master of Arts programs leading to initial certification are open to qualified individuals who are seeking both a master's degree and a new teaching certification or to qualified students seeking a master's degree in a field not requiring state 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. M.A. candidates must complete a portfolio as part of the requirements of an internship.

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 ensures 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. A score of 220 (computer-based test or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) is required if the applicant is an international student. 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. Specific graduate programs within the College of Education may use socioeconomic status, commitment to work in low income neighborhoods, evidence of community or volunteer work, family educational background, first generation in college, overcoming hardships, or personal interviews as additional criteria for admission.

Restricted Admission

The College of Education has a separate restricted application process for those students who do not present at least a 3.0 grade point average in their last 60 attempted semester hours of undergraduate course work AND at least a score of 1000 on the combined verbal-quantitative sections of the Graduate Record Examination. The restricted deadline is earlier in the semester for all programs with the exception of School Psychology, Counselor Education, and the doctoral programs. To be considered for restricted admission in the College of Education, students must file an application for restricted status in the Education Student Services Office (ED 109; 823-3723) upon being denied regular admission. Department committees make recommendations to the College Graduate Standards and Curriculum Committee. The following criteria are applied in evaluating applications:

- Ranking of undergraduate 60-hour grade point average
- Ranking of GRE score
- Contribution, current and projected, to the profession
- Number of years of professional experience
- Number of non-degree-seeking hours taken
- Grade point average on any non-degree-seeking work
- Recommendations by college faculty and other professionals.

Restricted students who do not maintain a 3.0 GPA during their first nine hours of enrollment will be reverted to non-degree-seeking status. Those who are accepted as restricted students by one program are not accepted into another, but must reapply for restricted admittance into another program.

Program of Study

Students are officially assigned formal academic advisers 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 non-degree / transfer hours toward a degree is contingent upon the recommendation of the academic adviser and is approved only after a program of study has been officially filed through all university channels.

Academic advisers are not assigned to individuals admitted as non-degree-seeking students. Non-degree-seeking students may seek information and general advisement in the Education Student Services Office (ED 109; 823-3723). Non-degree-seeking students seeking certification in the state of Florida and who have been initially certified elsewhere are not eligible for financial assistance from the university. In general, non-degree-seeking students 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. A "B" (3.0 GPA) must be maintained on all graduate work and no more than six hours of "C" may be earned and applied to the degree program. Unresolved "I" (incomplete) grades must be resolved according to university guidelines. In addition to the minimum university standards, 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 reexamination during a subsequent semester. Students are required to be enrolled during the semester in which they take examinations to satisfy this requirement and must be enrolled the term they plan to graduate.

Thesis, Research Report, and Non-thesis Options

In most programs, master's degree students in education, with adviser consultation, 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 adviser; 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 adviser and result in a program of at least 36 semester hours. For specific options within programs, please consult the graduate program coordinator for the degree sought.

Master of Arts: Tracks in Extended Content

Graduate Program Coordinator: T. S. Kubala, ED 350, (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 Science, and English Language Arts. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an adviser 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 advisers in the program.

Area A: Core—15 Semester Hours

(some programs may vary slightly)

EDF 6155 Lifespan Human Development and Learning (3 hours)

EDF 6401 Statistics for Educational Data (3 hours) OR

EDF 6432 Measurement and Evaluation in Education (3 hours)

EDF 6481 Fundamentals of Graduate Research Education (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—27 Semester Hours

(Electives approved by adviser)

Art Education

Graduate Program Coordinator: T. Brewer, ED 140, (407) UCF-3714. E-mail: tbrewer@pegasus.cc.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Education in Art Education

Minimum hours required for M.Ed.—36 Semester Hours

This program is designed to meet the expanded and deepening needs of the art teacher in the studio content areas to examine contemporary problems in art education, review recent curriculum developments, study innovative developments, explore interdisciplinary concepts, and become involved in research problems specific to the art teacher. This degree requires previous certification in art.

Area A: Core—9 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6886 Multicultural Education (3 hours)

Area B: Specialization—21 Semester Hours
(Approved by adviser)
Can include two studio (4000*- or 5000- level ART) courses

Select One Option—6 Semester Hours

Option A: Research Report—6 Semester Hours
ARE 6905 Research Trends (3 hours)
ARE 6909 Research Report (2, 1 hours)

Option B: Thesis—6 Semester Hours
EDF 6401 Statistics for Educational Data (3 hours)
ARE 6971 Thesis (2,1 hours)

Option C: Non-Thesis (Approved by adviser)—6 Semester Hours

* Six hours of 4000-level courses maximum

Master of Arts in Art Education

Minimum hours required for M.A.—45 Semester Hours

The Master of Arts program in Art is planned to provide the art-oriented person with a degree that includes certification. The program meets state certification requirements in foundations, special methods in art education, general methods in teaching, and the student teaching component.

Area A: Core—15 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6236 Principles of Instruction and Learning (3 hours)
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Select One:
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours)

Area B: Specialization—18 Semester Hours
(Approved by adviser)
Can include two studio (4000*- or 5000- level ART) courses

Select One Option—6 Semester Hours

Option A: Research Report—6 Semester Hours
ARE 6905 Research Trends (3 hours)
ARE 6909 Research Report (2,1 hours)

Option B: Non-Thesis—6 Semester Hours
(Approved by adviser)

Area C: Internship—6 Semester Hours
ARE 6946 Graduate Internship (6 hours)

Corequisites
ARE 4351 Teaching Art in the Elementary School (3 hours)
ARE 4352 Teaching Art in the Secondary School (3 hours)

* Six hours of 4000-level courses maximum

Minimum undergraduate specialization requirements must be completed as pre- or corequisites. A track is available for this program in Extended Content and requires 18 hours of graduate-level content in the program. Only six hours of independent study courses may be used to satisfy degree requirements. It is important to see an adviser if courses are not offered in content areas.

Counselor Education

Graduate Program Coordinator: E. H. Robinson, ED 311, (407) UCF-3819. E-mail: erobinso@pegasus.cc.ucf.edu

This program includes two tracks. 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 School Counseling track requires an internship of 600 clock hours.

Application Deadlines

Fall admission	March 1
Spring admission	October 1

Admissions

To be considered for admission to any of the counselor education program tracks, an applicant must secure, complete, and submit an application by the deadline (March 1 for fall term admission, October 1 for spring term admission). 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. 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.

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.
- Complete a portfolio and receive approval by Counselor Education faculty.
- Pass comprehensive written examinations satisfactorily.

Master of Education in Counselor Education

School Counseling Track

Minimum hours required for M.Ed.—51 Semester Hours

Area A: Core—12 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EGC 6971 Thesis or 2 electives (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)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
MHS 6420 Counseling Special Populations (3 hours)
MHS 6500 Group Procedures and Theories in Counseling (3 hours)
MHS 6780 Ethical and Legal Issues (3 hours)
SDS 6330 Career Development (3 hours)
SDS 6411 Counseling with Children and Adolescents (3 hours)
SDS 6620 Organization and Administration of School Counseling Programs (3 hours)

Area C: Professional Clinical Experience—9 Semester Hours
MHS 6800 Practicum in Counselor Education (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 Track

Minimum hours required for M.A.—60 Semester Hours

Area A: Core—12 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EGC 6971 Thesis or 2 approved electives (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)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
MHS 6420 Counseling Special Populations (3 hours)
MHS 6500 Group Procedures and Theories in Counseling (3 hours)
MHS 6780 Ethical and Legal Issues (3 hours)
SDS 6330 Career Development (3 hours)
SDS 6411 Counseling with Children and Adolescents (3 hours)
SDS 6620 Organization and Administration of School Counseling and Guidance Programs (3 hours)

Area C: Professional Clinical Experience—9 Semester Hours
MHS 6800 Practicum in Counselor Education (3 hours)
MHS 6830 Counseling Internship I (3 hours)
MHS 6830 Counseling Internship II (3 hours)

Area D: Required DOE Certification—9 Semester Hours

Foundations: Select one of the following:
EDF 6517 History and Philosophy of American Education (3 hours)
EDF 6608 Social Factors in American Education (3 hours)
EDF 6886 Multicultural Education (3 hours)

General Methods—6 Semester Hours
(Approved by adviser)

Mental Health Counseling Track

Minimum hours required for M.A.—60 Semester Hours

This program prepares students for Florida licensure in mental health counseling.

Area A: Core—12 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EGC 6971 Thesis or 2 approved electives (6 hours)

Area B: Specialization—36 Semester Hours
MHS 5005 Introduction to the Counseling Profession (3 hours)
MHS 6020 Mental Health Care Systems (3 hours)
MHS 6070 Diagnosis and Treatment in Counseling (3 hours)
MHS 6220 Individual Psychoeducational Testing I (3 hours)
MHS 6221 Individual Psychoeducational Testing II (3 hours)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6401 Techniques of Counseling (3 hours)
MHS 6420 Counseling Special Populations (3 hours)
MHS 6450 Counseling Substance Use and Abuse (3 hours)
MHS 6480 Human Sexuality and Relationships (3 hours)
MHS 6500 Group Procedures and Theories in Counseling (3 hours)
MHS 6780 Ethical and Legal Issues (3 hours)
SDS 6330 Career Development (3 hours)

Area D: Professional Clinical Experiences—12 Semester Hours
MHS 6800 Practicum in Counselor Education I (3 hours)
MHS 6800 Practicum in Counselor Education 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.

Curriculum and Instruction

Graduate Program Coordinator: M. Kysilka, ED 355, (407) UCF-2011. E-mail: kysilka@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	March 15

Master of Education in Curriculum and Instruction *(pending SUS Board of Regents approval)*

This program is designed for those who are interested in curricular studies, a more general, broadly based master's program, or have interest in the flexibility this program offers to pursue graduate course work in middle school education, pre-K handicapped, multicultural, and gifted education.

Minimum hours required for M.Ed.—33 Semester Hours

Area A: Core—18 Semester Hours
EDF 6233 Analysis of Classroom Teaching (3 hours)
EDF 6259 Strategies of Classroom Management (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6XXX Assessment of Learning (3 hours)
EDG 6223 Curriculum Theory and Organization (3 hours)
EME 6602 Integrating Technology into the Curriculum (3 hours)

Area B: Track—15 Semester Hours

Option I: Curriculum Studies
Select 15 hours from the following electives.
EDF 6XXX Challenges of Classroom Diversity (3 hours)
EDF 6XXX Comparative and International Education (3 hours)
EDF 6517 History and Philosophy of American Education (3 hours)
EDG 6XXX Curriculum Policy Analysis (3 hours)
EDG 6046 Contemporary Issues in Education (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)
EDG 6285 Evaluation of School Programs (3 hours)
ESE 6235 Curriculum Design (3 hours)

Option II: Middle School Education
Students will take the following courses and complete and elective approved by the adviser.
EDM 5235 Teaching in the Middle School (3 hours)
EDM 6XXX Middle Level Instruction (3 hours)
EDM 6XXX Principles of Middle Level Education (3 hours)
EDM 6XXX Understanding the Young Adolescent (3 hours)
Approved elective (3 hours)

Option III: Gifted Education
Students will take the following course and complete an elective approved by the adviser.
EGI 6051 Understanding the Gifted / Talented Student (3 hours)
EGI 6245 Program Planning and Methodology for Gifted / Talented Students (3 hours)
EGI 6246 Education of Special Populations of Gifted Students (3 hours)
SDS 6426 Guidance and Counseling of Gifted / Talented Individuals (3 hours)
Approved elective (3 hours)

Option IV: Multicultural Education
EDF 6886 Multicultural Education (3 hours)
EDF 6XXX Challenges of Classroom Diversity (3 hours)
EDF 6XXX Education as a Cultural Process (3 hours)
EDF 6XXX Comparative and International Education (3 hours)

An elective selected from the following courses:
TSL 5345 Methods of ESOL Teaching (3 hours)
TSL 6142 Critical Approaches to ESOL (3 hours)
TSL 6440 Problems in Evaluation in ESOL (3 hours)

Other TSL courses with approval of adviser or another elective with adviser approval.

Option V: Pre-K Handicapped
Note: This is an approved graduate certificate program that is currently being offered at off-campus sites in Orange County.

EEX 5702 Planning Curriculum for Pre-kindergarten Children with Disabilities (3 hours)
EEX 5750 Communication with Parents and Agencies (3 hours)
EEX 6017 Typical and Atypical Applied Child Development (3 hours)
EEX 6224 Observation and Assessment of Young Children (3 hours)
Approved elective (3 hours)

Educational Leadership

Graduate Program Coordinator: K. Murray, RP 215, (407) 384-2191. E-mail: murray@pegasus.cc.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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. options are designed to prepare individuals for leadership positions in student personnel administration in higher education and education-related fields. The M.A. options do not fulfill state certification requirements.

Educational Leadership (M.Ed.) 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.

Modified Leadership Core Program

If an individual holds a graduate degree with a major other than educational administration, administration, and supervision or educational leadership, certification may be obtained through completion of an approved modified program in educational leadership. The UCF modified program consists of the eight courses in Area B of the Specialization of the Educational Leadership M.Ed. degree and where appropriate (Area C) Program Emphasis. The Educational Leadership graduate program coordinator should be contacted to request an evaluation of prior graduate course work (required for admission into the program).

Master of Education in Educational Leadership

Minimum hours required for M.Ed.—39 Semester Hours

Area A: Core—9 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)
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)

Area B: Specialization—24 Semester Hours
It is recommended that these courses be taken in the following sequence:
EDA 6061 Organization and Administration of Schools (3 hours)
EDA 6232 Legal Aspects of School Operation (3 hours)
EDA 6240 Educational Financial Affairs (3 hours)
EDA 6260 Educational Systems Planning and Management (3 hours)
EDA 6931 Contemporary Issues in Educational Leadership (3 hours)
EDA 6946 Graduate Internship (3 hours)*
EDS 6123 Educational Supervisory Practices I (3 hours)
EDS 6130 Educational Supervisory Practices II (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 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours)
EDF 6401 Statistics for Educational Data (3 hours) OR
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDA 6909 Research Report (2,1 hours)

Area B: Specialization—9 Semester Hours
(Approved by adviser)

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)
EDS 6123 Educational Supervisory Practices I (3 hours) OR
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 6260 Educational Systems Planning and Management (3 hours)
EDA 6931 Contemporary Issues in Educational Leadership (required) (3 hours)

Student Personnel Administration in Higher Education Track

Minimum hours required for M.A.—39 Semester Hours

Area A: Core—6 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6432 Measurement and Evaluation in Education (3 hours) OR
EDF 6401 Statistics for Educational Data (3 hours)

Area B: Specialization—24 Semester Hours
EDA 6540 Organization and Administration of Higher Education (3 hours)
EDH 6065 History and Philosophy of Higher Education (3 hours)
EDH 6505 Finance in Higher Education (3 hours)
MHS 6400 Theories of Counseling and Personality (3 hours)
MHS 6780 Ethical and Legal Issues (3 hours)
SDS 6040 Student Personnel Services in Higher Education (3 hours)
SDS 6330 Career Development (3 hours)
SDS 6624 The College Community and the Student (3 hours)

Area C: Electives—6 Semester Hours
(Approved by adviser)

Area D: Professional Field Experience—3 Semester Hours
EDH 6946 Higher Education Internship (3 hours)

Elementary Education

Graduate Program Coordinator: E. Ortiz, ED 224, (407) 823-5222, ortiz@mail.ucf.edu, and C. Hutchinson, ED 204, (407) 823-3532, hutchins@magicnet.net.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Education in Elementary Education

Minimum hours required for M.Ed.—33 Semester Hours

This program is designed to meet the needs of the classroom teacher whose career goal is to remain in the classroom. It provides experiences in the foundations of education, an update of the student's skills and understanding related to current research and instructional trends in basic subject matter areas, and elective choices in specific areas.

Area A: Core—15 Semester Hours
EDF 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)

Select Option A or B:

Option A:
EDF 6401 Statistics for Educational Data (3 hours)
EDE 6971 Thesis (2,1 hours)

Option B:
EDF 6517 History and Philosophy of American Education (3 hours)
EDE 6909 Research Report (2,1 hours)

Area B: Specialization—18 Semester Hours
EDE 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:
LAE 6616 Trends in Language Arts Education (3 hours)
RED 6116 Trends in Reading 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 5695 Trends in Arts Education (3 hours)

Select One:
MAE 6517 Diagnosis / Remediation of Difficulties in Mathematics for the Classroom Teacher (3 hours)
MAE 6641 Problem Solving and Critical Thinking Skills (3 hours)

Primary Track

Minimum hours required for M.Ed.—36-39 Semester Hours

The purpose of this track is to prepare students to become master teachers of, or consultants for, programs in age three (3) through grade three. Course work includes a "professional core" of research, human development, and measurement and evaluation courses; field experiences and courses focusing on programs, creative activities, organization of instruction, individualizing, perception, and an overview of the exceptional student. Students must have certification in Elementary Education. This degree does not meet the requirements for Early Childhood Education.

Area A: Core—12 or 15 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Select Option A or B:

Option A - Research Project or Thesis—6 Semester Hours
EDF 6401 Statistics for Educational Data (3 hours)
EDE 6971 Thesis (2,1 hours) OR
EDE 6909 Research Report (2,1 hours)

Option B - Non-Thesis—9 Semester Hours
Electives approved by adviser (6 hours)
EDF 6886 Multicultural Education (3 hours)

Area B: Specialization—24 Semester Hours
EEC 5205 Programs and Trends in Early Childhood Education (3 hours)
EEC 5206 Organization of Instruction in Early Childhood Education (3 hours)
EEC 5208 Creative Activities in Early Childhood (3 hours)
EEC 6268 Play Development, Intervention, and Assessment (3 hours)
EEC 6406 Guiding and Facilitating Social Competence (3 hours)
EEX 5750 Communication with Parents and Agencies (3 hours)
EEX 6017 Typical and Atypical Applied Child Development (3 hours)
EEX 6224 Observation and Assessment of Young Children (3 hours)

Mathematics Education Track

Minimum hours required for M.Ed.—33 Semester Hours

This is a track 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.

Course work 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.

This track is not approved for automatic certification by the state of Florida. The track 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. To be certified as an elementary mathematics specialist, a person must have a minimum of 18 semester hours in mathematics.

Area A: Core—12 or 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6401 Statistics for Educational Data (3 hours) OR
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 of 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—9 Semester Hours
(Approved by adviser)
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 (3 hours)

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-hour 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 Current Methods in Elementary School Mathematics (3 hours)
SCE 5716 Methods in 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 5115 Methods of Elementary School Social Science (3 hours)

Area D: Internship—6 Semester Hours
EDE 6946 Graduate Internship (6 hours)

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

Graduate Program Coordinator: J. Cornett, ED 348, (407) UCF-2939. E-mail: jcornett@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Education in English Language Arts Education

Minimum hours required for M.Ed.—33-36 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 6401 Statistics for Educational Data (3 hours) OR
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)
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—21 Semester Hours
LAE 5295 Writing Workshop I (3 hours)
LAE 5495 Assessing Writing (3 hours)
LAE 6467 Studies in Adolescent Literature (3 hours)
LAE 6637 Research in Teaching English (3 hours)
LAE 6792 CFWP Teacher/Researcher (3 hours)
RED 6337 Reading in the Secondary School (3 hours)
Elective (Approved by adviser) (3 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 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)
EDF 6517 History and Philosophy of American Education (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)
ESE 6909 Research Report or 2 approved electives (2,1 or 6 hours)

Area B: Specialization—15 or 18 Semester Hours
(Approved by adviser)
LAE 5295 Writing Workshop I (3 hours)
LAE 6467 Studies in Adolescent Literature (3 hours)
LAE 6637 Research in Teaching English (3 hours)
LAE 6792 CFWP Teacher/Researcher (3 hours)
Elective (Approved by adviser) (3 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)

Students are required to take 30 hours of English course work to meet certification requirements to teach English, grades 6-12. 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 adviser if courses are difficult to schedule in content areas.

Exceptional Education: Varying Exceptionalities

Graduate Program Coordinator: M. Lue, ED 305, (407) UCF-2036. E-mail: mbell@pegasus.cc.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Education in Exceptional Education

Varying Exceptionalities Track

Minimum hours required for M.Ed.—33-36 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 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EEX 6971 Thesis OR two of the following three approved electives*

ELD 6248 Instructional Strategies for Students with Learning Disabilities (3 hours)
EMR 6362 Teaching Students with Mental Handicaps (3 hours)
EED 6226 Theory and Application for the Emotional Handicapped (3 hours)

Area B: Specialization—24 Semester Hours
EEX 6061 Instructional Strategies PreK-6 (3 hours)
EEX 6065 Instructional Strategies 6-12 (3 hours)
EEX 6107 Teaching Spoken and Written Language (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 6524 Organization and Collaboration in Special Ed (3 hours)
EEX 6612 Methods of Behavioral Management (3 hours)
EEX 6863 Supervised Practicum or Elective (Approved by Adviser) (3 hours)

Culminating experience includes a comprehensive examination. Please see your adviser.

* Approved electives include ELD 6248, EMR 6362, EED 6226, or other course approved by adviser.

Master of Arts in Exceptional Education

Varying Exceptionalities Track

Minimum hours required for M.A.—36-39 Semester Hours

This program is for non-education majors or previously certified teachers in another field. In addition to the 36 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, Specific Learning Disabilities (SLD), Mental Handicaps (MH), and Emotional Handicapped (EH). Graduates must be eligible for certification by the completion of the degree program.

Area A: Core—9-12 Semester Hours
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EEX 6908 Research Report OR two of the following three approved electives

ELD 6248 Instructional Strategies for Students with Learning Disabilities (3 hours)
EMR 6362 Teaching Students with Mental Handicaps (3 hours)
EED 6226 Theory and Application for the Emotional Handicapped (3 hours)

Area B: Specialization—27 Semester Hours
EEX 6061 Instructional Strategies PreK-6 (3 hours)
EEX 6065 Instructional Strategies 6-12 (3 hours)
EEX 6107 Teaching Spoken and Written Language (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 6524 Organization & Collaboration in Special Ed (3 hours)
EEX 6612 Methods of Behavioral Management (3 hours)
EEX 6946 Graduate 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.

EDF 6155 Lifespan Human Development & Learning (3 hours)
EDF 6236 Principles in Instruction and Learning (3 hours)
MAE 5318 Current Methods in Elementary School Mathematics (3 hours)
RED 5147 Developmental Reading (3 hours)
AND
Choose one of the following:
EDF 6517 History and Philosophy of American Education (3 hours)
EDF 6608 Social Factors in American Education (3 hours)
EDF 6886 Multicultural Education (3 hours)

Prerequisite
EEX 5051 Exceptional Children in the Schools (3 hours)

As a culminating activity, students must complete the College of Education portfolio and comprehensive examinations. Please see your adviser.

Exercise Physiology

See College of Education, Physical Education.

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 Track

Graduate Program Coordinator: J. R. Lee, ED 205, (407) UCF-6139. E-mail: jlee@mail.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 course work for basic teaching certification in Florida; at least one year of successful classroom experience is preferred.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Admission

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. This managed application packet is available from Graduate Studies. Included in the managed application packet will be: (1) essay questions required for admission into the Educational Media program, and (2) forms for three letters of recommendation. A formal interview with the Educational Media Review Committee is required. All required materials, an interview and a favorable recommendation from the Educational Media Review Committee, acceptance by UCF Graduate Studies and the College of Education are required for acceptance into the Educational Media program.

Area A: Core—12 or 15 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6401 Statistics for Educational Data (3 hours) OR
EDF 6432 Measurement and Evaluation in Education (3 hours)

Option A - Research Report
EME 6909 Research Report (2,1 hours)

Option B - Non-Thesis Option
EME 6062 Research in Instructional Technology (3 hours)
EME Elective (3 hours)

Area B: Specialization—24 Semester Hours
EME 5051 Technologies of Instruction and Information Management (3 hours)
EME 5208 Production Techniques for Instructional Settings (3 hours)
EME 5225 Media for Children and Young Adults (3 hours)
EME 6105 Collection Development Policies and Procedures (3 hours)
EME 6605 Role of the Media Specialist in Curriculum and Instruction (3 hours)
EME 6706 Administrative Principles in Media Centers (3 hours)
EME 6805 Organization of Media and Information (3 hours)
EME 6807 Information Sources and Services (3 hours)

Area C: Elective—3 Semester Hours
EME 6209 Multimedia Instructional Systems II (3 hours)
EME 6058 Current Trends in Educational Media (3 hours)
EME 5408 Computer Applications in Instructional Technology (3 hours)
LAE 4464 Survey of Literature for Adolescents (3 hours)
LAE 5415 Children's Literature in Elementary Education (3 hours)
EME Elective

Area D: Internship
EME 6946 Graduate Internship (Required if no media center experience) (3 hours)

Master of Arts in Instructional Technology

Educational Technology Track

Graduate Program Coordinator: G. Gunter, ED 313, (407) UCF-3502. E-mail: ggunter@bellsouth.net

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 edu-

cation 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.

Application Deadline

Fall admission only March 30

Admissions Policy

To be considered for admission to the Educational Technology Program, you must submit a completed graduate application packet, including three letters of recommendation. In addition, you will need to submit a student information form, which can be obtained from our website (http://pegasus.cc.ucf.edu/~edtech) or from the Educational Foundations Department (ED 243). An interview may be necessary. Acceptance by UCF Graduate Studies and the College of Education, in addition to the abovementioned materials, are required for acceptance into the Educational Technology Program.

Area A: Core—9-12 Semester Hours
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Option A - Research Report
EME 6909 Research Report (2,1 hours)

Option B - Non-thesis Option
EME 6062 Research in Instructional Technology (3 hours)
Elective (3 hours)

Area B: Specialization—18 Semester Hours
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)

Area C: Extension—6 Semester Hours
Electives in current certification area or other as approved by adviser (3 hours)
Elective (3 hours)

Area D: Practicum—3 Semester Hours
EME 6940 Theory into Practice in Educational Technology (3 hours)

Co-requisite (If not currently certified in education)
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours) OR
EDF 6886 Multicultural Education (3 hours)

Instructional Systems Track

Graduate Program Coordinator: R. Cornell, ED 312, (407) UCF-2053. E-mail: cornell@mail.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.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Area A: Core—6 or 9 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Select Option A, B, or C:

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 adviser (3 hours)

Area B: Specialization—24 Semester Hours
EME 5054 Instructional Systems Technology: A Survey of Applications (3 hours)
EME 5056 Communication for Instructional Systems Process (3 hours)
EME 5057 Communication for Instructional Systems Application (3 hours)
EME 5408 Computer Applications in Instructional Technology (3 hours) OR
EME 6313 Media Systems Design (3 hours)
EME 6613 Instructional System Design (3 hours)
EME 6705 Administration of Instructional Systems (3 hours)
CAP 6613 Utilizing Micro Computers in Education (3 hours)
EME 6946 Graduate Internship in Instructional Systems (3 hours) OR
COE 6946 Cooperative Education (3 hours)

Area C: Elective—9 Semester Hours
(Courses not listed below require adviser approval)
EIN 5255 Interactive Engineering (3 hours)
EME 6053 Current Trends in Instructional Technology (3 hours)
EME 6208 Multimedia Instructional Systems I (3 hours)
EME 6209 Multimedia Instructional Systems II (3 hours)
EME 6457 Distance Education: Technology Process Product (3 hours)
EME 6607 Planned Change in Instructional Technology (3 hours)
INP 6317 Organizational Psychology and Motivation (3 hours)

Lockheed Martin/UCF Academy for Mathematics and Science

Graduate Program Coordinator: J. A. Johnson, ED 146, (407) UCF-2950. E-mail: jjohnson@mail.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 limited access and designed for teachers of mathematics and science in grades K-8 in Orange, Osceola, and Seminole school districts. Teachers accepted into the academy 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 1 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

Graduate Program Coordinator: D. K. Brumbaugh, ED 107, (407) UCF-2045. E-mail: brumbad@mail.ucf.edu

Master of Education in Mathematics Education

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Minimum hours required for M.Ed.—33 Semester Hours

This program is designed to meet the advanced knowledge and skill needs of the classroom teacher of mathematics.

Area A: Core—12 or 15 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)

Select One:
EDF 6401 Statistics for Educational Data (3 hours) OR
EDF 6432 Measurement and Evaluation in Education (3 hours)

Select One:
EDF 6155 Lifespan Human Development and Learning (3 hours) OR
EDF 6517 History and Philosophy of American Education (3 hours) OR
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—6 Semester Hours
(Approved by adviser)

Area C: Curriculum Core—15 Semester Hours
(Approved by adviser)

Master of Arts in Mathematics Education

Minimum hours required for M.A.—39 Semester Hours

Program for non-education majors, or previously certified teachers in another field.

Area A: Core—18 or 21 Semester Hours
EDF 6155 Lifespan Human Development and Learning (3 hours)
EDF 6236 Principles of Instruction and Learning (3 hours)
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6517 History and Philosophy of American Education (3 hours)
ESE 6909 Research Report or 2 approved electives (2,1 or 6 hours)

Area B: Specialization—12 Semester Hours
(Electives approved by adviser)

Area C: Internship—9 Semester Hours
MAE 6946 Graduate Internship (3 hours)
MAE 6946 Graduate Internship (6 hours)

Corequisites
MAE 4360 Math Instructional Analysis (4 hours)

Students are required to take 30 hours of mathematics course work to meet certification requirements to teach mathematics in grades 6-12. 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 adviser if courses are difficult to schedule in content areas.

Music Education

Graduate Program Coordinator: M. Palmer, ED 351, (407) UCF-3397. E-mail: mpalmer@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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.

Area A: Core—12-15 Semester Hours
EDF 6401 Statistics for Educational Data (3 hours) OR
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) OR
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours)
MUE 6909 Research Report (2,1 hours)

Area B: Specialization—12 Semester Hours
(Approved by adviser)

Area C: Curriculum—12 Semester Hours*
MUE 6155 Teaching Performing Organizations (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)
MUT 4031 Review of Music Theory (1 hour)

Master of Arts in Music Education

Minimum hours required for M.A.—36 Semester Hours

This program is offered for students who have completed a baccalaureate degree who seek certification in music (K-12). The Master of Arts program is organized to develop basic teaching skills as well as advanced work in research and educational foundations, courses in foundations of music education and methods of teaching music. Supervised internship experiences are included. In most cases, music specialization requirements for certification are met by the B.A. degree.

Area A: Core—16 or 19 Semester Hours
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)

Select One:
EDF 6517 History and Philosophy of American Education (3 hours) OR
EDF 6608 Social Factors in American Education (3 hours) OR
EDF 6886 Multicultural Education (3 hours)
MUE 6909 Research Report or 2 approved electives (2,1 or 6 hours)

Area B: Specialization—12 Semester Hours*
(Approved by adviser)

* Graduate performance and advanced conducting courses are available only after admission to the graduate program and successful completion of 9 semester hours of the graduate program.

Area C: Internship—9 Semester Hours
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 adviser.

EDF 6432 Measurement and Evaluation in Education (3 hours)
MUE 4330 Secondary School Music Methods (2 hours)

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)
MUT 4031 Review of Music Theory (1 hour) OR

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 adviser if courses are difficult to schedule in content areas.

Physical Education

Graduate Program Coordinator: T. Angelopoulos, ED 172, (407) UCF-0364. E-mail: tangelop@mail.ucf.edu

Students may follow one of two general options in pursuit of a master's degree in the Exercise Physiology and Wellness track of the Physical Education graduate program. Option one in the specialization emphasizes experience in the area of clinical exercise physiology, adult fitness programs, and related areas. Students will work towards training certification as an Exercise Physiologist through the American College of Sports Medicine. This option will prepare students for the clinical exercise physiology examination (RCEP). The second option emphasizes the development of strength and conditioning programs for wellness centers. Course requirements include a common core plus specialized courses in exercise physiology and wellness.

Acceptance into the program is contingent upon having successfully completed basic mathematics, physics, chemistry, biology, human anatomy, and physiology that will allow the student to be successful in master's level courses. Courses in undergraduate exercise physiology courses are desired. A major in Exercise Science, Physical Education, Physical Therapy, Athletic Training, Biological Science, or related areas would usually include the course requirements listed. Deficiencies in content may require the completion of additional course work. The program of study developed by the adviser will reflect these additional requirements.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Arts in Physical Education

Minimum hours required for M.A.—39 Semester Hours

Area A: Core—9 or 12 Semester Hours
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
*PET 6910 Problem Analysis—Review of Literature (3 hours)
*PET 6946 Practicum, Clinical Practice (3-6 hours)

* Can be taken only after 2/3 of program is completed.

Area B: Specialization—27 Semester Hours
(Approved by adviser)

NOTE: Credit in human anatomy is a prerequisite or corequisites for many PET courses. Consult with an adviser.

Courses must be selected in consultation with an adviser. Courses from other colleges may be chosen as well.

HUN 5937 Nutrition and Exercise Physiology (3 hours)
PCB 4805 Endocrinology (3 hours)
PCB 6727 Comparative Animal Physiology (3 hours)
*PET 5355 Exercise Physiology and Health (3 hours)
PET 6086 Exercise Intervention and Risk Hazards (3 hours)
PET 6357C Environmental Exercise Physiology (3 hours)
*PET 6367 Physical Performance and Energy Supplies (3 hours)
*PET 6381 Physiology of Neuromuscular Mechanisms (3 hours)
*PET 6388 Exercise Physiology and Cardiovascular Disease Prevention (3 hours)
PET 6416 Administration of Corporate Wellness Programs (3 hours)
*PET 6XXX Adherence/Compliance (3 hours)
PET 6XXX Athletic Injuries (3 hours)
PET 6XXX Electrocardiology (3 hours)
PET 6XXX Exercise Testing and Prescription (3 hours)
Approved Elective

* Must be taken by all students in the specialization.

Area C: Thesis Option—6 Semester Hours
PET 6971 Thesis (6 hours)

Reading Education

Graduate Program Coordinator: T. Blair, ED 358, (407) UCF-5472. E-mail: tblair@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Master of Education in Reading Education

Minimum hours required for M.Ed.—36 Semester Hours

This program prepares teachers for certification as reading specialists (e.g., reading resource teacher, reading laboratory teacher, reading/language arts supervisor, primary education specialist) in grades K-12 in public schools and private reading laboratories or clinics. Diagnosis of reading disabilities, techniques of corrective reading, psychological measurement, reading in the content fields, management of reading programs, reading trends and research, and dimensions of the language arts other than reading are included with considerable emphasis on practica with disabled readers from the early childhood to adult levels. Professionals currently certified as Florida teachers are eligible to pursue a degree in the program. See individual course descriptions in this catalog.

Area A: Core—15 Semester Hours
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6886 Multicultural Education (3 hours)

Select Option A, B, or C:

Option A: Thesis
EDF 6401 Statistics for Educational Data (3 hours)
RED 6971 Thesis (2,1 hours)

Option B: Research Report
EDF 6155 Lifespan Human Development and Learning (3 hours)
RED 6909 Research Report (2,1 hours)

Option C: Extended Specialization—6 Semester Hours
Electives pre-approved by adviser

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

Prerequisites
Prescribed by College of Education to meet state certification requirements or as support for degree program.
RED 5147 Developmental Reading (3 hours) OR
RED 3012 Basic Foundations of Reading (3 hours)
RED 5514 Classroom Diagnosis and Development of Reading Proficiencies (3 hours) OR
RED 4519 Diagnostic and Corrective Reading Strategies (3 hours)
LAE 3414 Literature for Children (3 hours) OR
LAE 5415 Children's Literature in Elementary Education (3 hours) OR
LAE 4464 Survey of Literature for Adolescents (3 hours)
LAE 4314 Language Arts in Elementary School (3 hours) OR
LAE 4342 Teaching Language and Composition (3 hours)

Science Education

Graduate Program Coordinator: J. A. Johnson, ED 146, (407) UCF-2950. E-mail: jjohnson@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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.

Area A: Core—9 Semester Hours
EDF 6401 Statistics for Educational Data (3 hours) OR
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)
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—9 Semester Hours
(Approved by adviser)

Area C: Curriculum—12 Semester Hours
9 hours approved by adviser
SCE 6238 Inquiry in the Sciences (3 hours)

Master of Arts in Science Education

Biology Track

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 23 Semester Hours
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)
EDF 6517 History and Philosophy of American Education (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)

Select One Option:

Option A - Research Report—3 Semester Hours
ESE 6909 Research Report (2,1 hours)

Option B - Non-Thesis—8 Semester Hours
PCB 5045C Conservation Biology (4 hours)
PCB 6675C Evolutionary Biology (4 hours)

Area B: Specialization—12 Semester Hours
3 hours approved by adviser
5000- or 6000-level biology courses approved by adviser* (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)

* Only six hours of independent study.

Chemistry Track

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 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)
EDF 6517 History and Philosophy of American Education (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)

Select One Option:

Option A - Research Report—3 Semester Hours
ESE 6909 Research Report (2,1 hours)

Option B - Non-Thesis—6 Semester Hours
Chemistry 5000- or 6000-level courses; may include 3 hours of 4000-level; approved by adviser

Area B: Specialization—12 Semester Hours
(Approved by adviser)
5000- or 6000-level chemistry approved by adviser* (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 semester hours in chemistry including Technology or History of Science.

SCE 4360 Science Instructional Analysis (4 hours)

* Only six hours of independent study.

Physics Track

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 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)
EDF 6517 History and Philosophy of American Education (3 hours)
EDG 6253 Curriculum Inquiry (3 hours)

Select One Option:

Option A - Research Report—3 Semester Hours
ESE 6909 Research Report (2,1 hours)

Option B - Non-Thesis —6 Semester Hours
(3 SH in 5000- or 6000-level physics approved by adviser)
PHY 5015C Physics for Teachers II (3 hours)

Area B: Specialization—12 Semester Hours
5000- or 6000-level physics approved by adviser* (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)

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

Graduate Program Coordinator: J. W. Cornett, ED 346, (407) UCF-6067. E-mail: cornett@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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 6401 Statistics for Educational Data (3 hours) OR
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
ESE 6909 Research Report (2,1 or 6 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)

Area B: Specialization—9 Semester Hours
(Electives approved by adviser)

Area C: Curriculum—12 Semester Hours
EDG 6223 Curriculum Theory and Organization (3 hours)
ESE 6235 Curriculum Design (3 hours)
SSE 6636 Contemporary Social Science Education (3 hours)
Elective approved by adviser (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 6155 Lifespan Human Development and Learning (3 hours)
EDF 6236 Principles of Instruction and Learning (3 hours)
EDF 6432 Measurement and Evaluation in Education (3 hours)
EDF 6481 Fundamentals of Graduate Research in Education (3 hours)
EDF 6517 History and Philosophy of American Education (3 hours)
ESE 6909 Research Report or 2 approved electives (2,1 or 6 hours)

Area B: Specialization—12-15 Semester Hours
Electives approved by adviser (9-12 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 are required to take 30 hours of social science course work to meet certification requirements to teach social science in grades 6-12.

SSE 4361 Social Science Instructional Analysis (4 hours)

A track is available for this program in Extended Content and requires 18 hours of graduate-level content in this program.

* Only six hours of independent study.

Vocational Education

Graduate Program Coordinator: R. Paugh, ED 250, (407) UCF-6066. E-mail: paugh@mail.ucf.edu

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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. Many courses in both the Master of Education and the Master of Arts degrees are offered via distance education on the World Wide Web.

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)
EDF 6517 History and Philosophy of American 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 adviser) (6 hours)

Area B: Vocational Education Core—9 Semester Hours
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—18 Semester Hours
(Selected with approval of adviser)

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.—42 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)
EDF 6236 Principles of Instruction 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)

Select One Option:
EVT 6946 Graduate Internship (6 hours)
EVT 6909 Research Report (2,1 hours)

Area B: Vocational Education Core—9 Semester Hours
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—21 Semester Hours
(Selected with approval of adviser)

Areas of focus may include: health, technical training, teaching adults, 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)
EVT 4065 Principles and Practices of Vocational Education (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)

Graduate Certificates in Education

Certificate in Community College

Graduate Program Coordinator: T. S. Kubala, ED 350, (407) 823-2007. E-mail: tkubala@pegasus.cc.ucf.edu

The Community College graduate certificate program is designed to prepare individuals to become campus leaders at all organizational levels in community colleges, including the classroom. The program consists of five graduate courses that cover all facets of community colleges. The courses are on-line, Web-based, in format.

Admission
A master's degree is pre-requisite for admission to the program, and the applicant must be employed in a community college. Each applicant must complete and submit a nondegree application as well as a transcript of the master's degree. These documents should be submitted to the Office of Graduate Studies (ADM 230).

Required Courses—15 Semester Hours
EDH 6053 The Community College in America (3 hours)
EDH 6061 Contemporary Problems in Community Colleges (3 hours)
EDH 6204 Community College Organization, Administration, and Supervision (3 hours)
EDH 6215 Community College Curriculum (3 hours)
EDH 6305 Teaching and Learning in the Community College (3 hours)

Certificate in Initial Teacher Professional Preparation

Graduate Program Coordinator: M. Kysilka, ED 355, (407) 823-2011. E-mail: kysilka@mail.ucf.edu

The Initial Teacher Professional Preparation certificate program is designed for those who have secured a teaching position and a temporary teaching certificate, but who need professional core certification to meet State Department of Education requirements. The goal of this program is to provide these teachers with the most appropriate courses available to ensure successful teaching experiences in grades 6-12 classrooms and state certification. Courses will be offered throughout the academic year, and there is no mandated sequence to the classes.

Required Courses—15 Semester Hours
EDF 6155 Life Span Human Development and Learning (3 hours)
EDF 6236 Principles of Instruction and Learning (3 hours)
EDF 6432 Measure and Evaluation (3 hours)
EDF 6608 Social Factors in Education (3 hours)
Special Methods (Course selection depends on the student's intended certification.) (3 hours)

Certificate in Pre-Kindergarten Handicapped Endorsement

Graduate Program Coordinator: L. Cross, ED 216, (407) 823-2401. E-mail: lcross@mail.ucf.edu

The Pre-Kindergarten Handicapped Endorsement certificate program provides post-baccalaureate students and master's-prepared teachers the opportunity to obtain the requisite curriculum to become credentialed in the area of pre-kindergarten children with disabilities. The goal of the program is to prepare qualified students to teach the pre-kindergarten handicapped population.

Admission Requirements
Students must have completed one of the following admission requirements.

- Master's degree in varying exceptionalities or primary education
- Evidence of graduate course work in:
  - Exceptional student education
  - Preschool education (0-4)
  - Primary education (K-3)
  - Pre-Kindergarten / primary education (PK-3)
  - Early childhood education
- Bachelor's degree in exceptional education or primary education

Required Courses—12 Semester Hours
EEX 5702 Planning Curriculum for Pre-Kindergarten Children with Disabilities (3 hours)
EEX 5750 Communication with Parents and Agencies (3 hours)
EEX 6017 Typical and Atypical Applied Child Development (3 hours)
EEX 6224 Observation and Assessment of Children with Handicaps: Birth to Five (3 hours)

Certificate in Teaching Excellence

Graduate Program Coordinator: T. Blair, ED 173, (407) 823-5472. E-mail: tblair@pegasus.cc.ucf.edu

The College of Education offers a graduate certification program to support classroom teachers applying for National Board Certification. The dual purpose is to provide experienced classroom teachers the opportunity to enhance their classroom teaching performance and to acquire the necessary knowledge and abilities to become certified by the National Board for Professional Teaching Standards (NBPTS).

Admission

Applicants to this certificate program must have at least three years of classroom teaching experience.

Required Courses—11 Semester Hours
EDF 6233 Analysis of Classroom Teaching (3 hours)
EDG 6236 Principles of Instruction and Learning (3 hours)
EDG 6XXX Seminar on National Board Assessments (3 hours)
LAE 5295 Writing Workshop I (2 hours)

College of Engineering & Computer Science

The College of Engineering and Computer Science 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 for Research
E. Gelenbe, Ph.D., Associate Dean of Engineering
J. Nayfeh, Ph.D., Assistant Dean for Academic Affairs
I. Batarseh, Ph.D., P.E., Assistant Dean for Graduate Studies

The College of Engineering and Computer Science has the following departments with graduate programs:

- Civil and Environmental Engineering
- School of Electrical Engineering and Computer Science
- Industrial Engineering and Management Systems
- Mechanical, Materials, and Aerospace Engineering

Degree Programs

Master of Science (M.S.)
Computer Science
Engineering Management Track
Environmental Engineering Sciences Track
Human Engineering / Ergonomics Track
Interactive Simulation and Training Systems Track
Manufacturing Engineering Track
Operations Research Track
Quality Engineering Track
Simulation Modeling and Analysis Track
Structures and Foundations Engineering Track
Transportation Systems Engineering Track
Water Resources Engineering Track

Master of Science in Aerospace Engineering (M.S.A.E.)
Space Systems Design and Engineering Track
Thermofluid Aerodynamic Systems Design and Engineering Track

Master of Science in Civil Engineering (M.S.C.E.)
Structural and Geotechnical Engineering Track
Transportation Engineering Track
Water Resources Engineering Track

Master of Science in Computer Engineering (M.S.Cp.E.)
Computer Architecture Track
Digital Systems Track
Knowledge-based Systems Track
Software Engineering Track

Master of Science in Electrical Engineering (M.S.E.E.)
Communications Track
Controls / Power Track
Digital Signal Processing Track
Electromagnetics Track
Electronics Track
Electro-optics Track
Solid State and Microelectronics Track

Master of Science in Environmental Engineering (M.S.Env.E.)

Master of Science in Industrial Engineering (M.S.I.E.)

Master of Science in Materials Engineering (M.S.M.E.)

Master of Science in Mechanical Engineering (M.S.M.E.)
Computer-aided Mechanical Engineering Track
Mechanical Systems Track
Professional Track
Thermo-fluids Track

Doctor of Philosophy
Civil Engineering
Computer Engineering
Computer Science
Electrical Engineering
Environmental Engineering
Industrial Engineering
Materials Science and Engineering, *pending SUS Board of Regents approval*
Mechanical Engineering

Graduate Certificates

Civil Engineering
Geotechnical Engineering and Construction Materials
Structural Engineering
Surface Water Modeling
Transportation Engineering

Computer Engineering
Software Engineering
Software-Intensive Systems

Electrical Engineering
Antennas and Propagation
Communications Systems
Digital Signal Processing
Electronic Circuits

Environmental Engineering
Air Pollution Control
Drinking Water Treatment
Hazardous Waste Management
Hazardous Waste Site Remediation
Wastewater Treatment

Industrial Engineering and Management Systems
Applied Operations Research
Design for Usability
Industrial Ergonomics and Safety
Project Engineering
Quality Assurance
Systems Simulation for Engineers
Training Simulation

Mechanical, Materials, and Aerospace Engineering
CAD / CAM Technology
Computational Methods in Mechanics
HVAC Engineering
Launch / Spacecraft Vehicle Processing
Materials Characterization
Materials Failure Analysis

College Admission Requirements

In addition to meeting the minimum university admission requirements (see "University Graduate Regulations"), each applicant is required to satisfy college and department admission requirements. Specific department requirements are listed in respective departmental sections. Meeting the minimum admissions requirements does not automatically guarantee admission, 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 graduate program coordinators in making admissions decisions.

College Application Deadlines

	U.S. & Resident Alien Applicants	International Applicants
Fall admission	July 15	March 1
Spring admission	December 1	August 1
Summer admission	April 15	December 1

College Degree Requirements

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 with Analytic Geometry III (MAC 2313).
- 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language.

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.
- 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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.
- Continuing enrollment in one hour of thesis once six hours of thesis credits have been taken and all course work has been satisfied and until the final thesis has been received by the Office of Graduate Studies (AD 230).
- 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 non-degree-seeking 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 maximum of 6 semester hours of Independent Study may be used toward the degree. Directed research credits may not be applied toward the degree.

- 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.

Master's Thesis Committee

- The Dean, through the Chairs, is responsible for committee formation, additions, and deletions. The thesis committee will consist of a minimum of three members. All committee members should hold a doctoral degree and be in fields related to the thesis topic. At least two members must be department faculty (one to serve as chair). Off-campus experts, joint faculty members, adjunct faculty, and other university faculty members may serve as the third person in the committee. Program areas may further specify additional committee membership. The Office of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee, or appoint a co-adviser.
- In unusual cases, with approval from the department Chair, two professors may chair the committee jointly. Joint faculty members may serve as committee chairs, but off-campus experts and adjunct faculty may not serve as committee chairs. Particular programs may have more stringent requirements.
- All members vote on acceptance or rejection of the thesis proposal and the final thesis. The thesis proposal and final thesis must be approved by a majority of the advisory committee.

Non-Thesis Option, Master's Degree Requirements

Most departments within the College of Engineering and Computer Science 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.
- Continuing enrollment of three credit hours in XXX 7980 once the course work requirements and minimum hours of dissertation (XXX 7980) are satisfied.
- 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.

Doctoral Dissertation Committee

- The Dean, through the Chairs, is responsible for committee formation, additions, and deletions. The doctoral committee will consist of a minimum of five members. All committee members should hold a doctoral degree and be in fields related to the dissertation topic. At least three members must be department faculty (one to serve as chair), one must be from another department in the College of Engineering and Computer Science, and one must be from outside the college. Joint faculty members may serve as department-faculty committee members. Adjunct faculty and off-campus experts may serve as the outside-the-college person in the committee. Program areas may further specify additional committee membership. The Office of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee, or appoint a co-adviser.
- In unusual cases, with approval from the department Chair, two professors may chair the committee jointly. Joint faculty members may serve as committee chairs, but off-campus experts and adjunct faculty may not serve as committee chairs. Particular programs may have more stringent requirements.
- 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 advisory committee.

Integrated BS/MS Program

Some College of Engineering and Computer Science departments offer an integrated BS/MS degree program that allows students of high academic standing to complete an MS degree at an accelerated pace. The generic rule for students in this program is that they will be allowed to use nine hours of intermediate level (5000-level) graduate courses with a grade of "B" or higher toward fulfillment of both the BS and MS degree requirements. Interested students should contact the department Assistant Chair or Graduate Coordinator if they have questions about this program.

Florida Engineering Education Delivery System (FEEDS)

FEEDS is a Florida statewide system whereby graduate-level engineering and computer science 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 non-degree-seeking status into a degree-seeking program. Certain courses may have the requirement that the student come to the main campus for exams or laboratory participation.

For information concerning FEEDS, consult the UCF-FEEDS catalog (published each semester) or contact the Director of UCF-FEEDS at (407) 823-2481.

Civil and Environmental Engineering

Chair of the Department: A. E. Radwan
Assistant Chair of the Department: M. B. Chopra
Graduate Program Coordinator: R. L. Wayson, ENGR 208, (407) 823-2841. E-mail: go_ucf@mail.ucf.edu

Faculty

Professors: C. D. Cooper, Ph.D., P.E.; S. S. Kuo, Ph.D., P.E.; A. E. Radwan Ph.D., P.E.; D. R. Reinhart, Ph.D., P.E., Associate Dean; J. S. Taylor, Ph.D., P.E.; M. P. Wanielista, Ph.D., P.E., Dean

Associate Professors: H. M. Al-Deek, Ph.D., P.E.; M. A. Aty, Ph.D.; M. B. Chopra, Ph.D., P.E.; J. D. Dietz, Ph.D., P.E.; C. M. Head, Ph.D., P.E.; S. K. Kunnath, Ph.D., P.E.; F. N. Nnadi, Ph.D., P.E.; A. Oloufa, Ph.D., P.E.; U. O. Onyemelukwe, Ph.D., P.E.; A. A. Randall, Ph.D., P.E.; R. L. Wayson, Ph.D., P.E.

Assistant Professors: S. M. El-Tawil, Ph.D.; S.C. Hagen, Ph.D.; S. K. Hong, Ph.D.

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.). In addition, more specialized Master of Science (M.S.) degrees are offered 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 two options for the master's degree programs: the thesis 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 non-thesis option is also available for all master's degree programs and requires 36 course work hours and a comprehensive final oral and written examination as a requirement for graduation. This option is recommended only for part-time students on a limited access basis.

Admission

For admission to the advanced degree programs in civil or environmental engineering, students must have completed a bachelor of science degree. Applicants who are applying to the programs without a directly related undergraduate degree should closely check the prerequisites. Admittance to the programs requires a combined verbal and quantitative score of 1000 on the Graduate Record Examination (or 450 on the GMAT) or a grade point average of 3.0 or greater in the last 60 attempted semester hours of undergraduate studies. International applicants must be in the top one-half of their graduating class if only meeting the GRE requirement. In addition, international applicants may have their transcript evaluated by the World Education Services (WES) to meet the minimum grade point average in cases where they do not meet the GRE requirement.

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 engineering degree. As such, math through differential equations and all prerequisite classes for graduate courses is required. 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. Four defined tracks are available for this degree: general civil engineering, structural and geotechnical engineering, transportation engineering, and water resources engineering. The student must develop an individual program of study with a faculty adviser.

Required Courses—15 Semester Hours

Take any three of the following courses for all tracks:
CEG 5015 Geotechnical Engineering II (3 hours)
CEG 5700 Geo-Environmental Engineering (3 hours)

CEG 6115 Foundation Engineering (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 6840 Composite Steel Concrete Structures (3 hours)

Take two courses from among the following courses for all tracks:
TTE 5204 Traffic Engineering (3 hours) OR
TTE 5805 Geometric Design of Transportation Systems (3 hours)

CWR 5205 Hydraulic Engineering (3 hours) OR
CWR 5545 Water Resources Engineering (3 hours) OR
CWR 6125 Groundwater Hydrology (3 hours) OR
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 Computer Science, and often include courses taken from the following three subdiscipline areas, especially when a specific track is followed.

Tracks—9 or 21 Semester Hours
Take three courses with a thesis, or seven courses without a thesis from among the following tracks.

Thesis—6 Semester Hours

Total Hours Required for M.S.C.E.—30 or 36 Semester Hours

Structural and Geotechnical Engineering Track

Any of the structural/geotechnical courses not taken as a required course
CEG 6065 Soil Dynamics (3 hours)
CEG 6317 Advanced Geotechnical Engineering (3 hours)
CES 5325 Bridge Engineering (3 hours)
CES 5821 Masonry and Timber Design (3 hours)
CES 6116 Finite Element Structural Analysis (3 hours)
CES 6170 Boundary Element Methods in Civil Engineering (3 hours)
CES 6209 Dynamics of Structures (3 hours)
CES 6220 Wind and Earthquake Engineering (3 hours)
CES 6230 Advanced Structural Mechanics (3 hours)
CES 6715 Prestressed Concrete Structures (3 hours)
CES 6840 Composite Steel Concrete Structures (3 hours)
CES 6910 Research in Structural Engineering (3 hours)
TTE 5835 Pavement Design (3 hours)
Other courses with adviser's consent (3 hours each)

Transportation Engineering Track

Any of the transportation courses not taken as a required course
CGN 6655 Regional Planning, Design, and Systems (3 hours)
TTE 5205 Highway Capacity and Traffic Flow Analysis (3 hours)
TTE 6315 Traffic 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 Track

Any of the water resources courses not taken as a required course
CWR 6102 Advanced Hydrology (3 hours)
CWR 6126 Groundwater Modeling (3 hours)
CWR 6236 River Engineering and Sediment Transport (3 hours)
CWR 6535 Modeling Water Resources Systems (3 hours)
CWR 6539 Finite Differences/Elements in Surface Water Modeling (3 hours)

Master of Science

The Master of Science degree is offered in five areas of study or tracks: structures and foundations engineering, transportation systems engineering, water resources engineering, environmental engineering sciences, and environmental engineering. Each track is described below in detail.

Structures and Foundations Engineering Track

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 adviser and must have background or articulation course work to include:

Prerequisites
CEG 4101C Geotechnical Engineering I
CES 4101 Structural Analysis II
CES 4605 Steel Structures OR
CES 4702 Reinforced Concrete Structures
EGN 3310 Engineering Analysis-Statics
EGN 3321 Engineering Analysis-Dynamics
EGN 3331 Mechanics of Materials

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 subgroup. Other courses may also be taken with the consent of the faculty adviser.

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 Element Methods in Civil Engineering (3 hours)
TTE 5835 Pavement Design (3 hours)

Sub-Group B: Structural Engineering
CES 5325 Bridge Engineering (3 hours)
CES 5606 Advanced Steel Structures (3 hours)
CES 5706 Advanced Reinforced Concrete (3 hours)
CES 5821 Masonry and Timber Design (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 6230 Advanced Structural Mechanics (3 hours)
CES 6715 Prestressed Concrete Structures (3 hours)
CES 6840 Composite Steel Concrete Structures (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

Transportation Systems Engineering Track

The department offers a Master of Science (M.S.) degree in Transportation Systems Engineering for 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 (STA 3032)
Engineering Economic Analysis (EGN 3613)
Transportation Engineering (TTE 4004)
Mathematics through Differential Equations (MAC 2311, 2312, 2313; MAP 2302)

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 5205 Highway Capacity and Traffic Flow Analysis (3 hours)
TTE 6315 Traffic Safety Analysis (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

Water Resources Engineering Track

The department offers a Master of Science (M.S.) degree in Water Resources Engineering to students with appropriate science or 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. Each student must have an individual program of study approved by the student's faculty committee and have completed all required articulation course work as described below.

Prerequisites
CEG 4101C Geotechnical Engineering I
CWR 4101C Hydrology
CWR 4203C Hydraulics
EGN 3613 Engineering Economic Analysis
STA 3032 Probability and Statistics for Engineers

Required Courses (any five)—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 6236 River Engineering and Sediment Transport (3 hours)
CWR 6535 Modeling Water Resources Systems (3 hours)

Technical Elective Courses—9 or 15 Semester Hours
ENV 6046 Membrane Mass Transfer (3 hours)
ENV 6055 Fate and Transport of Subsurface Contaminants (3 hours)
ENV 6336 Site Remediation and Hazardous Waste Treatment (3 hours)
CEG 6317 Advanced Geotechnical Engineering (3 hours)
CWR 6539 Finite Differences / Elements in Surface Water Modeling (3 hours)
STA 5156 Probability and Statistics for Engineers (3 hours) OR
STA 5206 Statistical Analysis (3 hours)
Other courses with adviser's consent (3 hours each)

Thesis—6 Semester Hours

Total Hours Required for M.S.—30 or 36 Semester Hours

Environmental Engineering Sciences Track

Students who enter the graduate program in environmental engineering are expected to be knowledgeable in the topics required in the undergraduate program at UCF, including chemistry, process design, water resources, air pollution, and solid waste. This requirement is satisfied ideally by completion of university course work at UCF or elsewhere. Preliminary articulation requirements are noted below as general guidelines for prospective students, depending on undergraduate degree. Final articulation requirements will be determined by the department after students have been admitted and after discussions with their advisers. The degree requires (a) 30 semester hours of acceptable graduate work, which includes a thesis (6 semester hours), **or** (b) 36 semester hours of acceptable graduate work with a comprehensive final examination. The student develops an individualized program of study with a faculty adviser.

Prerequisites (all students)
Calculus through Differential Equations

Prerequisites for students with engineering undergraduate degrees in civil, environmental, mechanical, chemical engineering:
CWR 4101C Hydrology
EES 4111C Biological Process Control
EES 4202C Chemical Process Control
ENV 4121C Air Pollution
ENV 4561 Environmental Engineering—Process Design
(or equivalent courses)

Prerequisites for students with undergraduate degrees in other engineering disciplines:
CWR 3201 Engineering Fluid Mechanics
CWR 4101C Hydrology
CWR 4203C Hydraulics
EES 4111C Biological Process Control
EES 4202C Chemical Process Control
ENV 4121C Air Pollution
ENV 4561 Environmental Engineering—Process Design
(or equivalent courses)

Prerequisites for students with appropriate science or math undergraduate degrees:
CHM 2046 Chemistry Fundamentals II
CWR 3201 Engineering Fluid Mechanics
CWR 4101C Hydrology
CWR 4203C Hydraulics
EES 4111C Biological Process Control
EES 4202C Chemical Process Control
EGN 3613 Engineering Economic Analysis
ENV 4121C Air Pollution
ENV 4561 Environmental Engineering—Process Design
(or equivalent courses)

Prerequisites for students with nontechnical undergraduate degrees:
Articulation is quite extensive in such cases and it is recommended that a second undergraduate degree in Environmental Engineering be completed before applying to graduate school.

Required Courses—12 Semester Hours
CWR 5545 Water Resources Engineering (3 hours) OR
CWR 6125 Groundwater Hydrology (3 hours) OR
CWR 6235 Open Channel Hydraulics (3 hours)
ENV 6015 Physical/Chemical Treatment Systems (3 hours) OR
ENV 6016 Biological Treatment Systems (3 hours) OR
ENV 6558 Industrial Waste Treatment (3 hours)
ENV 6106 Theory and Practice of Atmospheric Dispersion Modeling (3 hours) OR
ENV 6126 Design of Air Pollution Controls (3 hours) OR
ENV 6347 Hazardous Waste Incineration (3 hours)
ENV 5071 Environmental Analysis Transportation Systems (3 hours) OR
ENV 6519 Aquatic Chemical Processes (3 hours) OR
ENV 6616 Receiving Water Impacts (3 hours)

Elective Courses—12 or 24 Semester Hours
Any of the appropriate ENV or CWR or appropriate graduate-level courses (5000 or 6000) with the consent of the student's adviser (3 hours each)

Thesis—6 Semester Hours

Total Hours Required for M.S.—30 or 36 Semester Hours

Master of Science in Environmental Engineering

The department offers a Master of Science degree in Environmental Engineering (M.S.Env.E.) for students who have an undergraduate degree in Environmental Engineering or any other closely related degree in engineering. Students who enter the graduate program in environmental engineering are expected to be knowledgeable in the topics required in the undergraduate program at UCF, including chemistry, process design, water resources, air pollution, and solid waste. This requirement is satisfied ideally by completion of university course work at UCF or elsewhere. Preliminary articulation requirements are noted below as general guidelines for prospective students, depending on undergraduate degree. Final articulation requirements will be determined by the department after students have been admitted and after discussions with their advisers. The degree requires either (a) 30 semester hours of acceptable graduate work, which includes a thesis (6 semester hours), or (b) 36 semester hours of acceptable graduate work, which includes a comprehensive final examination. The student develops an individualized program of study with a faculty adviser.

Required Courses—15 Semester Hours
CWR 5545 Water Resources Engineering (3 hours) OR
CWR 6125 Groundwater Hydrology (3 hours) OR
CWR 6235 Open Channel Hydraulics (3 hours)
ENV 6015 Physical/Chemical Treatment Systems (3 hours)
ENV 6016 Biological Treatment Systems in Environmental Engineering (3 hours)
ENV 6347 Hazardous Waste Incineration (3 hours) OR
ENV 6558 Industrial Waste Treatment (3 hours)
ENV 6106 Theory and Practice of Atmospheric Dispersion Modeling (3 hours) OR
ENV 6126 Design of Air Pollution Controls (3 hours)

Elective Courses—9 or 21 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 Specialization
Any of the appropriate ENV graduate-level courses (5000 or 6000) with the consent of the student's adviser (3 hours each)

Water Resources Specialization
Any of the appropriate CWR graduate-level courses (5000 or 6000) with the consent of the student's adviser (3 hours each)

Thesis—6 Semester Hours

Total Hours Required for M.S.Env.E.—30 or 36 Semester Hours

Doctor of Philosophy in Civil Engineering or Environmental Engineering

The Doctor of Philosophy (Ph.D.) degree requires a student to have completed 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 and achieve a combined verbal and quantitative score of 1100 on the Graduate Record Examination (or equivalent GMAT score). Prospective applicants should forward a detailed resume and a letter with research interests for department review with the application. In addition, the student must pass a Ph.D. Qualifying Examination in one of the departmental disciplines. This examination must be 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 must be from courses taken outside the department while at UCF. A maximum of 36 semester hours, which may include 6 thesis hours, may be transferred from a master's degree toward these requirements. 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 course work and consists of a written portion and an oral presentation of a research proposal. A copy of the written 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.

Graduate Certificates in Civil Engineering

In addition to master's and doctoral degrees, the department offers certificates designed to provide flexible graduate education to the practicing professional.

Certificate in Geotechnical Engineering and Construction Materials

Geotechnical engineering and construction materials is a key area related to the large developments taking place in the Central Florida area. Engineers continually need more applied knowledge of the behavior of soils and suitable materials for use in construction such as asphalt, concrete, aggregates, etc. The course work in this certificate program will help professionals update their knowledge of research and practice in this area.

Required Courses—12 Semester Hours
CEG 5015 Geotechnical Engineering II (3 hours)
CEG 6115 Foundation Engineering (offered every other year) (3 hours)
CGN 5504C Civil Engineering Materials (offered every other year) (3 hours)
TTE 5835 Pavement Design (3 hours)

Certificate in Structural Engineering

Structural engineering plays a significant role in the ongoing infrastructure developments in the Central Florida area. Engineers continually need to update their knowledge of the state-of-the-art in research and practice to ensure the safety of constructed facilities. This certificate program provides courses in this area.

Required Courses—12 Semester Hours
Choose four courses:
CEG 6115 Foundation Engineering (3 hours)
CES 5325 Bridge Engineering (3 hours)
CES 5606 Advanced Steel Structures (3 hours)
CES 5706 Advanced Reinforced Concrete (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 6230 Advanced Structural Mechanics (3 hours)
CES 6715 Prestressed Concrete Structures (3 hours)

Certificate in Surface Water Modeling

In Florida, conservation and management of our surface water resources is crucial. Course work for this graduate certificate will provide additional insight and an in-depth knowledge of the problem for local officials.

Prerequisite
CWR 4812C Water Resource Design (3 hours) or equivalent is required as a prerequisite.

Required Courses—15 Semester Hours
CWR 5545 Water Resources Engineering (3 hours)

CWR 6125 Ground Water Hydrology (3 hours) OR
CWR 6126 Groundwater Modeling (3 hours)

CWR 6236 River Engineering and Sediment Transport (3 hours)
CWR 6535 Modeling Water Resources Systems (not in current schedule, may need to replace) (3 hours)
CWR 6539 Finite Differences / Elements in Surface Water Modeling (3 hours)

Certificate in Transportation Engineering

Transportation engineering is crucial for the Orlando area. As grid-lock comes more evident, more skilled professionals will be needed. This certificate program will be helpful for professionals faced with solving transportation needs.

Required Courses—12 Semester Hours
Choose four courses:
CGN 6655 Regional Planning, Design, and Development (3 hours)
ENV 5071 Environmental Analysis of Transportation Systems (3 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)
TTE 6315 Traffic Safety Analysis (3 hours)
TTE 6625 Mass Transportation Systems (3 hours)

Graduate Certificates in Environmental Engineering

Certificate in Air Pollution Control

As development continues in Central Florida, our air quality continues to decline. Knowledgeable engineers are needed to help develop solutions for this problem. The course work for this certificate will help prepare these engineers.

Required Courses—12 Semester Hours
ENV 5116 Air Pollution Monitoring (3 hours)
ENV 6106 Theory and Practice of Atmospheric Dispersion Modeling (offered every other year) (3 hours)
ENV 6126 Design of Air Pollution Controls (offered every other year) (3 hours)
ENV 6347 Hazardous Waste Incineration (offered every other year) (3 hours)

Certificate in Drinking Water Treatment

Rapid population growth in the Central Florida area requires ever-growing quantities of drinking water. Furthermore, significant improvements in existing water treatment processes are needed to comply with more stringent current and future drinking water regulations. This certificate program will provide fundamental and practical knowledge for local drinking water professionals to fulfill this need.

Required Courses—12 Semester Hours
Choose four courses:
CWR 5205 Hydraulic Engineering (3 hours)
CWR 6125 Groundwater Hydrology (3 hours)
CWR 6235 Open Channel Hydraulics (3 hours)
ENV 5410 Drinking Water Treatment (3 hours)
ENV 6015 Physical / Chemical Treatment Systems in Environmental Engineering (3 hours)
ENV 6046 Membrane Mass Transfer (3 hours)
ENV 6504L Unit Operation and Processes Laboratory (3 hours)
ENV 6519 Aquatic Chemical Processes (3 hours)
ENV 6938 Seminar: Particle Processes in Aquatic Systems (3 hours)

Certificate in Hazardous Waste Management

Hazardous waste mismanagement in the past has lead to widespread environmental contamination. Regulations have been enacted over the past two decades to ensure proper management. However, implementation of these regulations is complex. This certificate program addresses the need for training and education of professionals in this field.

Required Courses—12 Semester Hours
ENV 5335 Hazardous Waste Management (3 hours)
ENV 6347 Hazardous Waste Incineration (3 hours)
ENV 6558 Industrial Waste Treatment (3 hours)
Elective course approved by adviser (3 hours)

Certificate in Hazardous Waste Site Remediation

Hazardous waste continues to be an environmental concern. The certificate program offers courses to help in solving these problems.

Required Courses—12 Semester Hours
CWR 6125 Groundwater Hydrology (3 hours)
ENV 5335 Hazardous Waste Management (3 hours)
ENV 6055 Fate and Transport of Subsurface Contaminants (3 hours)
ENV 6336 Site Remediation and Hazardous Waste Treatment (3 hours)

Certificate in Wastewater Treatment

Development continues in the Central Florida area causing a strain on our wastewater facilities. More experienced professionals are needed to handle this growing concern. This certificate program offers courses to help professionals update their knowledge of research and practice in this area.

Required Courses—12 Semester Hours
ENV 6016 Biological Treatment Systems in Environmental Engineering (3 hours)

Choose three courses:
ENV 5505 Sludge Management Operations in Environmental Engineering (offered every other year) (3 hours)
ENV 6015 Physical / Chemical Treatment Systems in Environmental Engineering (3 hours)
ENV 6519 Aquatic Chemical Processes (offered every other year) (3 hours)
ENV 6558 Industrial Waste Treatment (3 hours)

School of Electrical Engineering and Computer Science

The School of Electrical Engineering and Computer Science consists of three independent but interrelated programs: the Computer Engineering (CpE) program, the Computer Science (CS) program, and the Electrical Engineering (EE) program.

Director of the School: Erol Gelenbe
Computer Engineering Program Director: Christian S. Bauer, ENGR 407C, (407) 823-2236. E-mail: csb@engr.ucf.edu
Computer Science Program Director: Ronald D. Dutton, CSB 263, (407) 823-2920. E-mail: dutton@cs.ucf.edu
Electrical Engineering Program Director: Zhihua Qu, ENGR 446, (407) 823-5976. E-mail: qu@pegasus.cc.ucf.edu
Computer and Electrical Engineering Graduate Coordinator: Michael Georgiopoulos, ENGR 407B, (407) 823-5338. E-mail: michaelg@mail.ucf.edu
Computer Science Graduate Coordinator: Ronald D. Dutton, CSB 263, (407) 823-2920. E-mail: dutton@cs.ucf.edu

Application Deadlines

Fall Admission	March 1*
Fall Admission	July 15
Spring Admission	December 1
Summer Admission	April 15

* Students applying for fellowships or assistantships must apply for the Fall semester by this date.

Computer Engineering Program

Faculty
Professors: C. S. Bauer, Ph.D.; A. J. Gonzalez, Ph.D.
Associate Professors: R. DeMara, Ph.D.; H. I. Klee, Ph.D.; D. G. Linton, Ph.D; B. E. Petrasko, D. Eng.; J. Zalewski, Ph.D.; G. Walton, Ph.D.
Assistant Professors: F. Gonzalez, Ph.D.

The School of Electrical Engineering and Computer Science offers Master of Science and Doctor of Philosophy degrees in Computer Engineering. Students in the CpE program receive a broad background in the areas of software engineering, digital systems, computer architectures and knowledge-based systems while specializing in a research area of their interest. Research interests of the CpE faculty include digital systems, computer architecture, software engineering, artificial intelligence, expert systems, simulation, computer communications and computer vision.

Master of Science in Computer Engineering

The Master of Science degree in Computer Engineering (M.S.Cp.E.) requires a baccalaureate degree in Computer Engineering or a closely related discipline from an accredited 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 Computer and Electrical Engineering 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 program coordinator in consultation with the student's adviser 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 STA 3032)
Numerical methods and matrix algebra (equivalent to EGN 3420)
Engineering data structures (equivalent to EEL 4851C)
Digital logic circuits (equivalent to EEL 3342C)
Computer design (equivalent to EEL 4767C)

Students without this background must take the appropriate course work. Courses taken to correct deficiencies cannot be used to satisfy minimum degree requirements.

Tracks in Computer Engineering

There are four tracks available in the master's degree program in computer engineering. They are:

- Computer Architecture
- Digital Systems
- Knowledge-based Systems
- Software Engineering

Each track has a thesis option and a course work-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 adviser prior to completing 9 hours of course work. A maximum of 9 semester hours of graduate course work taken prior to admission to the program can be used in a graduate degree program.

Thesis Option

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 adviser 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.

Non-Thesis Option

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.

Transfer Credits

Graduate students (subject to approval from an adviser) with a bachelor's degree from Computer Engineering at UCF may transfer up to 9 credit hours of 5000-level work toward a non-thesis M.S. option, and up to 3 credit hours of 5000-level work toward a thesis M.S. option.

Required Courses (Core)—9 Semester Hours

EEL 5708 High Performance Computer Architecture (3 hours)
EEL 5874 Expert Systems and Knowledge Engineering (3 hours)
EEL 5881 Software Engineering I (3 hours)

Computer Architecture Track

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 adviser) (6 hours)
Thesis (6 hours)
Total Hours Required for M.S.Cp.E.—30 Semester Hours

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 adviser) (15 hours)
Final Exam (0 hours)
Total Hours Required for M.S.Cp.E.—36 Semester Hours

Digital Systems Track

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 adviser) (3 hours)
Thesis (6 hours)
Total Hours Required for M.S.Cp.E.—30 Semester Hours

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 (9 hours)
Electives (Selected in consultation with adviser) (9 hours)
Final Exam (0 hours)
Total Hours Required for M.S.Cp.E.—36 Semester Hours

Knowledge-based Systems Track

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 (3 hours):
EEL 6876 Current Topics in AI in Engr. Systems
EEL 6878 Modeling and Artificial Intelligence
Electives (Selected in consultation with adviser) (6 hours)
Thesis (6 hours)
Total Hours Required for M.S.Cp.E.—30 Semester Hours

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 adviser) (12 hours)
Final Exam (0 hours)
Total Hours Required for M.S.Cp.E.—36 Semester Hours

* If the student has taken this course or an equivalent as an undergraduate, then an elective, chosen in consultation with the adviser, can be used to replace this course.

Software Engineering Track

Thesis Option
Core (9 hours)
EEL 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 adviser) (9 hours)
Thesis (6 hours)
Total Hours Required for M.S.Cp.E.—30 Semester Hours

Non-Thesis Option
Core (9 hours)
EEL 6883 Software Engineering II (3 hours)
At least two of the following courses (6 hours):
- EEL 6885 Software Engineering Quality Assurance Methods
- EEL 6887 Software Engineering Life-Cycle Control
- EEL 6897 Software Development for Real-Time Engineering Systems

Electives (selected in consultation with adviser) (18 hours)
Final Exam (0 hours)
Total Hours Required for M.S.Cp.E.—36 Semester Hours

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 **either** a master's degree in computer engineering or a closely related discipline with a minimum grade point average of 3.5 (on a 4.0 scale) and a minimum of 1100 on the combined verbal-quantitative sections of the Graduate Record Examination (GRE) **or** a bachelor's degree in computer engineering or a closely related discipline with a minimum grade point average of 3.5 (on a 4.0 scale) in the last 60 attempted semester hours of the bachelor's degree and a minimum of 1100 on the combined verbal-quantitative sections of the GRE. Admissions decisions using these results and supplemental information are made by the graduate 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 continuing in degree-seeking status usually within the first year of doctoral study.

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 while at UCF. There is a residency requirement of two contiguous semesters in full-time graduate student status (minimum of 9 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 obtained at a regionally accredited institution 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."

Qualifying/Comprehensive Examinations

The prospective doctoral student must take a written Qualifying Examination. 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.

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 Computer Engineering Program that any calculator used during the qualifying examination may not be used to store user-defined programs.

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 five members: three must be faculty members from within the School of Electrical Engineering and Computer Science, and one must be from outside the College of Engineering and Computer Science. The Committee Chair must be a member of the department graduate faculty approved to direct dissertations.

Graduate Certificates in Computer Engineering

Graduate Program Coordinator, Certificates in Computer Engineering: Gwen Walton, Ph.D., ENGR 407, (407) 823-3276. E-mail: gwalton@mail.ucf.edu

Certificate in Software Engineering

The current shortage of computer engineers in the United States has been recently described by many in the industry and government as a shortage of crisis proportion. This certificate program provides students with a level of proficiency in software engineering that satisfies the needs of industry.

Required Courses—12 Semester Hours
EEL 5881 Software Engineering I (3 hours)
EEL 5XXX Software Requirements Engineering (3 hours)
EEL 6887 Software Engineering Life-Cycle Control (3 hours)
EEL 6XXX Software Engineering Architecture and Design (3 hours)

Certificate in Software-Intensive Systems

Due to rapid technological development and changes in software engineering, several important application areas, including real-time systems, computer networking, computer graphics, real-time simulation, and intelligent systems, require significant knowledge that is application-specific. This certificate program directly addresses these needs by providing the opportunity for students to pursue their individual interests as well as meet the needs of industry.

Required Courses—12 Semester Hours
EEL 5881 Software Engineering I (3 hours)
EEL 6883 Software Engineering II (3 hours)

Any 2 of the following courses:
EEL 5771C Engineering Applications of Computer Graphics (3 hours)
EEL 5874 Expert Systems and Knowledge Engineering (3 hours)
EEL 6785 Computer Network Design Methods (3 hours)
EEL 6885 Software Engineering Quality Assurance (3 hours)
EEL 6887 Software Engineering Life-Cycle Control (3 hours)
EEL 6895 Current Issues in Real-Time Simulation (3 hours)
EEL 6897 Software Development for Real-Time Engineering Systems (3 hours)

Computer Science Program

Faculty
Professors: M. A. Bassiouni, Ph.D.; R. C. Brigham, Ph.D.; N. Deo, Ph.D., Millican Endowed Chair in Computer Science; R. D. Dutton, Ph.D.; T. J. Frederick, Ph.D.; E. Gelenbe, Ph.D.; F. Gomez, Ph.D.; R. K. Guha, Ph.D.; C. E. Hughes, Ph.D.; G. Marin, Ph.D.; J. M. Moshell, Ph.D.; A. Mukherjee, Ph.D.; M. A. Shah, Ph.D.
Associate Professors: O. Favorov, Ph.D.; H. C. Gerber, Ph.D.; K. Hua, Ph.D.; S. D. Lang, Ph.D.; J. Leeson, Ph.D.; A. Orooji, Ph.D.; N. da Vitoria Lobo, Ph.D.; D. A. Workman, Ph.D.
Assistant Professors: R. Parsons, Ph.D.; J. Rogers, Ph.D.; A. Wu, Ph.D.
Lecturer: U. Vemulapati, Ph.D.

The School of Electrical Engineering and Computer Science offers Master of Science and Doctor of Philosophy degrees in Computer Science. Students in the computer science program receive a broad background in the areas of programming systems and languages, computer architecture, and computer science theory while specializing in the research area of their interest. Research interests of the CS 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, data-

base management systems, computer graphics, interactive graphic systems of instruction, distributed processing networking, and computational complexity.

Admission

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

- 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 Computer Architecture
  COP 4020 Programming Languages I
  COP 4600 Operating 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).
- Applicants desiring financial support (assistantships or fellowships) are advised to take the Computer Science Graduate Record Examination in order to receive favorable consideration.

Master of Science in Computer Science

Degree Requirements

Required Courses—9 Semester Hours
(Students must receive an "A" or "B" grade in these courses.)
CDA 5106 Advanced Computer Architecture I (3 hours)
COT 5405 Design and Analysis of Algorithms (3 hours)

Select One:
COP 5611 Operating Systems Design Principles (3 hours)
COP 5021 Program Analysis (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 Computer Science faculty, 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 6 semester hours to be taken from graduate courses outside Computer Science.

Two options are available. The Non-Thesis option is a 36-semester-hour program that allows at most 6 hours of independent study. 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. Beyond these two semesters, students are required to be enrolled in at least one hour of thesis until the thesis requirement is satisfied. 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 School of Computer Science.

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 Non-Thesis option and none in the Thesis option
- Two 6000-level courses, with grades of "B" or better, taught by the School of Computer Science
- Six credits of thesis (XXX 6971) for those in the Thesis option

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. 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.

Ph.D. Qualifying Examination

Outstanding students with a bachelor's degree are encouraged to apply directly into the doctoral program. Phase I of the qualifying examination, normally taken within the first two semesters of graduate work, determines whether a student will be allowed to continue for the Ph.D.

Phase I consists of a written examination in which students must successfully pass questions covering at least four areas from a list of areas supplied by the program. To pass the questions of an area requires that the student must clearly convey at least a strong undergraduate knowledge of the area. These written examinations will be offered twice per academic year, normally in September and January. Students are allowed two attempts to pass the Phase I examination. Upon passing, students are officially placed in the Ph.D. program.

Phase II of the qualifying examination consists of the acceptance of a professional paper, normally under the supervision of the student's adviser, by a peer-reviewed conference or journal. It is expected that the Phase II goal should be satisfied within the first eighteen months of graduate work.

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 Engineering and Computer Science.

Plan of Study

The Ph.D. plan of study will consist of a minimum of 15 semester hours of Ph.D. dissertation (CAP, CDA, COP, or COT 7980) credits and at least 57 semester hours of non-dissertation graduate (5000-level or above) credits. The latter must include CDA 5106, COT 5310, COT 5405, at least 15 semester hours of advanced (6000-level) computer science courses, exclusive of Special Topics courses, and 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 12 credits of Independent Study can be used.

Candidacy Examination

The candidacy examination consists 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) the presentation of a written doctoral research prospectus to the committee with an oral review of the proposal.

Students cannot register for dissertation credit (XXX 7980) until the term following successful passing of the candidacy examination.

Residence Requirement

Students in the Ph.D. program are normally expected to be, for at least two consecutive semesters, registered for a minimum of 9 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 adviser and committee, the school director or designee, and the dean of the college or designee. Format approval is required from the Thesis and Publications Editor and final approval of satisfaction of degree requirements by the Office of Graduate Studies (AD 230).

Electrical Engineering Program

Faculty

Professors: J. J. Liou, Ph.D.; D. C. Malocha, Ph.D., P.E.; W. B. Mikhael, Ph.D.; H. R. Myler, Ph.D., P.E.; R. L. Phillips, Ph.D.; N. S. Tzannes, Ph.D.; P. F. Wahid, Ph.D.

Associate Professors: I. Batarseh, Ph.D., Assistant Dean of the College of Engineering and Computer Science; M. Georgiopoulos, Ph.D.; T. Kasparis, Ph.D., R. N. Miller, Ph.D., P.E.; Z. Qu, Ph.D.; S. M. Richie, Ph.D., K. B. Sundaram, Ph.D.; J. S. Yuan, Ph.D.

Assistant Professors: M. G. Haralambous, D. Sc., P.E., T. Wu, Ph.D.

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

The School of Electrical Engineering and Computer Science offers Master of Science and Doctor of Philosophy degrees in electrical engineering. Students in the EE program receive a broad background in areas such as communications, controls / power, digital signal processing, electromagnetics, electronics, electro-optics, and solid state and microelectronics while specializing in a research area of their interest. Research interests of the EE faculty include antennas, microwave and millimeter 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 conjuction, infrared detectors, fourier optics, lens design, and nonlinear optics.

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 a regionally accredited 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 program coordinator for further information.

Detailed information on the tracks and research activities is available in the department. Students must have an adviser appointed and an official program of study submitted before completing nine semester hours of course work. For more information, see the department website at http://www-ece.engr.ucf.edu/.

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 program coordinator in consultation with student's research adviser on a case-by-case basis.

In general, students with a nonelectrical 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 I (EEL 3307C or equivalent)
Electromagnetic Fields (EEL 3470 or equivalent)
Signal Analysis and Communications (EEL 3552C or equivalent)
Semiconductor Devices I (EEL 3306 or equivalent)

Additional courses may also be required to correct any undergraduate course deficiencies. Courses taken to correct deficiencies cannot be used to satisfy minimum degree requirements.

Thesis Option

This option requires a minimum of thirty semester hours of approved course work.

Non-Thesis Option

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.

Transfer Credits

Graduate students (subject to an approval from an adviser) with a bachelor's degree from Electrical Engineering at UCF may transfer up to 9 credit hours of 5000-level work toward an M.S. non-thesis option and up to 3 credit hours of 5000-level work toward an M.S. thesis option.

Degree Requirements

- Required courses from *one* of the following tracks:
  - Communications
  - Controls/Power
  - Digital Signal Processing
  - Electromagnetics
  - Electronics
  - Electro-optics
  - Solid State and Microelectronics
- 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 adviser in an approved program of study.
- At least 15 credit hours must be from 6000-level courses.
- Continuous enrollment in one hour of thesis for those pursuing the thesis option until the thesis requirement is satisfied, beyond the six hours minimum for the thesis.

Communications Track

Required Courses—12 Semester Hours
EEL 5542 Random Processes I (3 hours)
EEL 6530 Communication Theory (3 hours)

One course from two of the following tracks: Controls/Power, Digital Signal Processing, Electromagnetics, Electronics, Electro-optics, Solid State and Microelectronics (6 hours)

Electives
EEL 6504 Communications Systems Design (3 hours)
EEL 6543 Random Processes II (3 hours)
EEL 6537 Detection and Estimation (3 hours)
EEL 5555C RF and Microwave Communications (3 hours)
EEL 5762 Performance Analysis of Computer and Communication Systems (3 hours)
EEL 5547 Introduction to Radar Systems (3 hours)
EEL 6785 Computer Network Design (3 hours)
EEL 6590 Advanced Topics in Communications (3 hours)

Thesis Option—18 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (12 hours)

Non-Thesis Option—24 Semester Hours
Electives (24 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

Controls/Power Track

Required Courses—12 Semester Hours
EEL 5630 Digital Control Systems (3 hours)
EEL 5173 Signal and System Analysis (3 hours)

One course from two of the following tracks: Communications, Digital Signal Processing, Electromagnetics, Electronics, Electro-optics, Solid State and Microelectronics (6 hours)

Electives in Controls
EEL 6621 Nonlinear Control Systems (3 hours)
EEL 6671 Modern and Optimal Control Systems (3 hours)
EEL 6674 Optimal Estimation for Control (3 hours)
EEL 6617 Fundamentals of Modern Multivariable Control (3 hours)
EEL 6616 Adaptive Control (3 hours)
EEL 6680 Advanced Topics in Modern Control Systems (3 hours)

Electives in Power
EEL 5245C Power Electronics I (3 hours)
EEL 6208 Advanced Machines (3 hours)
EEL 6255 Advanced Power Systems Analysis (3 hours)
EEL 6269 Advanced Topics in Power Engineering (3 hours)
EEL 6246 Power Electronics II (3 hours)

Thesis Option—18 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (12 hours)

Non-Thesis Option—24 Semester Hours
Electives (24 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

Digital Signal Processing Track

Required Courses—12 Semester Hours
EEL 4750 Digital Signal Processing Fundamentals (3 hours)
EEL 5513 Digital Signal Processing Applications (3 hours)
One course from two of the following tracks: Communications, Controls / Power, Electromagnetics, Electronics, Electro-optics, Solid State and Microelectronics (6 hours)

Electives
EEL 6502 Adaptive Digital Signal Processing (3 hours)
EEL 6505 Multidimensional Digital Processing (3 hours)
EEL 6558 Advanced Topics in Digital Signal Processing (3 hours)
EEL 5820 Image Processing I (3 hours)
EEL 6823 Image Processing II (3 hours)
EEL 5825 Pattern Recognition (3 hours)

Electromagnetics Track

Required Courses—12 Semester Hours
EEL 6488 Electromagnetic Fields (3 hours)

One of the following courses is required:
EEL 4436C Microwave Engineering (3 hours)
EEL 5462C Antenna Analysis and Design (3 hours)
EEL 5434 Microwave Circuits and Devices (3 hours)

One course from two of the following tracks: Communications, Controls / Power, Digital Signal Processing, Electronics, Electro-optics, Solid State and Microelectronics (6 hours)

Electives
EEL 5555C RF and Microwave Communications (3 hours)
EEL 6463 Antenna Analysis and Design II (3 hours)
EEL 6492 Advanced Topics in Electromagnetics and Microwaves (3 hours)

Thesis Option—18 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (12 hours)

Non-Thesis Option—24 Semester Hours
Electives (24 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

Electronics Track

Required Courses—12 Semester Hours
EEL 6371 Advanced Electronics I (3 hours)

One of the following courses is required:
EEL 5245C Power Electronics I (3 hours)
EEL 5357 CMOS Analog and Digital IC Design (3 hours)

One course from two of the following tracks: Communications, Controls / Power, Digital Signal Processing, Electromagnetics, Electro-optics, Solid State and Microelectronics (6 hours)

Electives
EEL 5353 Semiconductor Device Modeling and Simulation (3 hours)
EEL 5370 Operational Amplifiers (3 hours)
EEL 6354 Advanced Semiconductor Devices II (3 hours)
EEL 6372 Advanced Topics in Electronics (3 hours)
EEL 6246 Power Electronics II (3 hours)

Thesis Option—18 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (12 hours)

Non-Thesis Option—24 Semester Hours
Electives (24 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

Electro-optics Track

Required Courses – 9 Semester Hours
EEL 5441 Introduction to Wave Optics (3 hours)
EEL 6560 Laser Engineering (3 hours)
EEL 6561 Fourier Optics (3 hours)

Electives
Courses from the following tracks can serve as electives: Communications, Controls / Power, Digital Signal Processing,

Electromagnetics, Electronics, Solid State and Microelectronics. The elective courses depend on the sub-option chosen in the Electro-optics track. The sub-options are: Photonics, Optical Communications, Electro-optics Systems, Imaging Systems, Remote Sensing, and Laser Engineering. More details of these sub-options can be obtained from the graduate office at the School of Electrical Engineering and Computer Science.

Thesis Option—21 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (15 hours)

Non-Thesis Option—27 Semester Hours
Electives (27 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

Solid State and Microelectronics Track

Required Courses—12 Semester Hours
EEL 5355C Fabrication of Solid-state Devices (3 hours)
EEL 6354 Advanced Semiconductor Device I (3 hours)

One course from two of the following tracks: Communications, Controls / Power, Digital Signal Processing, Electromagnetics, Electronics, Electro-optics (6 hours)

Electives
EEL 5332C Thin Film Technology (3 hours)
EEL 5353 Semiconductor Device Modeling and Simulation (3 hours)
EEL 5357 CMOS Analog and Digital IC Design (3 hours)
EEL 5517 Surface Acoustic Wave Devices and Systems (3 hours)
EEL 5352 Semiconductor Material and Device Characterization (3 hours)
EEL 6354 Advanced Semiconductor Device II (3 hours)
EEL 6338 Advanced Topics in Microelectronics (3 hours)

Thesis Option—18 Semester Hours
EEL 6971 Thesis (6 hours)
Electives (12 hours)

Non-Thesis Option—24 Semester Hours
Electives (24 hours)

Total Hours Required for M.S.E.E.—30 or 36 Semester Hours

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 **either** a master's degree in electrical engineering or a closely related discipline with a minimum grade point average of 3.5 (on a 4.0 scale) and a minimum of 1100 on the combined verbal-quantitative sections of the Graduate Record Examination (GRE), **or** a bachelor's degree in electrical engineering or a closely related discipline with a minimum grade point average of 3.5 (on a 4.0 scale) in the last 60 attempted semester hours of the bachelor's degree and a minimum of 1100 on the combined verbal-quantitative portion of the GRE.

Students are required to pass a qualifying examination within their first year of doctoral study. The student must then 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 while at UCF. There is a residency requirement of two contiguous semesters in full-time graduate student status (minimum of 9 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."

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. It is the policy of the department that any calculator used during the qualifying examination may not be used to store user-defined programs.

1. **Fundamentals—**This is a closed book four-hour examination on the fundamentals of electrical engineering. The student must pass four of the eight subject areas on the test:

Circuits	Electromagnetic Fields
Communications	Electronics
Controls / Power	Physical Electronics
Digital Systems	Digital Signal Processing

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.

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 five members: three must be faculty members from within the School of Electrical Engineering and Computer Science, and one must be from outside the College of Engineering and Computer Science. The committee Chair must be a member of the department graduate faculty approved to direct dissertations.

Graduate Certificates in Electrical Engineering

Graduate Program Coordinator, Certificates in Electrical Engineering: Michael Georgiopoulos, Ph.D., ENGR 407, (407) 823-5338. E-mail: michaelg@mail.ucf.edu

Certificate in Antennas and Propagation

Antenna design and electromagnetic propagation is of great importance in several areas, such as radar, wireless communications, and remote sensing. This certificate program provides the knowledge and training needed for people to work in this area.

Required Courses—15 Semester Hours
EEL 4436 Microwave Engineering (3 hours)
EEL 5432 Satellite Remote Sensing (3 hours)
EEL 5462C Antenna Analysis and Design (3 hours)
EEL 5547 Introduction to Radar Systems (3 hours)
EEL 6488 Electromagnetic Fields (3 hours)

Certificate in Communications Systems

Every day we use a variety of modern communication systems and communication media, including the telephone, radio, television, electronic mail, and facsimile. Through these media we can communicate (nearly) instantaneously with people on different continents, transact our daily business, and receive information about developments and events of note that occur around the world. This certificate program provides the basic principles in the analysis and design of communication systems. After presentation of the background concepts of probability, random variables, and stochastic processes, students will be able to analyze existing or new communication systems. The fundamental elements of all communication systems (transmitter, channel, and receiver) will be thoroughly investigated and a number of practical communication systems will be discussed in detail.

Required Courses—9 Semester Hours
EEL 5542 Random Processes I (3 hours)
EEL 6504 Communications Systems Design (3 hours)
EEL 6530 Communication Theory (3 hours)

Certificate in Digital Signal Processing

Digital signal processing encompasses many types of applications, ranging from the processing of speech signals to the automatic recognition of characters in a scanned document. This certificate program provides students with a basic understanding of digital processing techniques by building on a formal foundation in sampling of analog signals, finite impulse response filters, and infinite impulse response filters.

Required Courses—12 Semester Hours
EEL 4750 Digital Signal Processing Fundamentals (3 hours)
EEL 5513 Digital Signal Processing Applications (3 hours)

Any 2 of the following courses:
EEL 5820 Image Processing I (3 hours)
EEL 6823 Image Processing II (3 hours)
EEL 5825 Pattern Recognition (3 hours)
EEL 6502 Adaptive Digital Signal Processing (3 hours)
EEL 6505 Multidimensional Digital Processing (3 hours)
EEL 6558 Advanced Topics in Digital Signal Processing (3 hours)

Certificate in Electronic Circuits

This certificate program emphasizes modern design practice for power electronics, CMOS-integrated circuits, computer-aided circuit simulation, semiconductor device modeling, advanced analog and digital circuits, and advanced machinery. The power electronics courses cover principles of power elec-

tronics, power semiconductor devices, inverter topologies, switch-mode and resonant dc-to-dc converters, cyclo-converters, and advanced topics (soft-switching techniques, small-signal modeling of PWM and resonant converters, control techniques, power factor correction circuits). Conventional analog circuits such as ideal and non-ideal OP-amps, active RC and switched-capacitor filters, non-linear and other functional circuits, frequency stability and compensation of OP-amps will also be included. For electronic circuit design, SPICE circuit simulation is an essential computer-aided design tool, and course work focuses on semiconductor device modeling for circuit simulation, illustration of semiconductor device physics, and design principles of advanced CMOS analog and digital circuits in mixed-signal integrated circuits. Extensive circuit simulation and design examples will be provided.

Required Courses—12 Semester Hours
EEL 5245C Power Electronics (3 hours)
EEL 5357 CMOS Analog and Digital IC Design (3 hours)

Any 2 of the following courses:
EEL 5353 Semiconductor Device Modeling and Simulation (3 hours)
EEL 5370 Operational Amplifiers (3 hours)
EEL 6208 Advanced Machines (3 hours)
EEL 6246 Power Electronics (3 hours)

Industrial Engineering and Management Systems

Chair of the Department: Charles H. Reilly
Graduate Program Coordinator: Linda C. Malone, ENGR 307B, (407) 823-2204. E-mail: lmalone@mail.ucf.edu

Faculty
Professors: John E. Biegel, Ph.D., P.E., Professor Emeritus; Yasser A. Hosni, Ph.D., P.E., Martin-Marietta Distinguished Professor; Dennis K. McBride, Ph.D., C.P.E.; Linda C. Malone, Ph.D.; Charles H. Reilly, Ph.D.; George F. Schrader, Ph.D., P.E., Professor Emeritus; Gary E. Whitehouse, Ph.D., P.E., Provost and Academic Vice President
Associate Professors: Robert L. Armacost, D.Sc.; Ahmad K. Elshennawy Ph.D., C.Q.E., C.R.E.; Robert L. Hoekstra, Ph.D.; Dennis Kulonda, Ph.D.; Gene C.H. Lee, Ph.D., P.E.; Pamela R. McCauley-Bell, Ph.D.; Mansooreh Mollaghasemi, Ph.D.; Michael A. Mullens, Ph.D.; Julia J.A. Pet-Edwards, Ph.D.; James M. Ragusa, D.B.A.; José A. Sepúlveda, Ph.D., P.E.; Kay M. Stanney, Ph.D.; Kent E. Williams, Ph.D.
Assistant Professors: Timothy G. Kotnour, Ph.D.; Michael D. Proctor, Ph.D.; William J. Thompson, Ph.D.

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 options in Simulation Systems, which are now the Interactive Simulation and Training Systems Track and the Simulation Modeling and Analysis Track. These tracks 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 track in Product Assurance Engineering. This track has been revised recently and is now called Quality Engineering. In 1996, the department was granted permission to offer a track 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, in 2000 the area of Manufacturing was reorganized under the umbrella of Manufacturing Engineering with four areas of emphasis: Manufacturing Management, Manufacturing Processes and Systems, Computer-Integrated Manufacturing, and High Performance Internal Combusion Engine Optimization. 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 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 from among the General Electric Company, Embry-Riddle Aeronautical University, and UCF's Industrial Engineering Department to support the development of an Intelligent Simulation 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 that 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 non-polluting alternative fuels that use mixtures of hydrogen and methane. Systemwide considerations include research in optimization of engine design and performance as well as development of the infrastructure to support alternative fuels.

Simulation-related research continues to be a major effort. The simulation research is very broad ranging from development of models for time / space interactions to validation

of man-in-the-loop simulations. Research supported by the U.S. Army involves the effectiveness of training simulations and the evaluation of distributed interactive simulation. Human engineering and ergonomics research activities include several studies of human computer interaction, particularly with respect to virtual reality applications as well as studies of cumulative trauma disorders. Several recent studies have addressed the problem of resource constrained project scheduling and have focused on algorithmic improvements, identification of optimality in stochastic networks, and risk in project scheduling. Research funding from the U.S. Coast Guard supported a risk analysis of the International Ice Patrol and Department of Transportation mandates led to industry supported risk analyses of highway transportation of hazardous fuels.

The department has been recognized for its outstanding performance. In 1993, it was named the 1993 Public Organization of the Year for "world class leadership qualities and professional contributions to engineering education and research" by the Central Florida Joint Council of Engineering Societies. The department also received the Davis Productivity Award presented by the Florida Council of 100, Inc. and Florida Tax Watch, Inc. for its leading edge application of 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, Cirent Technologies (AT&T), Walt Disney World, Sabre Decision Technologies, NASA, Rockwell, Oracle, Harris, Deloite 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 Engineering degree in Industrial Engineering (M.S.I.E.) and a Master of Science (M.S.) degree with tracks in Engineering Management, Human Engineering / Ergonomics, Operations Research, Manufacturing Engineering, Quality Engineering, Interactive Simulation 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 score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) (only applicants whose native language is not English, except for those completing a Bachelor's degree where the course of study was presented in English); and a minimum GPA of 3.0 in the last 60 attempted semester hours of undergraduate studies or a minimum GRE score of 1000 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 complete the GRE regardless of GPA. Students who have previous GMAT scores may use them in place of the GRE. The minimum acceptable GMAT score is 550. Students who have submitted all admission materials but do not have a 3.0 GPA or 1000 GRE or 220 TOEFL (if applicable) 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 tracks 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 adviser 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 of 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 nine 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 (M.S.I.E.)

Industrial Engineering focuses on a total systems approach to optimize operations in manufacturing and service industries. Industrial engineers use many different analytical approaches to improve productivity and quality of working life while reducing operating costs. UCF awards the Master of Science in Industrial Engineering 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.

For a student with a B.S.I.E., there are two options:

1. Generalist Option
EIN 5117 Management Information Systems I (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 6357 Advanced Engineering Economic Analysis OR ESI 6358 Decision Analysis (3 hours)
ESI 5XXX Engineering Statistics (3 hours)
ESI 5236 Reliability Engineering (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)
Three 6000-level electives and three other electives OR one 6000-level elective, thesis, and one additional elective

2. Specialist Option
Any M.S. track

For students with any other engineering B.S. degree, the following courses are required:

Prerequisites
Any higher level computer language
EIN 3314 Work Measurement and Design (3 hours)
EIN 4333 Industrial Control Systems (3 hours)
EIN 4391 Manufacturing Engineering (3 hours)

Program of Study
EIN 4364 Industrial Facilities Planning and Design (3 hours)
EIN 5117 Management Information Systems I (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 5248C Ergonomics (3 hours)
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
ESI 5XXX Engineering Statistics (3 hours)
ESI 5316 Operations Research (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6225 Quality Design and Control (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)
Two 6000-level electives

Master of Science

Engineering Management Track

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 analytical, organizational, and managerial 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—24 Semester Hours
EIN 5108 The Environment of Technical Organizations (3 hours)
EIN 5117 Management Information Systems I (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 6322 Engineering Management (3 hours)
EIN 6339 Operations Engineering (3 hours)
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
ESI 5316 Operations Research (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Thesis Option—6 Semester Hours
EIN 6971 Thesis (6 hours)

Non-Thesis Option—12 Semester Hours
Electives (12 hours), including two 6000-level courses

Total Hours Required for M.S.—30-36 Semester Hours

Human Engineering/Ergonomics Track

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 assists 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)
Human Engineering (EIN 4243C or equivalent)*

* Undergraduate course may be included in program of study as an elective

Required Courses—18 Semester 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)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

Human Performance/Perception Restricted Elective—3 Semester Hours
Select one of the following courses:
EXP 5208 Sensation and Perception (3 hours)

EXP 5256 Human Factors I (3 hours)
EXP 6255 Human Performance (3 hours)
EXP 6506 Human Cognition and Learning (3 hours)

Thesis Option—6 Semester Hours
EIN 6971 Thesis (6 hours)

Non-Thesis Option—9 Semester Hours
Electives (9 hours)

Total Hours Required for M.S.—30-36 Semester Hours

Interactive Simulation and Training Systems Track

The Interactive Simulation and Training Systems track focuses on providing a fundamental understanding of significant topics relative to systems, requirements, design, development and use of such systems for knowledge transfer in the technical environment. Additionally, the Interactive Simulation and Training Systems track addresses the evolving and multiple discipline application of interactive simulation by providing a wealth of electives to support development of individual student interests and talents. In conjunction with industrial organizations involved in simulation in the Central Florida region, military organizations, UCF's Institute for Simulation and Training and other governmental organizations, the program provides exposure to both military and commercial interactive simulations and training systems.

The track emphasis is on the application and development of interactive simulation and training systems to meet various requirements to include but are not limited to simulators, skill trainers, organizational learning systems, computer and web-based interactive simulation systems and other novel interactive simulation efforts. The Interactive Simulation and Training Systems curriculum prepares individuals with an undergraduate degree in engineering, science, education, psychology, mathematics or other related disciplines for careers in simulation, focusing particularly on the interactive simulation and training systems industries.

Prerequisites
Computer programming capability
Mathematics through Differential Equations (MAP 2302)

Required Courses—15 Semester Hours
EIN 5255C Interactive Simulation (3 hours)
EIN 5317 Training Systems Engineering (3 hours)
EIN 6645 Modeling and Simulation of Real Time Processes (3 hours)
EIN 6647 Interactive Simulation (3 hours)
EIN 6649C Intelligent Tutoring Training System Design (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Restricted Elective—3 Semester Hours
Select one of the following:
EIN 6524 Simulation Modeling Paradigms (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6532 Object-Oriented Simulation (3 hours)
ESI 6546 Process Simulation (3 hours)

Thesis Option—9 Semester Hours
EIN 6971 Thesis (6 hours)
Electives (3 hours)

Non-Thesis Option—15 Semester Hours
Electives (15 hours)

Total Hours Required for M.S.—30-36 Semester Hours

Manufacturing Engineering Track

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 Engineering 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 Engineering curriculum builds on an undergraduate degree in engineering, mathematics, computer science, or an allied field to develop a strong understanding of manufacturing engineering, manufacturing systems, and the tools required to design, improve, and manage those systems.

The Manufacturing Engineering track has four areas of specialization: manufacturing management, manufacturing processes and systems, computer-integrated manufacturing, and high performance internal combustion engine optimization. Required courses and elective sequences vary for each specialization. Up to nine hours of transfer credit may be used in the program of study.

Prerequisites
BS in engineering, computer science, mathematics, or allied field
Mathematics through Differential Equations (MAP 2302)
Manufacturing Engineering*
Engineering Economic Analysis**

* May be satisfied by graduate electives or by an undergraduate course taken as a graduate elective
** May be satisfied by graduate electives

Degree Requirements
All students seeking an MS degree with specialization area in manufacturing engineering must complete advanced course work in each of the following areas:

- Manufacturing processes: understanding behavior and properties of materials processing
- Process and product engineering: understanding design of products and processes and their associated variables or equipment and tooling necessary for products manufacture
- Understanding the management of manufacturing enterprises through topics such as project management, cost, quality, human resources,safety, environmental issues, and product life cycle
- Manufacturing integration methods and systems design: understanding the design, development, and operation of manufacturing systems through techniques including simulation, modeling, control, and information systems

To satisfy the above knowledge and to receive the degree of Master of Science with emphasis on Manufacturing Engineering, there are two options:

Option I—Students must complete 36 semester hours beyond the bachelor's degree.
Option II—Students must complete 30 semester hours and a research paper (3 semester hours). See "Research Paper Requirements" below under each specialization.

Manufacturing Management Focus

Students selecting to pursue the MS in Manufacturing Engineering with a focus on Manufacturing Management must take the following course work.

Required Courses
EIN 5108 The Environment of Technical Organizations (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 5368C Integrated Factory Automation Systems (3 hours)
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
EIN 6339 Operations Engineering (3 hours)
ESI 5XXX Engineering Statistics* (3 hours)
ESI 6224 Quality Management (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

* May be substituted with an elective at the discretion of adviser or graduate program coordinator

The remainder of the course work will consist of:

- Any other courses (A, B, C, D) below
- Any courses from an approved course list
- Courses approved by the adviser or the graduate program coordinator

Research Paper Requirements
Applies only to Option II above.
For the Research Paper option, the student will prepare and submit a scholarly report in the form of a journal paper. The paper must follow the format requirements of a manufacturing journal (as chosen by the student). The topic and content of the paper will be developed as part of the student's degree requirements. The student will register for EIN 6918 (1 semester hour) to meet this requirement. The student's adviser and an "outside reviewer" will review the paper. This outside reviewer can be an industry or academic person familiar with the research topic.

Manufacturing Processes and Systems Focus

Students selecting to pursue the MS in Manufacturing Engineering with a focus in Manufacturing Processes and Systems must take the following course work.

Required Courses
EIN 5140 Project Engineering (3 hours)
EIN 5368C Integrated Factory Automation Systems (3 hours)
ESI 5XXX Engineering Statistics (3 hours)*
ESI 6225 Quality Design and Control (3 hours)

* May be substituted with an elective at the discretion of adviser or graduate program coordinator

At least one course from each of the following groups must be completed.

A. Manufacturing Processes and Technologies
EIN 4391 Manufacturing Engineering (3 hours)
EIN 5415C Tool Engineering and Manufacturing Analysis (3 hours)
EIN 6418C Electronics Manufacturing (3 hours)
EIN 6398 Advanced and Nontraditional Manufacturing Processes (3 hours)
EGN 5858C Introduction to Rapid Prototyping (3 hours)

B. Process and Product Engineering
EIN 4411 Computer-Aided Manufacturing (3 hours)
ESI 5236 Reliability Engineering (3 hours)
EIN 6930 Manufacturing Engineering Seminar (3 hours)
EIN 6399 Concurrent Engineering (3 hours)
ESI 5227 Total Quality Improvement (3 hours)
EIN 5392C Manufacturing Systems Engineering (3 hours)

C. Manufacturing Productivity and Quality
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
EGN 5855C Metrology (3 hours)
ESI 5316 Operations Research (3 hours)
ESI 6224 Quality Management (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

D. Manufacturing Integration Methods for Systems Design
EIN 6336 Production and Inventory Control (3 hours)
EIN 6425 Scheduling and Sequencing (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
EIN 5607C Computer Control of Manufacturing Systems (3 hours)
EIN 6215 System Safety Engineering and Management (3 hours)
EIN 6330 Quality Systems Automation (3 hours)

Research Paper Requirements
Applies only to Option II above.
For the Research Paper option, the student will prepare and submit a scholarly report in the form of a journal paper. The paper must follow the format requirements of a manufacturing journal (as chosen by the student). The topic and content of the paper will be developed as part of the student's degree requirements. The student will register for EIN 6918 (1 semester hour) to meet this requirement. The student's adviser and an "outside reviewer" will review the paper. This outside reviewer can be an industry or academic person familiar with the research topic.

Computer-Integrated Manufacturing Focus

Students selecting to pursue the MS in Manufacturing Engineering with a focus on Computer-Integrated Manufacturing must take the following course work.

Required Courses
EGN 5858C Introduction to Rapid Prototyping (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 5368 Integrated Factory Automation Systems (3 hours)
EIN 5607C Computer Control of Manufacturing Systems (3 hours)

EIN 6357 Advanced Engineering Economic Analysis (3 hours)
ESI 5XXX Engineering Statistics (3 hours)*
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6225 Quality Design and Control (3 hours)

* May be substituted with an elective at the discretion of adviser or graduate program coordinator

Four additional electives of course work will consist of:

- Any other courses (A, B, C, D) above
- Any courses from an approved course list
- Courses approved by the adviser or the graduate program coordinator

Research Paper Requirements
Applies only to Option II above.
For the Research Paper option, the student will prepare and submit a scholarly report in the form of a journal paper. The paper must follow the format requirements of a manufacturing journal (as chosen by the student). The topic and content of the paper will be developed as part of the student's degree requirements. The student will register for EIN 6918 (1 semester hour) to meet this requirement. The student's adviser and an "outside reviewer" will review the paper. This outside reviewer can be an industry or academic person familiar with the research topic.

High Performance Internal Combustion Engine Optimization Focus

Students selecting to pursue the MS in Manufacturing Engineering with a focus on High Performance Internal Combustion Engine Optimization must take the following course work.

Required Courses
EGN 5720 Internal Combustion Engine Analysis and Optimization (3 hours)
EGN 6721 Experimental Methods for High Performance Engine (3 hours)
EIN 5607C Computer Control of Manufacturing Systems (3 hours)
EIN 6417 Precision Engineering (3 hours)
EIN 6918 Directed Research Project (3 hours)
EIN 6946 Internship / Practicum (3 hours)
ESI 5XXX Engineering Statistics (3 hours)*
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

* May be substituted with an elective at the discretion of adviser or graduate program coordinator

Three additional electives of course work will consist of:

- Any other courses (A, B, C, D) above
- Any courses from an approved course list
- Courses approved by the adviser or the graduate program coordinator

Operations Research Track

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 track 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)
Operations Research (ESI 4312)
Higher level computer programming and microcomputer familiarity

Required Courses—21 Semester Hours
ESI 5XXX Engineering Statistics (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6427 Linear Programming and Extensions (3 hours)
ESI 6437 Nonlinear Programming and Dynamic Programming (3 hours) OR ESI 6448 Network Analysis and Integer Programming (3 hours)
ESI 6358 Decision Analysis (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours) OR STA 6236 Regression Analysis (3 hours)
STA 5825 Stochastic Processes and Applied Probability Theory (3 hours) OR ESI 6336 Queueing Systems (3 hours)

Thesis Option—9 Semester Hours
EIN 6971 Thesis (6 hours)
Electives (3 hours)

Non-Thesis Option—15 Semester Hours
Electives (15 hours)

Total Hours Required for M.S.—30-36 Semester Hours

Quality Engineering Track

Quality Engineering focuses on improving product and process quality in manufacturing and service industries. Quality 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. The Quality Engineering curriculum builds on an undergraduate degree in engineering, science, mathematics, or a closely related discipline to provide the necessary knowledge to plan, control, and improve the product assurance function in government, military, service, or manufacturing organizations. Up to nine hours of transfer credit may be used in the program of study.

Prerequisites
BS in engineering, science, mathematics, or allied field
Mathematics through Differential Equations (MAP 2302)

Required Courses—24 Semester Hours
EIN 6330 Quality Control in Automation (3 hours)
ESI 5XXX Engineering Statistics (3 hours)
ESI 5236 Reliability Engineering (3 hours)

ESI 6224 Quality Management (3 hours)
ESI 6225 Quality Design and Control (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

Thesis Option—12 Semester Hours
EIN 6971 Thesis (6 hours)
Two electives (6 hours) approved by the adviser

Non-Thesis Option—12 Semester Hours
Three restricted electives (12 hours) selected from the list below
Three additional electives (12 hours) including one elective at the 6000-level

Restricted Electives
EGN 5855C Metrology (3 hours)
EIN 5117 Manufacturing Information Systems I (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 5368C Integrated Factory Automation Systems (3 hours)
EIN 5392 Manufacturing Systems Engineering (3 hours)
EIN 6930 Manufacturing Engineering Seminar (3 hours)
ESI 5227 Total Quality Improvement (3 hours)

Total Hours Required for M.S.—30-36 Semester Hours

Simulation Modeling and Analysis Track

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 track 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 track. 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
Computer programming capability in FORTRAN, C, or C++
Mathematics through Differential Equations (MAP 2302)
Operations Research (ESI 4312)*

* This requirement may be met by taking ESI 5316 as part of the program of study.

Required Courses—15 Semester Hours

Simulation Language Foundation—6 hours
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6532 Object-Oriented Simulation (3 hours)

Simulation Modeling Foundation—3 hours
EIN 6524 Simulation Modeling Paradigms (3 hours)

Evaluation Foundation—9 hours
ESI 5XXX Engineering Statistics (3 hours)
ESI 6217 Statistical Aspects of Digital Simulation (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

Thesis Option—12 Semester Hours
EIN 6971 Thesis (6 hours)
Electives (6 hours)

Non-Thesis Option—18 Semester Hours
Electives (18 hours) including three hours at the 6000-level

Total Hours Required for M.S.—30-36 Semester Hours

Doctor of Philosophy in Industrial Engineering

The Ph.D. 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, such as manufacturing, engineering management, operations research, simulation modeling, interactive simulation, quality, or human engineering / ergonomics.

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 institution and have demonstrated above average performance at the Master's level. In addition, selected outstanding applicants who have a GPA of at least 3.4 in the last 60 attempted semester hours of their undergraduate degrees and have at least combined Verbal and Quantitative GRE scores of 1200 will be considered for direct entrance as Pre-Doctoral students from their Bachelor's degrees. Students meeting these criteria and the approval of the Doctoral Committee will be admitted as Pre-Doctoral students. Students must complete any needed articulation course work and pass a Ph.D. Qualifying Examination in order to be admitted as a regular Doctoral Student. This examination is normally taken within the first year after all articulation work is completed. Final admissions decisions based in part on Qualifying Examination results are made by the Departmental Doctoral Committee.

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 or directed research. A total of 30 to 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 must be taken outside of the Department of Industrial Engineering and Management Systems while at UCF. There is a residency requirement of two continuous semesters in full-time graduate student status (minimum of 6 semester hours) after acceptance into the Doctoral Program at UCF. As a Pre-Doctoral student at the beginning of the Ph.D. program, a preliminary program of study must be developed with the graduate program coordinator 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 and admission as a Doctoral Student, the official program of study is developed with an adviser 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 date of admission as a Pre-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 courses; and 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 typically 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 proposal. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation.

Prerequisites/Corequisites
Students must have background in the following areas:
A high level structured programming language
Calculus through Differential Equations
Manufacturing Engineering (EIN 4391)
Quality Engineering (ESI 4234)
Work Measurement (EIN 3314)
Industrial Facilities Planning (EIN 4364)
Human Engineering (EIN 4243C)

Required Courses—21 Semester Hours
EIN 5140 Project Engineering (3 hours)
EIN 6336 Production and Inventory Control (3 hours)
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
ESI 5XXX Engineering Statistics (3 hours)
ESI 5316 Operations Research (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

Required Specialization Core—9-12 Semester Hours
Select one of the following areas of specialization.

Industrial Engineering
EIN 5117 Management Information Systems (3 hours)
ESI 6225 Quality Analysis and Control (3 hours)
ESI 6427 Linear Programming and Extensions (3 hours)

Interactive Simulation
EIN 5255 Interactive Simulation (3 hours)
EIN 5317 Training Systems Engineering (3 hours)
EIN 6645 Modeling and Simulation of Real Time Processes (3 hours)
EIN 6649 Intelligent Tutoring Training System Design (3 hours)

Simulation Modeling and Analysis
EIN 6524 Simulation Modeling Paradigms (3 hours)
ESI 6217 Statistical Aspects of Digital Simulation (3 hours)
ESI 6532 Object Oriented Simulation (3 hours)

Operations Research
ESI 6336 Queuing Systems (or STA 5825 Stochastic Processes) (3 hours)
ESI 6427 Linear Programming and Extensions (3 hours)
STA 6236 Regression Analysis (3 hours)

Quality
EIN 5392C Manufacturing Systems Engineering (3 hours)
ESI 5227 Total Quality Improvement (3 hours)
ESI 5236 Reliability (3 hours)
ESI 6225 Quality Design and Control (3 hours)

Human Engineering/Ergonomics
EIN 5248 Ergonomics (3 hours)
EIN 6249 Biomechanics (3 hours)
EIN 6258 Human Computer Interaction (3 hours)

Manufacturing
EIN 5368C Integrated Factory Automation Systems (3 hours)
EIN 5392C Manufacturing Systems Engineering (3 hours)
EIN 6399 Concurrent Engineering (3 hours)

Management Systems
EIN 5108 Environment of Technical Organizations (3 hours)
EIN 5117 Management Information Systems (3 hours)
EIN 6322 Engineering Management (3 hours)
EIN 6339 Operations Engineering (3 hours)

Two courses at UCF outside of IEMS—6 Semester Hours

Electives—21-24 Semester Hours

Dissertation—24 Semester Hours

IEMS Graduate Courses by Areas of Study

Engineering Management

EIN 5108 Environment of Technical Organizations (3 hours)
EIN 5117 Management Information Systems (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 5356 Cost Engineering (3 hours)
EIN 5381 Engineering Logistics (3 hours)
EIN 6322 Engineering Management (3 hours)
EIN 6339 Operations 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 5602C 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 5855C Metrology (3 hours)
EGN 6721C Experimental Methods for High Performance Engine Manufacturing (3 hours)
EIN 5368C Integrated Factory Automation Systems (3 hours)
EIN 5388 Forecasting (3 hours)
EIN 5392C Manufacturing Systems Engineering (3 hours)
EIN 5415C Tool Engineering and Manufacturing Analysis (3 hours)
EIN 5607C Computer Control of Manufacturing Systems (3 hours)
EIN 6336 Production and Inventory Control (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 6930 Manufacturing Engineering Seminar (3 hours)
EIN 6936 Seminar in Advanced Industrial Engineering (3 hours)

Operations Research

ESI 5315 Research Foundations for IE and OR Modeling (3 hours)
ESI 5316 Operations Research (3 hours)
ESI 5359 Risk Assessment and Management (3 hours)
ESI 5419C 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 Extension (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 6921 Seminar in Advanced Operations Research (3 hours)
ESI 6941 Operations Research Practicum (6 hours)

Simulation

EIN 5255 Interactive Simulation (3 hours)
EIN 5317 Training Systems Engineering (3 hours)
EIN 6524 Simulation Modeling Paradigms (3 hours)
EIN 6529 Simulation Design and Analysis (3 hours)
EIN 6645 Modeling and Simulation of Real-time Processes (3 hours)
EIN 6647 Intelligent Simulations (3 hours)
EIN 6649 Intelligent Tutoring 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)
ESI 6546 Process Simulation (3 hours)

Statistics and Quality Control

EIN 6330 Quality Control in Automation (3 hours)
ESI 5227 Total Quality Improvement (3 hours)
ESI 5236 Reliability Engineering (3 hours)
ESI 6224 Quality Management (3 hours)
ESI 6225 Quality Design and Control (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Other

EIN 5936 Seminar in Industrial Engineering Doctoral Research (1 hour)

Graduate Certificates in Industrial Engineering and Management Systems

The Department of Industrial Engineering and Management Systems offers the following seven certificate programs: Project Management Applied Operations Research, Quality Assurance, Training Simulation, Design for Usability, Industrial Ergonomics and Safety, and Systems Simulation for Engineers. Certificate programs offer graduate course work in a more flexible format for working professionals to enhance knowledge and professional credentials.

Each certificate program can be completed in one calendar year or less from the time a student is first enrolled. The required courses are the same courses that students in the graduate degree programs take. Certificate program students can usually transfer their courses to a degree program in IEMS. The prerequisites for each program are simply the prerequisites for the courses which make up the certificate program.

Certificate in Applied Operations Research

Operations research (OR) models and solution techniques provide a powerful arsenal for solving complex resource allocation and management problems. For instance, OR has

been used to solve many of the scheduling, distribution, staffing, and design problems in industry. As more powerful desktop computers and software become available, the potential to apply OR models and methods to such problems will grow. This certificate program gives students a good overview of OR tools, develops competence in modeling programs, and provides students practice and hands-on experience with OR tools.

Required Courses—12 Semester Hours
ESI 5316 Operations Research (3 hours)
ESI 5419C Engineering Applications of Linear and Nonlinear Optimization (3 hours)
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Certificate in Design for Usability

Too often we hear about products, services, or systems that are supposedly designed with the user in mind, only to discover that the design is ineffective or unfriendly to users. This certificate program educates students in the methods of user-centered design and usability engineering that can be used to assess and assure usability throughout a product, service, or system development cycle. Students will learn how to design products that are both ergonomically sound and "user-friendly," as well as how to plan and conduct usability tests, analyze related data, and use the results to improve the design of a product, service, or system.

Required Courses—12 Semester Hours
EIN 5248C Ergonomics (3 hours)
EIN 5251 Human-Computer Interaction: Usability Evaluation (3 hours)
EIN 6258 Human Computer Interaction (3 hours)
ESI 6247 Experimental Design and Taguchi Methods (3 hours)

Certificate in Industrial Ergonomics and Safety

Because of increasing costs due to injuries, on-the-job accidents, and rehabilitation, interest in injury and accident prevention has increased dramatically. Designing workplaces to accommodate human workers is a key to improving worker safety and occupational health. Success with such designs can only be achieved if the designer understands how humans are affected by their workplaces and their work environment. This certificate program prepares students in the design and implementation of an effective human engineering / ergonomics effort within an occupational setting. The course work covers how humans are affected by the conditions under which they work and the principles for designing safe and productive work environments.

Required Courses—15 Semester Hours
EIN 5248C Ergonomics (3 hours)
EIN 6215 System Safety Engineering and Management (3 hours)
EIN 6249C Biomechanics (3 hours)
EIN 6264C Industrial Hygiene (3 hours)
EIN 6270C Work Physiology (3 hours)

Certificate in Project Engineering

Engineers increasingly are found in leadership positions. They must have certain skills in order to be effective in such a role. This certificate program addresses the needs of engineers moving into management and other leadership roles by complementing their technical backgrounds with the human aspects, organizational and financial issues, project considerations, and analytical tools for effective decision making.

Required Courses—12 Semester Hours
EIN 5108 The Environment of Technical Organizations (3 hours)
EIN 5117 Management Information Systems I (3 hours)
EIN 5140 Project Engineering (3 hours)
EIN 6357 Advanced Engineering Economic Analysis (3 hours)
OR
ESI 6358 Decision Analysis (3 hours)

Certificate in Quality Assurance

Much of the resurgence of U.S. products in the global marketplace has been due to an increased emphasis on quality. Today's consumers are offered many alternatives to meet their needs, and they have consequently become very discriminating in their purchases. There is strong interest by goods and services providers to continually improve the products they offer. In addition, companies seek to be known as a quality organization, not merely the producer of quality products. This certificate program provides students with the knowledge that they will need to improve the quality and reliability of the goods and services they produce and to institute steps to make their organizations more competitive through an overall commitment to quality.

Required Courses—12 Semester Hours
ESI 5227 Total Quality Improvement (3 hours)
ESI 5236 Reliability Engineering (3 hours)
ESI 6225 Quality Design and Control (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Certificate in Systems Simulation for Engineers

Discrete event simulation provides very powerful modeling capabilities to engineers. Simulation is particularly valuable because models of complex systems can be constructed and probabilistic or random forces can be represented in those models. This certificate program provides students with the necessary background in probability and statistics, fundamental simulation modeling skills, essentials for designing and analyzing simulation experiments, and an introduction to an area of advanced simulation modeling.

Required Courses—12 Semester Hours
ESI 5531 Discrete Systems Simulation (3 hours)
ESI 6217 Statistical Aspects of Digital Simulation (3 hours)
EIN 6647 Intelligent Simulation (3 hours) OR
ESI 6532 Object-oriented Simulation (3 hours)
ESI 5XXX Engineering Statistics (3 hours)

Certificate in Training Simulation

Because of the tremendous growth in military and commercial simulation, there will be many people entering this industry without all of the education they will need, as well as people transitioning to this field. This certificate program provides a fundamental understanding of significant topics relative to systems, requirements, design, development, and use of training simulations.

Required Courses—12 Semester Hours
EIN 5255 Interactive Simulation (3 hours)
EIN 5317 Training Systems Engineering (3 hours)
EIN 6645 Modeling and Simulation of Real-Time Processes (3 hours)
EIN 6649 Intelligent Tutoring Training System Design (3 hours)

Mechanical, Materials, and Aerospace Engineering

Chair of the Department: L. C. Chow
Associate Chair of the Department: R. Hosler
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Faculty
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Assistant Professors: E. Enikov, Ph.D.; J. Kapat, Sc.D.; S. Seal, Ph.D.; D. Zhou, Ph.D.
Joint Appointees: K.D. Belfield, Ph.D., Department of Chemistry; K. A. Cerqua-Richardson, Ph.D., School of Optics; B. Chai, Ph.D., Department of Physics; M. B. Chopra, Ph.D., Department of Civil and Environmental Engineering; L. Debnath, Ph.D., Department of Mathematics; N. S. Dhere, Ph.D., Florida Solar Energy Center; A. Kar, Ph.D., School of Optics; W. Luo, Physics, D.C. Malocha, Ph.D., School of Electrical Engineering and Computer Science; N. Misconi, Engineering Technology; H. Myler, School of Electrical Engineering and Computer Science; K.V. Sundaram, School of Electrical Engineering and Computer Science; R. Y. Ting, Ph.D., AMPAC; K. Vajravelu, Ph.D., Department of Mathematics
Research Faculty: J. Bindell, Ph.D., Cirent Semiconductor; R. Irwin, Ph.D., Cirent Semiconductor; F. Stevie, M.S., Cirent Semiconductor; R. Zarda, Ph.D., Lockheed-Martin Missiles and Fire Control

Fields of Emphasis and Research

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

Thermo-fluids: turbomachinery, thermal management, miniaturization of thermal systems, combustion, aeroacoustics, computational thermo-fluids, laser machining, inverse problems, and boundary elements.

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 fracture mechanics, nonlinear finite elements, virtual reality visualization of finite element databases, 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 electronic packaging, miniaturization of thermal systems, laser-material interactions, turbomachinery, combustion generated pollution, material synthesis using combustion methods, inverse heat transfer problems, conjugate heat transfer, boundary elements, and heat conduction in nonhomogeneous materials.

Degree Programs

The Mechanical, Materials, and Aerospace Engineering Department (MMAE) offers the Master of Science in Mechanical Engineering (M.S.M.E.), the Masters of Science in Materials Science and Engineering (M.S.M.S.E.), the Masters of Science in Aerospace Engineering (M.S.A.E.), and the Doctor of Philosophy (Ph.D.) degrees. Tracks offered for the M.S.M.E. are: Mechanical Systems, Thermo-fluids, Computer-aided Mechanical Engineering, and Professional. The professional and computer-aided tracks are mainly designed to meet the needs of part-time students. Tracks for the Ph.D. are Aerospace Systems, Materials Science and Engineering, Mechanical Systems, and Thermo-fluids.

Certificate Programs

The Mechanical, Materials, and Aerospace Engineering Department offers six certificates in the following specialties: Materials Failure Analysis, Materials Characterization, Computational Methods in Mechanics, CAD/CAM Technology, HVAC Engineering, and Launch/Spacecraft Vehicle Processing.

The certificate is primarily designed for engineers interested in enhancing specific skills in one of the focus areas covered by our program offering. Students may enroll in the certificate program under non-degree seeking status or indicate they wish to receive a certificate upon completion of requirements if already enrolled as degree seeking students. Details of the application process can be found in the Admissions chapter of this catalog. All certificates, excepting CAD/CAM , require four courses and can be completed in 4 semesters. It is the policy of the MMAE graduate committee that the 4th class (if required by a certificate program) will be counted towards completion of an M.S. or Ph.D. degree should a student subsequently decide to apply for regular status.

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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

In certain circumstances a trial program may be extended to students who have a GPA below 3.0 but otherwise meet university requirements. Additional courses may be required to correct deficiencies. Students should contact the MMAE graduate program coordinator for further information.

All students are expected to identify an adviser and file an official degree program of study prior to the completion of nine semester hours of study. Students should consult with the MMAE graduate program coordinator for assistance in filling out a program of study.

Degree Requirements

The M.S.M.E. degree is offered as a thesis or a non-thesis program in each of the four departmental tracks: Mechanical Systems, Thermo-fluids, Computer Aided Mechanical Engineering, and Professional. The thesis option 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 option is primarily designed to meet the needs of part-time students and requires 36 semester hours of course work, at least 15 of which must be at the 6000 level. In addition, students pursuing the non-thesis option are required to pass a final comprehensive exam and to take EML 6085 Research Methods in MMAE as part of their 36-hour course requirement. A program of study, satisfying track requirements, must be developed prior to the completion of nine hours 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 adviser 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 (http://www-mmae.engr.ucf.edu).

Computer-aided Mechanical Engineering Track

Prerequisites (or equivalent)

Mathematics through Differential Equations (MAP 2302)
Modeling Methods in Mechanical and Aerospace Engineering (EML 3034)
Thermodynamics of Mechanical Systems (EML 3101)
Structure and Properties of Materials (EGN 3365)
Machine Design and Analysis (EML 3500)

Required Courses—6 Semester Hours

All students must take the following two required courses.
EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5211 Continuum Mechanics (3 hours)

Take at least four courses from the track specialty courses below. Additional courses to satisfy total semester hour requirements (30 hours thesis option, 36 hours non-thesis option) may be taken from the list of representative electives below or from the remaining MMAE course offerings. Consult with your faculty adviser (or graduate program coordinator if you do not have a faculty adviser) prior to registering for classes. Note that thesis option students must take 6 hours of thesis and non-thesis option students must take Research Methods in MMAE. Thesis students must continue to enroll in one hour of thesis course work (XXX 6971) until the thesis requirement is satisfied, beyond the minimum of six hours of thesis.

Track Specialty Courses—12 Semester Hours (minimum)

EGN 5858C Introduction to Rapid Prototyping (3 hours)
EML 5025C Engineering Design Practice (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 6062 Boundary Elements Methods in Engineering (3 hours)
EML 6067 Finite Elements in Mechanical and Aerospace Engineering I (3 hours)
EML 6068 Finite Elements in Mechanical, Materials, and Aerospace Engineering II (3 hours)

EML 6725 Computational Fluid Dynamics and Heat Transfer I (3 hours)
EML 6726 Computational Fluid Dynamics and Heat Transfer II (3 hours)

Representative Electives—12-18 Semester Hours
EAS 6138 Advanced Gas Dynamics (3 hours)
EAS 6185 Turbulent Flow (3 hours)
EML 5105 Gas Kinetics and Statistical Thermodynamics (3 hours)
EML 5402 Turbomachinery (3 hours)
EML 6155 Convection Heat Transfer (3 hours)
EML 6712 Mechanics of Viscous Flow (3 hours)
EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5131 Combustion Phenomena (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)
EML 5713 Intermediate Fluid Mechanics (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 6154 Conduction Heat Transfer (3 hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)
EML 5546 Engineering Design with Composite Materials (3 hours)
EMA 5106 Metallurgical Thermodynamics (3 hours)
EMA 5108 Surface Science (3 hours)
EMA 5326 Corrosion Science and Engineering (3 hours)
EMA 6628 Materials Failure Analysis (3 hours)
EML 6971 Thesis (6 hours)
EML 6085 Research Methods in MMAE (required for non-thesis option) (3 hours)

Total Hours Required for M.S.M.E.—30 or 36 Semester Hours

Mechanical Systems Track

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods in Mechanical and Aerospace Engineering (EML 3034)
Machine Design and Analysis (EML 3500)
Vibration Analysis (EML 4220)
Experimental Techniques in Mechanics and Materials (EMA 3012C)
Feedback Control (EML 3312C)

Required Courses—6 Semester Hours
All students must take the following two required courses.
EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5211 Continuum Mechanics (3 hours)

Take at least four courses from the track specialty courses below. Additional courses to satisfy total semester hour requirements (30 hours thesis option, 36 hours non-thesis option) may be taken from the list of representative electives below or from the remaining MMAE course offering. Consult with your faculty adviser (or graduate program coordinator if you do not have a faculty adviser) prior to registering for classes. Note that thesis option students must take 6 hours of thesis and non-thesis option students must take Research Methods in MMAE. Thesis students must continue to enroll in one hour of thesis course work (XXX 6971) until the thesis requirement is satisfied, beyond the minimum of six hours of thesis.

Track Specialty Courses—12 Semester Hours (Minimum)
EML 5311 System Control (3 hours)
EML 5271 Intermediate Dynamics (3 hours)
EML 5546 Engineering Design with Composite Materials (3 hours)
EML 6067 Finite Elements in Mechanical and Aerospace Engineering I (3 hours)
EML 6068 Finite Elements in Mechanical, Materials, and Aerospace Engineering II (3 hours)
EML 6062 Boundary Element Methods in Engineering (3 hours)
EML 6227 Nonlinear Vibrations (3 hours)
EML 6305C Experimental Mechanics (3 hours)
EML 6547 Engineering Fracture Mechanics in Design (3 hours)

Representative Electives—12-18 Semester Hours
EMA 5104 Intermediate Structure and Properties of Materials (3 hours)
EMA 5504 Modern Characterization of Materials (3 hours)
EMA 6628 Materials Failure Analysis (3 hours)
EML 5025C Engineering Design Practice (3 hours)
EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5224 Acoustics (3 hours)
EML 5228C Modal Analysis (3 hours)
EML 5245 Tribology (3 hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 5572 Probabilistic Methods in Design (3 hours)
EML 6808 Analysis and Control of Robot Manipulators (3 hours)
EML 6223 Advanced Vibrational Systems (3 hours)
EML 6226 Analytical Dynamics (3 hours)
EML 6653 Theory of Elasticity (3 hours)
EML 6971 Thesis (6 hours)
EML 6085 Research Methods in MMAE (required for non-thesis option) (3 hours)

Total Hours Required for M.S.M.E.)—30 or 36 Semester Hours

Professional Track

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods in Mechanical and Aerospace Engineering (EML 3034)
Thermodynamics of Mechanical Systems (EML 3101)
Structure and Properties of Materials (EGN 3365)
Mechanics of Materials (EGN 3331)

Required Courses—6 Semester Hours
All students must take the following two required courses.
EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5211 Continuum Mechanics (3 hours)

Take at least four courses from the track specialty courses below. Additional courses to satisfy total semester hour requirements (30 hours thesis option, 36 hours non-thesis option) may be taken from the list of representative electives below or from the remaining MMAE course offering. Consult with your faculty adviser (or graduate program coordinator if you do not have a faculty adviser) prior to registering for classes. This track is intended mainly for part-time students and may be taken under non-thesis or thesis options. Thesis option students must take 6 hours of thesis and non-thesis option students must take Research Methods in MMAE. Thesis students must continue to enroll in one hour of thesis course work (XXX 6971) until the thesis requirement is satisfied, beyond the minimum of six hours of thesis.

Track Specialty Courses—12 Semester Hours (minimum)
EMA 6628 Materials Failure Analysis (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 Methods in Engineering (3 hours)
EML 6155 Convection Heat Transfer (3 hours)
EML 6226 Analytical Dynamics (3 hours)
EML 6067 Finite Elements in Mechanical and Aerospace Engineering I (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)

Representative Electives—12-18 Semester Hours
EML 5025C Engineering Design Practice (3 hours)
EML 5105 Gas Kinetics and Statistical Thermodynamics (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 5131 Combustion Phenomena (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)
EML 5713 Intermediate Fluid Mechanics (3 hours)
EML 6068 Finite Elements in Mechanical, Materials, and Aerospace Engineering II (3 hours)
EML 6726 Computational Fluid Dynamics and Heat Transfer II (3 hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)
EML 5546 Engineering Design with Composite Materials (3 hours)
EMA 5106 Metallurgical Thermodynamics (3 hours)
EMA 5108 Surface Science (3 hours)
EMA 5326 Corrosion Science and Engineering (3 hours)
EML 6971 Thesis (6 hours)
EML 6085 Research Methods in MMAE (required for non-thesis option) (3 hours)

Total Hours Required for M.S.M.E.—30 or 36 Semester Hours

Thermo-fluids Track

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods in Mechanical and Aerospace Engineering (EML 3034)
Thermodynamics of Mechanical Systems (EML 3101)
Measurements in Thermal Systems (EML 4304C)
Fluid Mechanics II (EML 4703)
Heat Transfer (EML 4142)

Required Courses—6 Semester Hours
All students must take the following two required courses.
EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5211 Continuum Mechanics (3 hours)

Take at least four courses from the track specialty courses below. Additional courses to satisfy total semester hour requirements (30 hours thesis option, 36 hours non-thesis option) may be taken from the list of representative electives below or from the remaining MMAE course offering. Consult with your faculty adviser (or graduate program coordinator if you do not have a faculty adviser) prior to registering for classes. Note that thesis option students must take 6 hours of thesis and non-thesis option students must take Research Methods in MMAE. Thesis students must continue to enroll in one hour of thesis course work (XXX 6971) until the thesis requirement is satisfied, beyond the minimum of six hours of thesis.

Track Specialty Courses—12 Semester Hours (Minimum)
EML 5105 Gas Kinetics and Statistical Thermodynamics (3 hours)
EML 5402 Turbomachinery (3 hours)
EML 6062 Boundary Elements in Engineering (3 hours)
EML 6155 Convection Heat Transfer (3 hours)
EML 6157 Radiation Heat Transfer (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)

Representative Electives—12-18 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 5025C Engineering Design Practice (3 hours)
EML 5066 Computational Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5131 Combustion Phenomena (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)
EML 5713 Intermediate Fluid Mechanics (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 6104 Classical Thermodynamics (3 hours)
EML 6124 Two Phase Flow (3 hours)
EML 6154 Conduction Heat Transfer (3 hours)
EML 6158 Gaseous Radiation Heat Transfer (3 hours)
EML 6726 Computational Fluid Dynamics and Heat Transfer II (3 hours)
EML 6971 Thesis (6 hours)

EML 6085 Research Methods in MMAE (required for non-thesis option) (3 hours)

Total Hours Required for M.S.M.E.—30 or 36 Semester Hours

Master of Science in Materials Science and Engineering (M.S.M.S.E.)

Admission

The Master of Science degree in Materials Science and Engineering (M.S.M.S.E.) is intended primarily for a student with a bachelor's degree in mechanical, materials, 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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

In certain circumstances a trial program may be extended to students who have a GPA below 3.0 but otherwise meet university requirements. Additional courses may be required to correct deficiencies. Students should contact the MMAE graduate program coordinator for further information.

All students are expected to identify an adviser and file an official degree program of study prior to the completion of nine semester hours of study. Students should consult with the MMAE graduate program coordinator for assistance in filling out a program of study.

Degree Requirements

The M.S.M.E. degree is offered as a thesis or a non-thesis option. The thesis option 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 option is primarily designed to meet the needs of part-time students and requires 36 semester hours of course work, at least 15 of which must be at the 6000 level. In addition, students pursuing the non-thesis option are required to pass a final comprehensive exam and to take EML 6085 Research Methods in MMAE as part of their 36-hour course requirement. A program of study, satisfying track requirements, must be developed prior to the completion of nine hours 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 adviser 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.

Materials Science and Engineering Track

30-36 Semester Hours

Prerequisites (or equivalent)
Mathematics through Differential Equations (MAP 2302)
Modeling Methods in Mechanical and Aerospace Engineering (EML 3034)
Structure and Properties of Materials (EGN 3365)
Mechanics of Materials (EGN 3331) or Thermodynamics (EGN 3343)
Experimental Techniques in Mechanics and Materials (EMA 3012C)

Required Courses—6 Semester Hours
All students must take the following two required courses.
EMA 6126 Physical Metallurgy (3 hours)
EMA 6626 Mechanical Metallurgy (3 hours)

Take at least four courses from the option list below. Additional courses to satisfy total semester hour requirements (30 hours thesis option, 36 hours non-thesis option) may be taken from the list of representative electives below or from the remaining MMAE course offering. Consult with your faculty advisor (or graduate coordinator if you do not have a faculty advisor) prior to registering for classes. Note that thesis option students must take 6 hours of thesis and non-thesis option students must take Research Methods in MMAE. Thesis students must continue to enroll in one hour of thesis course work (XXX 6971) until the thesis requirement is satisfied, beyond the minimum of six hours of thesis.

Option List—12 Semester Hours (minimum)
EMA 5106 Metallurgical Thermodynamics (3 hours)
EMA 5108 Surface Science (3 hours)
EMA 5326 Corrosion Science and Engineering (3 hours)
EMA 6136 Diffusion in Solids (3 hours)
EMA 6516 X-Ray Diffraction and Crystallography (3 hours)
EMA 6605 Materials Processing Techniques (3 hours)
EMA 6628 Materials Failure Analysis (3 hours)

Representative Electives—12-18 Semester Hours
EMA 5104 Intermediate Structure and Properties of Materials (3 hours)
EMA 5140 Introduction to Ceramic Materials (3 hours)
EMA 5504 Modern Characterization of Materials (3 hours)
EMA 5584 Biomaterials (3 hours)
EMA 5705 High Temperature Materials (3 hours)
EMA 5610 Laser Materials Processing (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 5025C Engineering Design Practice (3 hours)
EML 5060 Mathematical Methods in Mechanical, Materials, and Aerospace Engineering (3 hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)

EML 5245 Tribology (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 5546 Engineering Design w/Composite Materials (3 hours)
EML6062 Boundary Element Methods in Engineering (3 hours)
EML 5211 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)
EML 6085 Research Methods in MMAE (required for non-thesis option) (3 hours)

Total Hours Required for M.S.M.S.E.—30 or 36 Semester Hours

Master of Science in Aerospace Engineering (M.S.A.E.)

Admission

The Master of Science degree in Mechanical Engineering (M.S.A.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 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

In certain circumstances a trial program may be extended to students who have a GPA below 3.0 but otherwise meet university requirements. Additional courses may be required to correct deficiencies. Students should contact the MMAE graduate program coordinator for further information.

All students are expected to identify an adviser and file an official degree program of study prior to the completion of nine semester hours of study. Students should consult with the MMAE graduate program coordinator for assistance in filling out a program of study.

Degree Requirements

There are two tracks that may be pursued under the MSAE program: 1. Space Systems Design and Engineering which includes the fields of controls and dynamics, space environment, instrumentation and communications, structures and materials, thermal analysis and design; 2. Thermofluid Aerodynamic Systems which includes the fields of controls and dynamics, aerodynamics, propulsion, thermal analysis and design. There are three required courses which must be taken by all M.S.A.E. students. In each track there are two required courses and several options courses. The student must select one track and one option within the track, and must take at least three courses from the selected option. Early in the program the student is required to submit a program of studies for review and approval by Graduate Program Coordinator, at which time the student will select or be assigned a faculty advisor. The thesis option is preferred for all students and is strongly recommended for full time students, especially with financial support. It involves 15 hours of required courses, three elective courses (nine hours) from a list of representative courses, and six hours of thesis. At least 15 credit hours must be at the 6000 level. The total number of credits for graduation with thesis is 30. Thesis students must complete a minimum of six hours of thesis course work (XXX 6971), and be continually enrolled in at least one hour of thesis beyond the minimum until the thesis requirement is satisfied. A non-thesis option will also be offered, to cater to the needs of part-time students. There will be 15 hours of required courses, seven elective courses (21 hours) from the list of representative courses. At least 18 credit hours must be at the 6000 level. The total number of credits required without a thesis is 36.

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 adviser 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.

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)
Orbital Mechanics (EAS 4505)

Required Courses—9 Semester Hours
EML 5060 Mathematical Methods in MMAE (3 hours)
EAS 6507 Astrodynamics (3 hours)
EAS 5407 Mechatronic Systems (3 hours)

The remainder of courses are to be chosen from one of two tracks: space systems design and engineering and thermofluid aerodynamic systems.

Space Systems Design and Engineering Track

Required Courses—6 Semester Hours
EML 5211 Continuum Mechanics (3 hours)
EML 6067 Finite Elements in MMAE I (3 hours)

Options Courses

***Controls/Dynamics (choose at least three)*—9 Semester Hours**
EML 5311 Systems Control (3 hours)
EAS 6405 Advanced Flight Dynamics (3 hours)
EAS 5157 VTOL Control (3 hours)
EEL 6621 Non-Linear Control (3 hours)

EML 6808 Analytical Control / Robotics (3 hours)
EAS 5271 Intermediate Dynamics (3 hours)
EAS 6XXX Attitude Determination and Control (3 hours)
EAS 5XXX Guidance, Navigation and Control (3 hours)
EAS 6XXX Aerospace Measurements / Instrumentation (3 hours)
EEL 6616 Adaptive Control (3 hours)

***Structures/Materials(choose at least three)*—9 Semester Hours**
EML 6068 Finite Elements in MMAE II (3 hours)
EML 6227 Non-Linear Vibrations (3hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)
EML 6547 Engineering Fracture Mechanics in Design (3 hours)
EMA 6628 Materials Failure Analysis (3 hours)
EML 5546 Engineering Design and Composite Materials (3 hours)

***Thermal Analysis and Design(choose at least three)*—9 Semester Hours**
EML 6155 Convective Heat Transfer (3 hours)
EML 6157 Radiation Heat Transfer (3 hours)
EAS 5302 Direct Energy Conversion (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)

***Space Environment/Instrumentation/Communications (choose at least three)*— 9 Semester Hours**
EAS 6XXX Space Environment and Payload Instrumentation (3 hours)
EEL 5432 Satellite Remote Sensing (3 hours)
EEL 5XXX Telemetry and Embedded Computers (3 hours)
EEL 5542 Random Processes (3 hours)
EEL 5555 RF and Microwave Communications (3 hours)
EEL 6530 Communication Theory (3 hours)
EEL 6537 Detection and Estimation (3 hours)

Other Support Courses
EAS 5XXX Engineering Design for Aerospace Vehicles (3 hours)
EML 5532 Computer Aided Design for Manufacturing (3 hours)
MAA 5405 Complex Variables (3 hours)
MAP 5426 Special Functions (3 hours)
EEL 5881 Software Engineering I (3 hours)
EEL 6897 Software Development for Real-Time Engineering Systems (3 hours)
EEL 5245 Power Electronics (3 hours)
EML 6712 Mechanics of Viscous Flow (3 hours)
EML 6725 Computational Fluid Dynamics and Heat Transfer (3 hours)
EML 5315 Rocket Propulsion (3 hours)
EML 5123 Intermediate Aerodynamics (3 hours)
EML 5937 Engineering Design Practice, PRO / E (3 hours)
EEL 5173 Signal and System Analysis (3 hours)
CDA 5106 Advanced Computer Architecture I
COT 5405 Design and Analysis of Algorithms (3 hours)

Thermofluid Aerodynamic Systems Design and Engineering Track

Required Courses—6 Semester Hours
EML 6712 Mechanics of Viscous Flow (3 hours)
EML 6725 Computational Fluid Dynamics and Heat Transfer I (3 hours)

Optional Course Functions

***Controls/Dynamics(choose at least three)*—9 Semester Hours**
EML 5311 Systems Control (3 hours)
EAS 6405 Advanced Flight Dynamics (3 hours)
EAS 5157 VTOL Control (3 hours)
EEL 6621 Non-Linear Control (3 hours)
EML 6808 Analytical Control / Robotics (3 hours)
EAS 6XXX Attitude Determination and Control (3 hours)
EAS 5XXX Guidance, Navigation and Control (3 hours)
EAS 6XXX Aerospace Measurements / Instrumentation (3 hours)
EML 5271 Intermediate Dynamics (3 hours)
EEL 6616 Adaptive Control (3 hours)

***Aerodynamics(choose at least three)*—9 Semester Hours**
EAS 5123 Intermediate Aerodynamics (3 hours)
EML 5713 Intermediate Fluid Mechanics (3 hours)
EAS 6185 Turbulent Flow (3 hours)

***Thermal Analysis and Design(choose at least three)*—9 Semester Hours**
EML 6155 Convective Heat Transfer (3 hours)
EML 6157 Radiation Heat Transfer (3 hours)
EAS 5302 Direct Energy Conversion (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)

***Propulsion(choose at least three)*—9 Semester Hours**
EAS 5315 Rocket Propulsion (3 hours)
EML 5131 Combustion Phenomena (3 hours)
EML 5105 Gas Kinetics and Statistical Thermodynamics (3 hours)
EAS 6138 Advanced Gas Dynamics (3 hours)

Other Support Courses
EAS 5XXX Engineering Design for Aerospace Vehicles (3 hours)
EML 5532 Computer Aided Design for Manufacturing (3 hours)
MAP 5405 Complex Variable (3 hours)
MAP 5426 Special Functions (3 hours)
EEL 5881 Software Engineering I (3 hours)
EEL 6897 Software Development for Real-Time Engineering Systems (3 hours)
EEL 5245 Power Electronics (3 hours)
EML 5211 Continuum Mechanics (3 hours)
EML 6067 Finite Elements of MMAE I (3 hours)
EML 5237 Intermediate Mechanics of Materials (3 hours)
EML 6547 Engineering Fracture Mechanics in Design (3 hours)
EML 5937 Engineering Design Practice, PRO / E (3 hours)
EEL 5173 Signal and System Analysis (3 hours)
CDA 5106 Advanced Computer Architecture (3 hours)
COT 5405 Design and Analysis of Algorithums (3 hours)

Doctor of Philosophy in Mechanical Engineering

The Doctor of Philosophy (Ph.D.) degree is 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 in Aerospace Systems, Materials Science and Engineering, Mechanical Systems, or Thermo-fluids.

Admission

In addition to satisfying the admission requirements for the M.S.M.E. degree, admission to the Ph.D. program requires that the student possess a Master's degree in mechanical or aerospace engineering or a closely related discipline from a recognized institution. Admission to full 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 of credits will be evaluated on a course-by-course basis as part of the Program of Study approval process.

Dissertation students must be continuously enrolled in three hours of dissertation course work each semester (beyond the minimum of 24 hours) until the dissertation requirement is satisfied.

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 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 (http://www-mmae.engr.ucf.edu).

Doctor of Philosophy in Materials Science and Engineering

The Doctor of Philosophy (Ph.D.) degree is intended for a student with a master's degree in mechanical or aerospace engineering, electrical engineering, materials science and engineering, or closely related disciplines such as chemistry, optics, physics and biology. The program provides an applied research-based education suitable for seeking employment in industry or academia. Industries with strong materials emphases include construction and design firms, microchip development companies, space-related technology firms, medical products manufacturers, and automotive and sports-related companies.

The program is based upon a solid core emphasizing the foundation of materials science and engineering with advanced knowledge in state-of-the-art applications. Doctoral students will be expected to apply their knowledge and research skills to removing barriers to critical technology advancement. The current interdisciplinary research collaboration between this program and Optics, Chemistry, Physics, and Electrical Engineering will provide many opportunities for gaining an interdisciplinary knowledge base needed to be competitive in industry. Students in this program will be encouraged to spend a summer internship with a relevant central Florida high technology industry.

Admission

A master's degree is normally expected, but not required from applicants. A bachelor's degree with a 3.0 GPA on the last 60 attempted hours of undergraduate course work from an accredited institution and a combined score of at least 1000 on the verbal-quantitative portions of the GRE are required for admission. International students whose native language is not English will have to present a TOEFL score of 220 to be considered.

Degree Requirements

The Ph.D. degree requires completion of a minimum of 81 hours of course work beyond the bachelor's degree, with 27 hours of dissertation credits. At least 9 hours of mathematical courses are required and 9 hours course work from outside the department is required. A maximum of 30 semester hours of course work and 6 hours of thesis hours may be transferred from a master's program. Transfer of credits will be evaluated on a course-by-course basis as part of the Program of Study.

Required Courses—6 Semester Hours
EMA 6126 Physical Metallurgy (3 hours)
EMA 6626 Mechanical Metallurgy (3 hours)

Materials Science and Engineering Courses—Minimum of 21 Semester Hours. Choose courses with a prefix of EMA.

Engineering and Science Electives—Minimum of 18 Semester Hours. Selected courses from Electrical Engineering, Mechanical Engineering, Aerospace Engineering, Chemistry, Physics, and others as approved. At least 9 hours must be from outside of the department.

Dissertation—Minimum of 27 Semester Hours

Minimum Hours Required for Ph.D.—81 Semester Hours

Examinations
Both a Qualifying Exam and Candidacy Exam are required. Further information on these examinations are contained in the *Ph.D. Degree General Procedures* manual available from the MMAE Department (http://www-mmae.engr.ucf.edu).

Graduate Certificates in Mechanical, Materials, and Aerospace Engineering

Certificate in CAD/CAM Technology

To prepare engineers for careers in design requires not only learning about these topics but also an understanding of engineering practice and experience in solving problems with realistic industrial constraints. This graduate certificate program offers a variety of learning opportunities for professional development.

Required Courses—9 Semester Hours
EML 5025C Engineering Design Practice (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EGN 5858C Introduction to Rapid Prototyping (3 hours)

Certificate in Computational Methods in Mechanics

This graduate certificate program is designed to aid engineers, designers, and analysts assigned responsibility of developing and running Computer-Aided-Engineering models to gain understanding of underlying physical principles and capabilities of various computational techniques.

Required Courses—12 Semester Hours
Choose four courses:
EML 5066 Computational Methods in MMAE (3 hours)
EML 5211 Continuum Mechanics (3 hours)
EML 5532C Computer-aided Design for Manufacture (3 hours)
EML 6062 Boundary Element Methods in Engineering (3 hours)
EML 6067 Finite Elements in MMAE I (3 hours)
EML 6068 Finite Elements in MMAE II (3 hours)
EML 6725 Computational Fluid Dynamics and Heat Transfer I (3 hours)
EML 6726 Computational Fluid Dynamics and Heat Transfer II (3 hours)

Certificate in HVAC Engineering

This graduate certificate program is designed to provide students with a fundamental understanding of principles behind HVAC engineering and a better understanding of applied aspects of HVAC engineering, including analysis and design of practical systems. Students will also participate in laboratory and hands-on experiences.

Required Courses—12 Semester Hours
EML 5066 Computational Methods in MMAE (3 hours)
EML 5152 Intermediate Heat Transfer (3 hours)
EML 5XXX HVAC Systems Engineering (3 hours)
EML 5XXX Applied HVAC Engineering (3 hours)

Certificate in Launch/Spacecraft Vehicle Processing

This graduate certificate program is designed to cover (1) understanding of elements of launch vehicle test and evaluation methodology and implementation, where integrated circuit applications, systems control techniques, microprocessor programming and their interfaces are included; (2) rocket propulsion with focus on fundamentals of combustion and instrumentation used for test and evaluation and techniques for the validation of launch / spacecraft propulsion subsystems and their interfaces; (3) basics of telemetry and implementation of embedded computers in vehicle launch processes; and (4) mathematical basics. The goal of this program is to upgrade managers and engineers in current mechatronics applications in aerospace vehicle test and evaluation (T&E) processes.

Required Courses—12 Semester Hours
EAS 55407 Digital Control in Mechatronics (3 hours)
EAS 5315 Rocket Propulsion (3 hours)
EGN 5XXX Telemetry and Embedded Computers (3 hours)
MAP 5435 Advanced Mathematics for Engineers (3 hours) OR
EML 5060 Mathematical Methods in MMAE (3 hours)

Certificate in Materials Characterization

This graduate certificate program will provide students or engineers in industry with fundamental knowledge of principles and processes of materials characterization based on electron beam and ion beam analyses and with a professional, hands-on training in modern characterization at the Materials Characterization Facility (MCF) at the University of Central Florida.

Required Courses—12 Semester Hours
Choose four courses:
EMA 5108 Surface Science (3 hours)
EMA 5504 Modern Characterization of Materials (3 hours)
EMA 5505 Scanning Electron Microscopy (3 hours)
EMA 5XXX Advanced Materials Characterization by Ion Beam Analysis (3 hours)
EMA 6518 Transmission Electron Microscopy (3 hours)

Certificate in Materials Failure Analysis

This graduate certificate program is designed to familiarize engineers entrusted with conducting materials failure analysis for possible causes of failure and the possible interaction of these causes. Aims of the program include developing the ability to conduct detailed fractographic and microstructural evaluations and proficiency with modern tools and techniques of failure analysis.

Required Courses—12 Semester Hours
EMA 6628 Materials Failure Analysis (3 hours)
EMA 5326 Corrosion Science and Engineering (3 hours)
EMA 5505 Scanning Electron Microscopy (3 hours)
EMA 5108 Surface Science (3 hours) OR
EMA 5504 Modern Characterization of Materials (3 hours)

College of Health & Public Affairs

The College of Health and Public Affairs offers nine graduate programs: the Master of Arts in Communicative Disorders, the Master of Science in Criminal Justice, the Master of Science in Health Sciences: Health Services Administration, the Master of Science in Molecular Biology and Microbiology, the Master of Science in Nursing, the Master of Science in Physical Therapy, the Master of Public Administration, the Master of Social Work, and the Doctor of Philosophy in Public Affairs. 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., Associate Dean
R. N. Gennaro, Ph.D., Interim Associate Dean
M. Rogers, Interim Assistant Dean

Faculty

Communicative Disorders

Chair of the Department: J. R. Lieberman, Ph.D.
Professors: C. Nye, Ph.D.; D. L. Ratusnik, Ph.D.
Associate Professors: D. B. Ingram, Ph.D.; T. A. Mullin, Ph.D.; J. Ryalls, Ph.D.; M. Vanryckeghem, Ph.D.
Assistant Professors: A. E. Brice, Ph.D.; J. Dutka, Ph.D.; L. Louko, Ph.D.; K. Rivers, Ph.D.; L. I. Rosa-Lugo, Ph.D.; H. A. Utt, Ph.D.; C. Watts, Ph.D.

Criminal Justice and Legal Studies

Chair of the Department: B. J. McCarthy, Ph.D., Professor
Professors: B. R. McCarthy, Ph.D., Dean; B. Bohm, Ph.D.; D. Fabianic, Ph.D.; R. Surette, Ph.D.
Associate Professors: C. Bast, J.D.; D. Bishop, Ph.D.; P. Griset, Ph.D.; D. Hall, Ph.D.; M. Lanier, Ph.D.; S. Mahan, Ph.D.; R. Pyle, Ph.D.; J. Sanborn, Ph.D.
Assistant Professors: B. Applegate, Ph.D.; D. Becker, M.S.; S. Holmes, Ph.D.; K. Lucken, Ph.D.; R. Remis, J.D.; K. M. Reynolds, Ph.D.; D. Slaughter, J.D.; R. Watkins
LS Internship Coordinator: K. Cook, J.D., Instructor
CJ Internship Coordinator: M. Eastep, M.S., Instructor
Instructors: J. Flagg, J.D.; R. Lynch, J.D.; J. Randall, M.S.

Health Professions

Interim Chair of the Department: M. J. Sweeney, Ph.D., Professor
Professors: L. J. Acierno, M.D.; M. Fottler, Ph.D.; G. H Frazer, Ph.D.
Associate Professors: S. Douglass, M.S.; T. Edwards, Ed.D., RT(R); E. Hamby, D.B.A., P.T.; A. Liberman, Ph.D.; J. S. Lytle, M.S., M.P.H.; T. S. Mendenhall, Ph.D., M.B.A.; L. T. Worrell, M.P.H.
Assistant Professors: L. Chase, Ph.D., P.T.; S. Morrison, Ph.D., M.S.P.H.; M. Rossi, C.S.C.S., P.T., Ph.D.; T. Rotarius, Ph.D., M.B.A.
Instructors: C. J. Barr, M.S.; G. Bertetta, M.A.; D. Cassidy, M.S., A.T.C.; M. Diesen, M.S., M.Ed.; K. B. Enchelmayer, M.S.P.T., O.T.R.; T. Falen, M.S.; J. Holder, M.S.P.T.; V. J. Hudson, M.S.P.T., M.B.A., A.T.C.; J. Ludy, M.A.; P. Welker, M.A., RT(R) (CT)

Molecular Biology and Microbiology

Chair of the Department: R. N. Gennaro, Ph.D., Professor
Professors: O. M. Berringer, Ph.D.; H. Daniell, Ph.D.; D. Jacobs, Ph.D.; M. J. Sweeney, Ph.D., Associate Dean; R. S. White, Ph.D.
Associate Professors: J. F. Charba, Ph.D.; D. W. Washington, Ph.D.
Assistant Professors: K. Chai, Ph.D.; D. Chakrabarti, Ph.D.; R. Chakrabarti, Ph.D.; C. Fernandez-Valle, Ph.D.; S. Naser Ph.D.
Instructors: K. Blaney; D. F. Hitchcock, M.S.; F. Logiudice, M.S.

School of Nursing

Director: E. Stullenbarger, DSN, RN, CS-PNP, Professor
RN-B.S.N. Coordinator: L. Hennig, Ed.D., RN
Professors: A. Bushy, Ph.D., RN, CS; M. L. Sole, Ph.D., RN, FAAN
Associate Professors: E. J. Brown, Ph.D., RN, CS; J. Dorner, M.N., RN, Associate Dean; J. Byers, Ph.D., RN; K. Dow, Ph.D., RN, FAAN; G. Giovinco, Ph.D., Ed.D., RN; R. Gropper, Ed.D., RN, Daytona Beach Campus Coordinator; J. Kijek, Ph.D., RN; F. Smith, Ed.D., RN; V. Browne-Krimsley, Ed.D., RN, Brevard Campus Coordinator; D. Wink, Ed.D., ARNP

Assistant Professors: N. Crigger, Ph.D., RN; J. Gichia, Ph.D., CNM, RN; L. Holcomb, DSN, RN, ARNP; E. Kiehl, Ph.D., ARNP; J. Weiss, Ph.D., RN, ARNP
Instructors: J. Peterson, Ph.D., RN, ORHS Coordinator; P. Leli, M.S.N., RN, Undergraduate Coordinator; M. Ramey, M.N.Ed., RN; M. Covelli, M.A., RN; S. Pelliccio, M.S.N., RN
Visiting Instructor: M. L. Brunell, MSN, RN; P. Connell, M.S.N., RN

Public Administration
Chair: K. T. Liou, D.P.A., Professor
Professors: P. W. Colby, Ph.D.; R. A. Shapek, Ph.D.
Associate Professors: E. Berman, Ph.D.; J. Gianakis, Ph.D.; J. D. Jurie, D.P.A.; W. C. Lawther, Ph.D.
Assistant Professors: M.A. Feldheim, Ph.D.; X. H. Wang, Ph.D.
Instructors: J. Kiefer, M.P.A., Program Coordinator; M. Rogers, M.P.A.

Public Affairs—Ph.D. Program
Director: B. R. McCarthy, Ph.D., Dean
Chairs: B. J. McCarthy, Ph.D., Professor; K. T. Liou, D.P.A., Professor
Professors: R. Bohm, Ph.D.; I. Colby, Ph.D.; D. Poole, Ph.D., R. Shapek, Ph.D.; R. Surette, Ph.D.
Associate Professors: E. Berman, Ph.D.; D. Bishop, Ph.D.; M. Lanier, Ph.D.; S. Mahan, Ph.D.; J. Sanborn, Ph.D.
Assistant Professors: B. Applegate, Ph.D.; M.A. Feldman, Ph.D.; J. Gianakis, Ph.D.; P. Griset, Ph.D.; S. Holmes, Ph.D.; A. Leon, Ph.D.; K. Luken, Ph.D.; K. Reynolds, Ph.D.; X. Wang, Ph.D.

School of Social Work
Director: M. Van Hook, Ph.D.
Professors: S. Dziegielewski, Ph.D.
Associate Professors: K. Kazmerski, D.S.W., M.S.W. Coordinator; P. Maiden, Ph.D.; E. K. Suh, Ph.D.
Assistant Professors: E. M. Abel, M.S.W., B.S.W. Coordinator; C. E. Green, Ph.D., Assistant Dean; J. Kirven, Ph.D.; A. Leon, Ph.D.; B. Turnage, Ph.D.
Coordinator, Field Education: C. Massey, M.S.W.
Clinical Instructors: D. Brett, Ph.D.; L. Davis, M.S.W.; G. Jacinto, M.S.W.; M. Sauer, M.S.W.

Programs

Doctor of Philosophy in Public Affairs
Tracks: Criminal Justice, Public Administration, and Social Work

Master of Science
Criminal Justice
Health Sciences: Health Services Administration
Molecular Biology and Microbiology
Physical Therapy

Master of Science in Nursing
Adult or Family Nurse Practitioner Track (MSN, RN to MSN)
Clinical Nurse Specialist Track (MSN, RN to MSN)
Nurse Practitioner to MSN Track
Nursing Leadership and Management Track (MSN, RN to MSN)

Master of Arts in Communicative Disorders

Master of Public Administration

Master of Social Work

Graduate Certificates
Adult or Family Nurse Practitioner
Crime Analysis
Gerontology
Health Care Information Systems
Managed Care
Medical Group Management
Nonprofit Management
Nursing and Health Professional Education
Planning
Public Administration
Risk and Quality Management

Interdisciplinary Studies

The College of Health and Public Affairs offers an interdisciplinary graduate certificate in Gerontology.

Graduate Certificate in Gerontology

Program Coordinator: Margaret Sauer, M.S.W., School of Social Work, HPA 204, (407) 823-2114.
E-mail: msauer@mail.ucf.edu
Web address: www.cohpa.ucf.edu/gerontology/
Phone: (407) 823-2215
Fax: (407) 823-5697

In recognition of the special needs of elderly citizens, the University of Central Florida offers a twelve-hour interdisciplinary program leading to a Graduate Certificate in Gerontology. The Graduate Certificate in Gerontology (GCG) is administered by the School of Social Work.

Who may be interested?

The program may be of particular interest to people presently employed in the aging field who have a baccalaureate or higher degree and who wish to increase their knowledge of gerontology. Graduate students who are enrolled in health sciences, psychology, social work, nursing, communicative disorders, or sociology, as well as in other areas, such as liberal arts, music education, physical education, or art education, may find the certificate valuable.

How is the certificate structured?

Students complete four classes. There is one required course and three electives. In order to keep the interdisciplinary nature, courses must be selected from both the College of Health and Public Affairs and the College of Arts and Sciences.

Required Course—3 Semester Hours:
GEY XXXX Gerontology, An Interdisciplinary Approach

Electives—9 Semester Hours
SYP 6938 Elder Abuse
SPA 6407 Aging and Communication
CLP XXXX Mental Health and Aging
EXP XXXX Human Factors in Aging
HSC 6568 Issues in Geriatric Health Care
NGR XXXX Psychosocial Factors in Health Care Outcomes of the Elderly
PHT 6XXX Gerontology in Physical Therapy Practice*
SYO 6XXX The Welfare State and Aging
SOW 5XXX Aging in the Social-Situational Context
SOW 5XXX Interventions with the Elderly and Their Families

* Physical Therapy majors only

What are the advantages of the GCG?

While the certificate does not prepare the student for a specific occupation in gerontology, those completing the certificate will have an advantage in seeking employment in the field of aging.

How to enroll in the Graduate Certificate of Gerontology

Students currently enrolled at UCF as a graduate student need only enroll in the required GCG courses to be in the program. Students who have completed an undergraduate or graduate degree (not necessarily at UCF) and who are returning only for the GCG should contact the Graduate Admissions office (407/823-2766) to register as non-degree-seeking in the GCG file.

How to receive your certificate

Upon completion of all courses, your name and social security number should be provided to the coordinator of the Graduate Certificate in Gerontology at the School of Social Work (407-823-2114). Include information about how you would like your name to appear on the certificate and your current mailing address. A Completion of Certificate form (available at http://www.graduate.ucf.edu) should be completed so that a certificate can be prepared. You may receive your certificate after completion of courses.

Doctor of Philosophy in Public Affairs

Dean and Interim Director: Belinda R. McCarthy, Ph.D., College of Health and Public Affairs, HPA 365A, (407) 823-0170. E-mail: phdpa@mail.ucf.edu

The Ph.D. in Public Affairs at the University of Central Florida provides a unique focus on public policy, planning, and administration. This interdisciplinary program draws from the strengths of faculty in four disciplines (Criminal Justice, Health, Public Administration, and Social Work) in its preparation of mid-career professionals (for leadership and/or research positions in public, nonprofit, and private agencies) and more traditional students (for positions in colleges and universities). The integration of this dynamic mix of students creates a stimulating environment in which to examine contemporary organizational, community, and regional problems and issues.

The mission of the program is an important one: The complex social, economic, and demographic issues that compromise the health and welfare of the citizens of Central Florida and the nation require a new breed of professionals who are able to think and work across traditional boundaries with colleagues similarly committed to tackling the complex social challenges of tomorrow. UCF's interdisciplinary Ph.D. in Public Affairs strives to fulfill that need and to meet the challenges of the future.

More specifically, the program brings together disciplines which address important and interrelated social problems that confront all communities. Too often, in the past, the interrelated problems of crime and justice, health services and social welfare delivery, and the administration of organizations that deal with these problems are approached in a discipline-specific and fragmented way. By integrating knowledge base and intervention approaches, more realistic resolutions to social problems can be identified and implemented.

The program will match career goals of students through the interdisciplinary nature of course content, the interaction with faculty from all four disciplines, and the flexibility inherent in the choice of electives. Those seeking advancement within public agencies or nonprofit organizations can choose a mix of electives, including course work from other UCF programs, while those seeking to teach at the college or university level can concentrate their course work more within a single discipline.

To accommodate the needs of both traditional students and working professionals, Public Affairs students may pursue the program on a full-time (9-12 credits per semester) or part-time (3-6 credits per semester) basis. Significant support is available for selected full-time students. All course work is offered in the evening hours.

Degree Requirements

Students must complete 58 hours beyond the master's degree, including fourteen courses (42 credit hours) above the master's level distributed in the following manner: (1) a five-course, 15-credit interdisciplinary core; (2) a three-course, 7-

credit research tool; and (3) a seven-course, 21-credit interdisciplinary specialization component that will be tailored to meet students' individual goals. Fifteen credit hours of dissertation must also be completed.

To ensure that students more fully experience the interdisciplinary nature of the program, completion of no more than five elective courses from one discipline will be permitted. Among the elective choices offered to students will be a series of research courses that will also be interdisciplinary.

If students receive grades below a "B" in core courses, they may be reverted to non-degree status. All students who receive a grade of "C" or lower in a required core course must repeat the course prior to taking the qualifying examinations.

Application Deadline

Fall admission	February 7*
Fall admission	March 15

* Students applying for fellowships or assistantships must apply for the fall semester by this date.

Admission

Applications for admission into the Ph.D. program in Public Affairs will be submitted to the UCF Office of Graduate Studies. The deadline for fall admission is April 3. Admission decisions will be made only once per academic year. Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

A complete packet for admission includes all of the following:

- An official admission application form
- Official copies of undergraduate and graduate transcripts
- Official results of the Graduate Record Examination (score of 1000, math and verbal combined, are required, taken within the last five years) and sent from ETS directly to UCF
- A narrative statement of 1000 words or less describing the applicant's educational expectations, career aspirations, level of computer skills, and any special qualifications or experiences that may enhance the overall learning environment of the program
- A current resume
- Three letters of reference from professionals who can assess the applicant's ability to succeed in a doctoral program
- International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

It is important that applicants return all materials in the single packet to facilitate admission decisions.

Financial Support

A limited number of graduate teaching/research assistantships and fellowships, funded in amounts up to $15,000 per year, are available for full-time students (9 credit hours per term). In addition, opportunities to assist in faculty research projects as well as to work in an agency or nonprofit setting may be available.

Transfer Credit

Course work accepted for transfer must be part of an approved plan of study for a doctoral program at UCF or elsewhere. The acceptance of transfer credit will be determined by the Ph.D. Coordinator on a case-by-case basis. A maximum of six hours may be transferred.

Assignment of Faculty Advisers

Upon acceptance of a student into the program, the Ph.D. Coordinator will provide an initial orientation and general advising session. The Coordinator will continue to advise the student throughout the first year, assisting the student in the clarification of interests and goals and facilitating the introduction of the student to faculty with research interests that can facilitate the student's program of study. By the end of the first year, the student will be assigned a faculty adviser, who will work with the student in selection of elective courses, finalize the program of study, and facilitate the discussion and review of dissertation topics. The dissertation chair should be selected by the end of the student's second year of study.

Qualifying Examination

Following successful completion of the seven required foundation courses, a student is required to pass a qualifying examination. This examination will test the student's knowledge of the material in the seven foundation courses only. The examination will be given once each fall and spring semester.

Candidacy Examination

Students who pass the qualifying examination, once all of their course work has been completed, are entitled to write and defend a dissertation proposal. Successful completion of the candidacy examination will consist of 1) achieving a 3.5 GPA for all elective courses; and 2) successful defense of the dissertation proposal.

Curriculum

Required Courses

Foundation

PAF 7000 Foundations of Public Affairs (3 hours)
PAF 7110 Ethics and Public Affairs (3 hours)
PAF 7230 Strategic Change and Management in Public Affairs (3 hours)
PAF 7250 Social Justice and Public Policy (3 hours)
PAF 7300 Policy Analysis in Public Affairs (3 hours)

Research
PAF 7802 Advanced Research Methods in Public Affairs (3 hours)
PAF 7804 Advanced Quantitative Research Methods in Public Affairs (3 hours)
PAF 7XXX Seminar in Quantitative Methods (1 hour)

Electives

Disciplinary Electives

Criminal Justice Track
CCJ 6938 Special Issues in Criminal Justice (3 hours) (Course may be repeated with different content.)
CCJ 7457 Seminar in Criminal Justice Theory (3 hours)
CCJ 7930 Seminar in Criminal Justice Policy Analysis (3 hours)

Public Administration Track
PAD 6207 Advanced Public Budgeting and Finance (3 hours)
PAD 6934 Special Issues in Public Administration (3 hours) (Course may be repeated with different content.)
PAD 7026 Advanced Seminar in Public Administration (3 hours)
PAD 7419 Advanced Public Human Resource Management (3 hours)

Social Work Track
SOW 6386 Seminar in Social Welfare Planning and Implementation (3 hours)
SOW 6399 Advanced Administration in Social Welfare (3 hours)
SOW 6492 Theory Building in Social Work (3 hours)
SOW 6938 Special Issues in Social Work (3 hours) (Course may be repeated with different content.)

Research Electives
PAF 7XXX Advanced Quantitative Methods II (3 hours)
PAF 7510 Seminar in Program Evaluation in Public Affairs (3 hours)
PAF 7810 Seminar in Survey Research in Public Affairs (3 hours)
PAF 7820 Seminar in Qualitative Methods (3 hours)
PAF 7840 Seminar in Secondary Data Analysis in Public Affairs (3 hours)

Note: Other 6000-level courses may be accepted as electives.

PAF 7982 Dissertation Seminar in Public Affairs (2 hours)

Dissertation—15 Semester Hours
PAF 7980 Dissertation Research

Minimum Hours Required for PhD—58 Semester Hours

Communicative Disorders

Chair: Jane R. Lieberman, Ph.D.
Graduate Program Coordinators: Martine Vanryckeghem, Ph.D., E-mail: martinev@mail.ucf.edu
Linda Louko, Ph.D., E-mail: llouko@mail.ucf.edu
Research Pavilion Suite 200, (407) 249-4798.
Coordinator, Academic Support: Jane Searles, Ed.S., E-mail: jsearles@mail.ucf.edu
Web address: http://www.cohpa.ucf.edu/comdis/

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 Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAP). The program is accredited by the Educational Standards Board of the American Speech-Language-Hearing Association. Full-time registration in the program is required every semester including summer.

The faculty is keenly aware of the need for combining theoretical foundations with clinical skills. Supervised student practica are offered in the Communicative Disorders Clinic on campus as well as in external settings. Selected speech/language pathologists in Central Florida 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 6553C, 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.

To apply for the Consortium Program, the applicant must have worked in the public school system for a one-year period and the school system must be a participating member of the Consortium Group. For more information on the Consortium Program, contact the Communicative Disorders Department.

Application Deadlines

Fall/Summer admissions	February 1
Spring admission	October 1

Admission

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. These are minimum university requirements and do not guarantee admission to the graduate program.
- Three letters of recommendation, preferably from former instructors.
- A letter of intent, stating background and experience, interest in the field, future goals, the semester in which admission is desired, and specifying consortium or regular program.
- 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 take the Test of English as a Foreign Language. To be considered for admission, a score of 220 (computer-based test; or equivalent score on the paper-based test) is required.

It is important that applicants return these materials in a single packet to the Office of Graduate Studies to facilitate admission decisions. Admission into the graduate program will be determined in fall and spring for all semesters including summer. This program is highly competitive and meeting minimum university standards may not guarantee admission to the program.

Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

Master of Arts in Communicative Disorders

Prerequisites

Baccalaureate in Speech and Hearing (Communicative Disorders) or special prerequisite courses to be arranged with the graduate 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—60 Semester Hours

Each semester's courses are prerequisites for the next semester's courses.

Term 1

SPA 5404 Language Disorders: Pre-School (3 hours)
SPA 5805 Research in Communicative Disorders (3 hours)
SPA 6410 Language Problems in Adults: Aphasia and Other Symbolic Disorders (3 hours)
SPA 6505 Clinical Practicum in Speech Pathology-Language (3 hours)

Term 2

SPA 5236 Speech Problems in Adults: Motor Speech Disorders (3 hours)
SPA 6204 Advanced Studies in Communicative Disorders: Articulation (3 hours)
SPA 6403 Language Disorders: School Age Language (3 hours)
SPA 6505 Clinical Practicum in Speech Pathology-Language (3 hours)

Term 3

SPA 5225 Fluency Disorders (3 hours)
SPA 6132 Measurements in Speech Science (3 hours)
SPA 6211 Voice Disorders (3 hours)
SPA 6505 Clinical Practicum in Speech Pathology-Language (3 hours)

Term 4

SPA 5327 Aural Habilitation - Rehabilitation (4 hours)
SPA 6407 Seminar in Language (2 hours)
SPA 6553C Differential Diagnosis Speech Language (4 hours)

Term 5

SPA 5600 Administration and Management of Communicative Disorders (3 hours)
SPA 6506 Clinical Practicum in Audiology (3 hours)
SPA 6526 Seminar in Speech Pathology (2 hours)
SPA 6826 Seminar in Research (2 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—9 Semester Hours (minimum)

All students must register for three hours each semester in SPA 6505 or SPA 6506 while in attendance, with exceptions as noted in the graduate manual (SPA 6553C, SPA 6918, and SPA 6946).

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 (SPA 6946) in Speech-Language Pathology. In addition, a student in the Clinical Internship option must register for one hour of Directed Research (SPA 6918) in the semester in which they do their internship.

Examinations

Students will be required to pass a written comprehensive examination administered by the department before being considered a degree candidate. The comprehensive examination is to be taken after all course work is completed with the exception of SPA 6918 and SPA 6946.

Minimum Hours Required for M.A.—50 Semester Hours

Criminal Justice & Legal Studies

Graduate Program Coordinator: K. Michael Reynolds, Ph.D., HPA 311, (407) 823-2603. E-mail: kreynold@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 qualitative and quantitative research and computer skills.

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 a variety of students. Some are recent college graduates interested in pursuing a professional career in criminal justice. Others are employees of criminal justice agencies interested in learning more about their field and advancing their careers. Still, others enter the program as a first step toward a Ph.D. in criminal justice or a related field. Some may be driven simply by a desire to enrich their intellectual lives. Whatever their motivations and backgrounds, graduates of the master's program will be better prepared to meet the many challenges facing the criminal justice system today.

Two plans of study are available. The first has a professional focus and is designed for students whose career goals include working in criminal or juvenile justice agencies. These students will be encouraged to focus on policy-oriented courses and to compile a professional portfolio of their graduate work. The second plan of study is designed for students who plan to enroll in a Ph.D. program when they complete the master's program. These students will be encouraged to prepare a thesis and to focus on research-related courses.

Students in both plans of study will be exposed to a wide variety of issues and problems within the discipline. They will study crime trends and theories of criminal behavior. They will analyze the administration of justice within the United States, including critical problems facing law enforcement, courts, and corrections. Qualitative and quantitative research methods, statistics, and computer technologies in the criminal justice field will also be part of each student's curriculum.

Students will select elective courses based on their program of study. These courses involve analysis of juvenile crime and the juvenile justice system; the relationship of law to social policy; individual and organizational strategies for change; the connection between popular culture, the mass media, crime, and criminal justice; and the future of corrections and law enforcement. A number of special topic courses will be offered as well.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

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 and a total score of 800 or higher on the verbal-quantitative sections of the GRE. Applicants that fail to meet the minimum requirements will be considered for admission on a case-by-case basis. 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 score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

Degree Requirements

The M.S. program in Criminal Justice consists of 30 semester hours. Each student completes a core of 4 courses (12 semester hours) and advanced curriculum of 6 courses (18 semester hours) selected in consultation with an adviser.

Minimum Core Requirements—12 Semester Hours
CCJ 5015 The Nature of Crime (3 hours)
CCJ 5456 The Administration of Justice (3 hours)
CCJ 5704 Research Methods in Criminal Justice (3 hours)
CCJ 6706 Quantitative Methods and Computer Utilization in Criminal Justice (3 hours)

Advanced Curriculum—18 Semester Hours
(choose six of the following)
CCJ 5105 Foundations of Law Enforcement
CCJ 5305 Foundations of Corrections
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 6934 Criminal Justice, Crime, and Popular Culture
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 Practicum.)

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.

Graduate Certificate in Crime Analysis

A unique Graduate Certificate in Crime Analysis has been developed by the Criminal Justice and Legal Studies Department to provide information for data-driven management, investigative support, and general crime analysis. The certificate program is designed to provide essential skills that are critically needed by law enforcement agencies to meet new demands for sophisticated crime analysis and mapping products.

The program addresses the needs of traditional criminal justice graduate students, and nontraditional criminal justice practitioners, who are seeking to develop knowledge in crime analysis and mapping. Theoretical aspects of crime pattern analysis are combined with practical applications to understand the development of data-driven crime prevention strategies. Crime pattern recognition and examination are emphasized. The program emphasizes data management abilities that are essential for sophisticated crime analysis. The program is designed to synthesize theory and application to produce a knowledge base necessary to 1) fully utilize available technologies to develop and perform complex crime analysis and mapping, 2) perform advanced spatial anlyses of crime, and 3) understand the essentials of creating customized crime analysis and mapping applications that are agency specific.

The certificate program is affiliated with the Master of Science in Criminal Justice and will be administered by the Department of Criminal Justice. The program follows UCF policies and procedures for graduate certificate programs. Any student with an undergraduate baccalaureate degree or higher from an accredited university may apply.

Certificate Requirements

The Crime Analysis certificate program consists of three courses for a total of nine semester hours. All courses are taught in a computer lab with a hands-on environment.

Required Courses—9 Semester Hours

CCJ 5937 Data Management Systems for Crime Analysis (3 hours)
CCJ 6938 Crime Mapping and Analysis in Criminal Justice (3 hours)
CCJ 6938 Advanced Crime Mapping and Analysis in Criminal Justice (3 hours)

Students need to be aware that entry to a certificate program does not guarantee admission to a graduate program. However, once a student is accepted into a regular graduate program, credits from a certificate program may be applied toward an existing graduate program with the consent of the program. No internship or independent study may be used in a certificate program. A certificate program must be completed within three years of the start of the first course in the certificate program.

Health Professions

Chair of the Department: TBA.
Health Services Administration Graduate Program Coordinator: Aaron Liberman, Ph.D., TR 534, (407) 823-3264. E-mail: aliberma@pegasus.cc.ucf.edu
Health Services Administration EMBA Graduate Program Coordinator: Myron Fottler, Ph.D., TR 534, (407) 823-5531. E-mail: fottler@mail.ucf.edu
Physical Therapy Graduate Program Coordinator: Eileen Hamby, D.B.A., P.T., HPA 256, (407) 823-3470. E-mail: ptinfo@mail.ucf.edu

Master of Science in Health Sciences: Health Services Administration

The Department of Health Professions offers a Master of Science in Health Sciences: Health Services Administration. The program of study required for the Health Services Administration option is outlined below.

Application Deadlines

Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

Admission

Admission to graduate status in the Master of Science in Health Sciences: Health Services Administration program is based on the following criteria:

- 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). Additionally, an LSAT score of 150 or an MCAT score of 27 may be used to satisfy this requirement.
- International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).
- 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, finance, statistics, and personal computers. These prerequisites may be taken after admission to the program.

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 adviser to plan a program of study.

Degree Requirements

Required Courses—27 Semester Hours
HSA 5198 Information Systems and Computer Applications in Medicine
HSA 6107 Health Care Organization and Management I
HSA 6188 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
HSA 6925 Capstone in Health Services Administration

Electives—12 Semester Hours
Students must choose a minimum of four courses in consultation with the adviser. Electives may also include a research project, thesis, independent study, or internship. As part of these electives, students will be asked to select at least one area of specialization. The successful completion of the required courses in a specific area of specialization will earn the student a graduate certificate in that area.

Medical Group Management
HSA 4502 Principles of Risk Management (3 hours)
HSA 6508 Principles of Practice Management (3 hours)
HSA 6938 Advanced Practice Management (3 hours)
PHC 6160 Health Care Finance (3 hours)

Risk and Quality Management
HSA 5198 Information Systems and Computer Applications in Health Care (3 hours)
HSA 6385 Quality Management in Health Care (3 hours)
HSA 6938 Advanced Risk Management (3 hours)
HSA 6938 Data Management in Health Care (3 hours)

Health Care Information Systems
HSA 5198 Information Systems and Computer Applications in Health Care (3 hours)
HSA 6188 Health Care Organization and Management II (3 hours)
ISM 6121 Systems Analysis and Development (3 hours) or NGR 5937 Health Care Informatics (3 hours)
ISM 6305 Information Resource Management (3 hours) or NGR 5937 Health Care Informatics (3 hours)

Managed Care
HSA 6126 Principles of Managed Care (3 hours)
HSA 6938 International Health Systems (3 hours)
HSA 6938 Data Management in Health Care (3 hours) or HSA 5937 ICD 9 Coding for Health Services Administrators (3 hours)
PHC 6420 Case Studies in Health Law (3 hours)

Comprehensive Examination Experience—3 Semester Hours
A final written examination experience is required of all students in the program. This experience will be completed through successful completion of the capstone symposium course. All students must successfully complete the comprehensive examination experience to graduate.

Thesis and Research Report Options—3-6 Semester Hours
Students may choose to do a research project or thesis with the consent of the academic adviser. Normally, 3 semester hours credit is earned for the research project and 6 for the thesis. Students should discuss this with the adviser when the program of study is completed.

Internship—3-6 Semester Hours
Internships provide a student with practical administrative experience. For a three-hour course, a student must work 225 hours at a health care organization during the semester. A maximum of three student credit hours will count toward the 39 required student credit hours for graduation.

Minimum Grade Requirements for Graduation
A grade point average of at least 3.0 (“B”) is required for graduation. Additionally, a student may earn no more than two grades of “C” to graduate. A student who earns a third grade of “C” may be disqualified from further Health Services Administration studies. A final decision on disqualification will be made by majority vote of the HSA faculty. In any course repeated, a student must earn a grade of “B” or better.

A student who earns a grade of “D” or below will be disqualified from further HSA graduate studies.

Minimum Hours Required for M.S. in HS (HSA)—39 Semester Hours

Note: Students are encouraged to have access to a personal computer, modem, and appropriate software to interact with the university and professors.

The Health Services Administration program may offer Graduate Teaching Assistantships to selected students. Those students who have distinguished themselves are encouraged to apply for a GTA position.

Executive MBA in Health Services Administration

See College of Business Administration, Executive MBA Program.

Master of Science in Physical Therapy

The mission of the program in Physical Therapy is to educate and train students to be entry-level practitioners of the art and science of Physical Therapy. The educational process enables students to possess the general skills for competent clinical management of patients. The intent of the curriculum is to enable students to assess, evaluate, and treat patients in the most efficient and appropriate manner possible.

Objectives of the Program

- Preparation of a physical therapist who will practice as a broadly skilled, inquiring clinician in a variety of health care settings, with appropriate skill in education, communication, advocacy, management, and research
- Preparation of a physical therapist who demonstrates a lifelong commitment to the profession and to their patients, through active participation in their communities,

patient advocacy, and the ability to adapt to consumer needs and the changing health care environment
- Promotion of the scientific foundations of physical therapy practice and education with emphasis on outcomes and efficacy of treatment
- Promotion of interdisciplinary approaches to patient care
- Promotion of the physical therapy profession and the physical therapist as a unique and integral component of health care

The program in Physical Therapy (M.S.) is a two-year (seven consecutive semesters), professional curriculum designed to prepare entry-level therapists to practice in a variety of settings. The professional curriculum is a full-time program with no opportunity to take courses other than those prescribed by the curriculum. The professional program includes clinical practicums and internships ranging from four weeks to twelve weeks long. Applicants need to note that one or more of the clinical practicums may be assigned at a site sufficiently removed from the Orlando area to require the student to provide transportation and housing.

Students who successfully complete the course of study will be granted the M.S. degree, enabling the graduate to seek membership in the American Physical Therapy Association and to qualify for Physical Therapy licensure. UCF's Program in Physical Therapy received interim accreditation of its Master of Science in Physical Therapy from the Commission on Accreditation of Physical Therapy Education. Approximately 28 students are admitted to the program each year. The demographics of the class entering in 1999 include an average age of 26.6 years, an overall grade point average of 3.465 (on a 4.0 scale), an average prerequisite grade point average of 3.45, and an average of 1,210 field hours in physical therapy settings.

Application Deadline

Summer admission	January 15

Admission Requirements

Acceptance and registration to study at UCF does not constitute admission to the Program in Physical Therapy. Students must apply to the University of Central Florida through the Office of Graduate Studies. Acceptance to the program in Physical Therapy is contingent upon admission through Graduate Studies and is based on competitive admission.

Before applying to the program, the applicant must:
- Earn a score of 1000 on the verbal-quantitative portion of the GRE or a 3.0 GPA for the last 60 attempted semester hours earned toward a bachelor's degree*
- Apply to the University of Central Florida, Program in Physical Therappy through the Office of Graduate Studies
- Earn a minimum of ten hours of volunteer / work experience under the direct supervision of a licensed physical therapist in the field of physical therapy

International students and students whose native language is not English must score at least 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

* Each applicant must submit official GRE results, regardless of score.

Before entering the program, the applicant must:
- Earn a bachelor's degree
- Complete program prerequisites with at least a 3.0 grade point average and no grade less than a "C." No CLEP, TSD, or AP credit may be used for prerequisite courses. Please see the program webpage (http://www.cohpa.ucf.edu/health.pro) for an outline of prerequisite courses.

Please visit the webpage for application details as well. Qualified applicants will be selected to participate in the interview process. Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

Degree Requirements

Summer Term 1
PHT 5XXXC Gross Anatomy / Neuroscience I (2 hours)
PHT 5XXXL Gross Anatomy / Neuroscience I Lab (2 hours)
PHT 5XXX Physiology of Therapeutic Exercise (2 hours)
PHT 5XXXL Physiology of Therapeutic Exercise Lab (2 hours)
PHT 5XXX Patient Care Skills (2 hours)
PHT 5XXXL Patient Care Skills Lab (1 hour)
PHT 5XXX Foundations of Physical Therapy I (2 hours)

Fall Term 1
PHT 5XXX Gross Anatomy / Neuroscience II (2 hours)
PHT 5XXXL Gross Anatomy / Neuroscience II Lab (2 hours)
PHT 5XXX Clinical Kinesiology (3 hours)
PHT 5XXXL Clinical Kinesiology Lab (2 hours)
PHT 5XXX Physical Assessment (1 hour)
PHT 5XXXL Physical Assessment Lab (2 hours)
PHT 5XXX Theories and Procedures I (2 hours)
PHT 5XXXL Theories and Procedures I Lab (1 hour)

Spring Term 1
PHT 5XXX Neurological Physical Therapy (2 hours)
PHT 5XXXL Neurological Physical Therapy Lab (1 hour)
PHT 5XXX Pathology / Pharmacology (3 hours)
PHT 5XXX Physical Therapy Integration I (1 hour)
PHT 5XXX Therapeutic Exercise I (2 hours)
PHT 5XXXL Therapeutic Exercise I Lab (2 hours)
PHT 5XXX Foundations of Physical Therapy II (3 hours)
PHT 5XXX Clinical Education I (1 hour)

Summer Term 2
PHT 6XXX Research Methods in Physical Therapy (2 hours)
PHT 6XXX Orthopedic Physical Therapy (2 hours)
PHT 6XXXL Orthopedic Physical Therapy Lab (1 hour)
PHT 6XXXC Functional Rehabilitation (2 hours)
PHT 6XXX Therapeutic Exercise II (2 hours)
PHT 6XXXL Therapeutic Exercise II Lab (1 hour)

Fall Term 2
PHT 6XXX Research Methods in Physical Therapy (2 hours)
PHT 6XXXC Pediatric Physical Therapy (2 hours)
PHT 6XXX Advanced Neurological Physical Therapy (2 hours)

PHT 6XXXL Advanced Neurological Physical Therapy Lab (1 hour)
PHT 6XXX Advanced Orthopedic Physical Therapy (2 hours)
PHT 6XXXC Cardiopulmonary Physical Therapy (2 hours)

Spring Term 2
PHT 6XXX Advanced Clinical Applications I (1 hour)
PHT 6XXX Management of Physical Therapy Services (3 hours)
PHT 6XXX Gerontology in Physical Therapy Practice (2 hours)
PHT 6XXX Theories and Procedures II (2 hours)
PHT 6XXXL Theories and Procedures II Lab (1 hour)
PHT 6XXX Physical Therapy Integration II (2 hours)

Summer Term 3
PHT 6XXX Advanced Clinical Applications II (3 hours)

Master of Science in Physical Therapy awarded—75 Semester Hours

Examinations
This non-thesis program requires a final comprehensive examination on course work in the program of study. In addition, comprehensive examinations will be required at the end of each year of the program. A research project is also required on each student.

Graduate Certificates in Health Services Administration

Graduate Program Coordinator: Aaron Liberman, Ph.D., TR 534, (407) 823-3264. E-mail: aliberma@pegasus.cc.ucf.edu

Medical Group Management

The medical group management certificate is designed for individuals who wish to better understand a medical office or a group practice environment. The certificate provides an opportunity to gain training in this ever-changing and exciting environment. The program is open to both degree-seeking and non-degree-seeking graduate students.

Required Courses—12 Semester Hours
HSA 4502 Principles of Risk Management (3 hours)
HSA 6508 Principles of Practice Management (3 hours)
HSA 6938 Advanced Practice Management (3 hours)
PHC 6160 Health Care Finance (3 hours)

Risk and Quality Management

Risk and quality management represent the first line of defense against liability claims that can adversely affect a healthcare organization, its governing board, and its professional staff. This program provides useful information and techniques both for preventing problems and addressing sensitive issues when they arise. The program is open to both degree-seeking and non-degree-seeking graduate students.

Required Courses—12 Semester Hours
HSA 5198 Information Systems and Computer Applications in Health Care (3 hours)
HSA 6385 Quality Management in Health Care (3 hours)
HSA 6938 Advanced Risk Management (3 hours)
HSA 6938 Data Management in Health Care (3 hours)

Health Care Information Systems

The information superhighway influences every facet of the personal and professional lives of many Americans. This certificate program provides a substantive road map for becoming actively engaged as an integral part of the technological revolution that is taking place. Training offered through the World Wide Web is an important feature of this certificate program. The program is open to both degree-seeking and non-degree-seeking graduate students.

Required Courses—12 Semester Hours
HSA 5198 Information Systems and Computer Applications in Health Care (3 hours)
HSA 6188 Health Care Organization and Management II (3 hours)
ISM 6121 Systems Analysis and Development (3 hours)
ISM 6305 Information Resource Management (3 hours)

Managed Care

Managed care represents the dominant mechanism for reimbursing providers for healthcare services. This certificate program is designed to guide each student in addressing their potential service interests in this diverse and multifaceted arena. The program is open to both degree-seeking and non-degree-seeking graduate students.

Required Courses—12 Semester Hours
HSA 6126 Principles of Managed Care (3 hours)
HSA 6938 International Health Systems (3 hours)
HSA 6938 Data Management in Health Care (3 hours)
PHC 6420 Case Studies in Health Law (3 hours)

Molecular Biology & Microbiology

Graduate Program Coordinator: R. N. Gennaro, Ph.D., BIO 330, (407) 823-5932. E-mail: gennaro@mail.ucf.edu
Web address: http://www.cohpa.ucf.edu/molec.bio/

Master of Science in Molecular Biology and Microbiology

Application Deadlines

Fall admission	March 15*
Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

* Students applying for fellowships or assistantships must apply for the fall semester by this date.

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 research experience, 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 score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL).

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 reexamination. 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 5205 Infectious Processes (3 hours)
MCB 5225 Molecular Biology of Disease (3 hours)
MCB 5487 Current Topics in Molecular Biology (3 hours)
MCB 5505 Virology (3 hours)
MCB 5527 Genetic Engineering and Biotechnology (3 hours)
MCB 5654 Applied Microbiology (3 hours)
MCB 6XXX Plant Molecular Biology (3 hours)
MCB 6226 Molecular Diagnostics (3 hours)
MCB 6407C Laboratory Methods for Molecular Biology (5 hours)
MCB 6417C Microbial Metabolism (3 hours)
MCB 6938 Seminar (1-2 hours)
MCB 6971 Thesis (1-6 hours)
PCB 5026 Signal Transduction Mechanics (3 hours)
PCB 5235 Immunopathology (3 hours)
PCB 5239 Tumor Biology (3 hours)
ZOO 5745C Essentials of Neuroanatomy (4 hours)

Summary of M.S. Degree Requirements

Admission
- 3.0 grade point average (GPA) for the last 60 attempted semester hours at the undergraduate level and 1000 on the GRE (quantitative and verbal)
- Three letters of recommendation
- Minimum score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL)
- 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

Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

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).

School of Nursing

Graduate Program Coordinator: TBA, HPA 220, (407) 823-2744.
E-mail: gradnurs@mail.ucf.edu

Master of Science in Nursing

Nursing Leadership and Management—41 Semester Hours
Nurse Practitioner (Family or Adult)—46 Semester Hours
Clinical Nurse Specialist—46 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 nursing leaders and managers to assume leadership positions in a variety of health care settings. Students are admitted to the programs in fall and spring semesters. The Master of Science program is accredited by the National League for Nursing Accrediting Commission (NLNAC).

This 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 programs are eligible to sit for certification examinations in the specialty. Nurse practitioner graduates are eligible for licensure as an ARNP in Florida.)

Application Deadlines

Fall admission	March 15
Spring admission	September 15

Nursing (post-baccalaureate and certificate students)
Deadlines may be extended to the university date if space is available.

Fall admission	June 1
Spring admission	October 15

Admission

Requirements for admission to the program include the following:

- A baccalaureate degree in nursing from a program accredited by the NLNAC (National League for Nursing Accreditation Commission) or CCNE (Commission on Collegiate Nursing Education)
- An overall grade point average of 3.0 (on a 4.0 scale) for upper-division undergraduate work (usually the last 60 attempted semester hours) and a combined GRE score of 900 on the verbal and quantitative exams; OR, an overall grade point average of 2.8 (on a 4.0 scale) for upper-division undergraduate work (usually the last 60 attempted semester hours) and a combined GRE score of 1000 on the verbal and quantitative exams
- Licensure as a Registered Nurse in Florida
- One year (or equivalent) experience as a Registered Nurse
- Completion of an undergraduate course in statistics
- Completion of an undergraduate course in health assessment (If health assessment content was integrated into other nursing course work, written documentation must be obtained from the school or college of nursing.)
- A personal statement describing interest in the field and career goals
- A resume (no longer than 2 pages)
- Three references; at least one should be from a former faculty member
- Score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) or passing score on CGFNS (Commission on Graduates of Foreign Nursing Schools; for international students only)

Admission to the program is competitive, based on evaluation of the applicant's abilities, past performance, recommendations, and the match of UCF's programs with career goals. The School of Nursing accepts the most qualified students. Since enrollment is limited, not all students who apply may be accepted, even if minimum requirements are met.

Students may take classes as a non-degree-seeking, post-baccalaureate student on a space-available basis. Deadlines for application for this status are earlier than those posted by the university. Students must designate on their application that they are applying to the School of Nursing in order to facilitate processing of files. Students will be notified in writing from the School of Nursing regarding acceptance as a non-degree-seeking student. Students who are accepted will be issued override forms for available courses. Successful completion of post-baccalaureate courses does not guarantee admission to the graduate program.

Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work

or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

Transfer of Courses

- Courses may be transferred into the plan of study according to UCF policies. Courses must be comparable to those taught in the School of Nursing.
- A grade of at least a "B" is required to transfer credit.
- Students must obtain a petition from the School of Nursing and submit the completed petition to the Admission, Progression, and Graduation Committee in order to transfer courses.

Progression

- Students must maintain a 3.0 GPA in the plan of study in order to progress.
- Students who receive more than two C's in their plan of study will be dismissed from the program.

Degree Requirements

Graduate students must complete a minimum of 41-46 semester hours of graduate-level course work, depending on major. Either a thesis or research scholarly work is required.

Required Courses for All Students—14-17 Semester Hours
NGR 5744 Roles and Issues in Advanced Practice Nursing I (1 hour)
NGR 5746 Roles and Issues in Advanced Practice Nursing II (1 hour)
NGR 5745 Roles and Issues in Advanced Practice Nursing III (1 hour)
NGR 5800 Nursing Theory / Research I (4 hours)
NGR 5801 Nursing Research II / Statistics (4 hours)
NGR 6971 / 6813 Thesis or Research Scholarly Work (3-6 hours)

Requirements for Nurse Practitioner Track—46 Semester Hours
NGR 5003 Advanced Health Assessment, Health Promotion and Diagnostic Reasoning (5 hours)
NGR 5141 Pathophysiology (3 hours)
NGR 6192 Pharmacology (3 hours)
NGR 6240 Advanced Practice Nursing: Primary Care for Adults and Communities (6 hours)
NGR 6334 Advanced Practice Nursing: Children, Adolescents, and Families (FNP) OR NGR 6242 Advanced Practice Nursing: Care of Adults with Complex Problems (Adult NP) (6 hours)
NGR 6941 Advanced Practice Practicum (6 hours)
Elective (0-3 hours)
Required Courses (listed above) (14-17 hours)

Requirements for Nursing Leadership and Management Track—41 Semester Hours
NGR XXXX Health Care Informatics (3 hours)
NGR 5720 Organizational Dynamics (3 hours)
NGR 6722 Financial Management and Resource Development (3 hours)
NGR 6723 Nursing Leadership and Management I (4 hours)
NGR 6724 Nursing Leadership and Management II (5 hours)
Electives (6-9 hours)
Required courses (listed above) (14-17 hours)

Requirements for Clinical Nurse Specialist Track—46 Semester Hours
NGR XXXX Health Care Informatics (3 hours)
NGR 5003 Advanced Health Assessment, Promotion, and Diagnostic Reasoning (5 hours)
NGR 5141 Pathophysiological Bases for Advanced Nursing Practice (3 hours)
NGR 5720 Organizational Dynamics (3 hours)
NGR 6192 Pharmacology for Advanced Nursing (3 hours)
NGR 7622 Financial Management and Resource Development (3 hours)
NGR XXXX Clinical Nurse Specialist I (3 hours)
NGR XXXX Clinical Nurse Specialist I Practicum (2 hours)
NGR XXXX Clinical Nurse Specialist II (2 hours)
NGR XXXX Clinical Nurse Specialist II Practicum (2 hours)
Elective (0-3 hours)
Required courses (listed above) (14-17 hours)

RN to MSN Track

The RN-MSN track is an accelerated program for RNs who do not hold a baccalaureate degree in Nursing (BSN). This program is designed for students who have met general education requirements, and who have demonstrated above-average performance in prior undergraduate course work (minimum of 3.0 GPA), and have the potential for success in graduate school. Students will meet both BSN and MSN objectives.

Available for all tracks in the graduate program: Nursing Leadership and Management, Family Nurse Practitioneer, Adult Nurse Practitioner, and Clinical Nurse Specialist. Up to 15 credit hours can be applied toward meeting requirements of both BSN and MSN programs.

Admission Requirements—Limited Access

Acceptance to the university does not constitute admission to the accelerated RN-MSN program. Separate application to this limited-access program must be made. Application forms and information are available from the School of Nursing or at http://www.cohpa.ucf.edu/nursing. All applicants must meet the following criteria:

- Graduate of a state-approved or accredited associate degree or diploma nursing program
- Licensure as an RN in the state of Florida
- Completion of UCF general education requirements or AA degree from a state of Florida school, including CLAST
- Completion of prerequisites for the RN-BSN (undergraduate statistics)
- Minimum cumulative GPA of 3.0
- Letter of intent to pursue accelerated master's
- Three references from people who can judge abilities for graduate school
- Resume
- Interview with School of Nursing to assess interest, motivation, and ability to succeed in graduate school

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 during the semester the BSN is awarded)
- Completion of requirements / credits for the baccalaureate degree in nursing, including health assessment course
- Completion of all UCF School of Nursing course work to date with a minimum GPA of 3.0
- Must meet university requirements for undergraduate degree completion (refer to the UCF undergraduate catalog)
- One year of clinical experience as an RN prior to the first graduate clinical course
- A minimum combined GRE score of 1000 on the verbal / quantitative exams
- Updated resume
- Three references

RN to MSN Program of Study

Courses taken toward BSN
NUR 3065 Health Assessment (3 hours)
NUR 3809 Transitional Concepts in Nursing I (3 hours)
NUR 4636C Community as the Continuum of Care (3 hours)
NUR 4636L Clinical Practice in the Community (2 hours)
NUR 4827 Leadership and Management Principles (3 hours)
NUR 4837 Health Care Issues, Policy and Economics (3 hours)
NUR 4836 Professional Development Seminar (3 hours) (NUR 4084)
Validated credit for previous nursing courses—28 hours

Courses Shared BSN/MSN
- An individualized plan of study is developed for each student admitted to the RN to MSN option.
- Students may take NGR 5800 Nursing Theory / Research I instead of NUR 3165 Nursing Research, if they have taken NUR 4836. The credits for this course are applied to both the BSN and MSN programs.
- Students pursuing the MSN in the Nursing Leadership and Management Track may take the following courses:

  NUR 4838L Directed Practice in Nursing Administration (for NUR 4954L Directed Nursing Practice)
  NGR 5720 Organizational Dynamics (for NUR 4827 Leadership and Management Principles)
  NGR XXXX Health Care Informatics (for nursing elective)
  NGR / HSA XXXX—Graduate elective in area of concentration (e.g., nursing, health services administration for nursing elective)

- Students pursuing the MSN in the Family / Adult Nurse Practitioner or Clinical Nurse Specialist tracks may take the following courses:

  NGR 5003C / L Advanced Health Assessment, Health Promotion and Diagnostic Reasoning (for NUR 4954L Directed Nursing Practice and undergraduate nursing elective)
  NGR 5141 Pathophysiology (for undergraduate nursing elective)
  NGR / HSA XXXX—Graduate elective in area of concentration (e.g., nursing, health services administration)

Courses taken toward MSN
Students will follow the degree requirements of the selected MSN track. The baccalaureate degree will be awarded 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.

Nurse Practitioner to MSN Track

The Nurse Practitioner to MSN track is designed for RNs who are licensed in the State of Florida with active status as an Advanced Registered Nurse Practitioner but have not completed a master's degree in nursing. This track is offered to experienced NPs who wish to remain in their specialty area. If NPs desire to change or add a specialty (e.g., from adult to family), an individualized plan of study can be developed to meet certification requirements.

There are two options in the NP to MSN track. Option 1 is for RNs who already have completed a baccalaureate degree in nursing. Option 2 is for those RNs who do not have a baccalaureate degree in nursing.

Option 1—Active RN/ARNP license in Florida with baccalaureate degree in nursing

Admission and Graduate Requirements
- Documentation of completion of a certificate program for nurse practitioners.
- Other requirements are the same as the Master of Science in Nursing program.

Degree Requirements
NP to MSN students with a BSN must complete a minimum of 31 semester hours of graduate-level course work. Either a thesis or research scholarly work is required.

Required Courses
NGR 5744 Roles and Issues in Advanced Practice Nursing I (1 hour)
NGR 5746 Roles and Issues in Advanced Practice Nursing II (1 hour)
NGR 5745 Roles and Issues in Advanced Practice Nursing III (1 hour)
NGR 5800 Nursing Theory / Research I (4 hours)
NGR 5801 Nursing Research II / Statistics (4 hours)
NGR 6813 Research Scholarly Work (3 hours) or NGR 6971 Thesis (3-6 hours)
NGR 5141 Pathophysiology (3 hours)
NGR 6192 Pharmacology (3 hours) *May be waived for elective credits if recent (within last 3 years) pharmacology course taken.*
NGR 5003C Advanced Health Assessment, Health Promotion, and Diagnostic Reasoning (5 hours)

NGR 6941 Advanced Practice Practicum (3 hours)
Graduate Elective (0-3 hours)

Option 2—Active RN/ARNP license in Florida without baccalaureate degree in nursing

Admission and Graduation Requirements

- Documentation of completion of acertificate program for nurse practitioners.
- Other requirements are the same as the RN to MSN track.

Degree Requirements

NP to MSN students without a BSN must complete requirements for both the BSN and MSN. Twelve to fifteen credits will be applied toward meeting requirements of both degrees. Either a thesis or research scholarly work is required.

Courses taken toward BSN

NUR 3809 Transitional Concepts in Nursing I (3 hours)
NUR 4636 Community as the Coninuum of Care (3 hours)
NUR 4636L Clinical Practice in the Community (2 hours)
NUR 4837 Healthcare Issues, Policy, and Economics (3 hours)
NUR 4836 Professional Development Seminar (3 hours)
NUR 4827 Leadership and Management Principles (3 hours)
Validated credit from previous RN and NP courses (28 hours)

Courses shared BSN/MSN

NGR 5800 Nursing Theory / Research I (4 hours)
NGR 5003C Advanced Health Assessment, Health Promotion, and Diagnostic Reasoning (5 hours)
NGR 5141 Pathophysiology (3 hours)
NGR Elective (3 hours)

Courses taken toward MSN

NGR 5744 Roles and Issues in Advanced Practice Nursing I (1 hour)
NGR 5746 Roles and Issues in Advanced Practice Nursing II (1 hour)
NGR 5745 Roles and Issues in Advanced Practice Nursing III (1 hour)
NGR 5801 Nursing Research II / Statistics (4 hours)
NGR 6813 Research Scholarly Work (3 hours) or NGR 6971 Thesis (6 hours)
NGR 6192 Pharmacology (3 hours) May be waived for elective credits if recent (within last 3 years) pharmacology course taken.
NGR 6941 Advanced Practice Practicum (3 hours)
Graduate Elective (0-3 hours)

Post-Master's Certificate in Family or Adult Nurse Practitioner

The Post-Master's Certificate option is designed to prepare nurses, who already have a master's degree in nursing, as either Family or Adult Nurse Practitioners. The program is 18 credits and includes 600 hours of clinical practice.

Prerequisites or Co-requisites

The following three graduate-level courses are prerequisites or co-requisites for the program. Courses can be incorporated into the plan of study.

NGR 5003 Advanced Health Assessment, Health Promotion, and Diagnostic Reasoning (5 hours)
NGR 5141 Pathophysiology (3 hours)
NGR 6192 Pharmacology (3 hours)

Admission Requirements

Requirements for admission to the program include the following:

- A master's degree in nursing from a program accredited by NLNAC (National League for Nursing Accreditation Commission) or CCNE (Commission on Collegiate Nursing Education)
- Licensure as a Registered Nurse in Florida
- One year (or equivalent) experience as a Registered Nurse
- Completion of undergraduate health assessment course

Admission to the program is competitive on a space available basis.

Application Process

The following information must be submitted in one packet to Graduate Studies in order to be considered:

- Nondegree application from Graduate Studies
- Official transcript of BSN degree
- Official transcripts of graduate course work showing awarding of master's degree (enclose an official sealed copy with your application)
- Three references from people who can judge abilities for graduate school
- Personal statement describing interest in certificate
- Health Form (Upon acceptance to the program, you will be required to fill out another form for our records.)
- A resume (no longer than 2 pages)
- Copy of RN License

Program of Study—18 Semester Hours

NGR 6240 Advanced Practice Nursing: Primary Care for Adults and Communities (6 hours)
NGR 6337 Advanced Practice Nursing: Children, Adolescents and Families (FNP) (6 hours) OR
NGR 6242 Advanced Practice Nursing: Care of Adults with Complex Problems (Adult NP) (6 hours)
NGR 6941 Advanced Practice Practicum (6 hours)

Additional Information

Information about tuition, fees, and length of nursing program can be obtained from the National League for Nursing Accreditation Commission, 61 Broadway Street, New York, NY 10006; phone: (800) 669-9656, ext. 153.

Graduate Certificate in Nursing and Health Professional Education

The graduate certificate in Nursing and Health Professional Education is designed to prepare nurses and other health care professionals to teach in professional health care education programs, health care institutions, and/or the community. The program requires a minimum of 12 semester hours.

Admission Requirements

Requirements for admission to the program include a baccalaureate degree in nursing or health-related field.

Application Process

The following information must be submitted in one packet to Graduate Studies in order to be considered:

- Nondegree application from Graduate Studies
- Official transcripts showing awardding of baccalaureate degree (enclose anofficial sealed copy with your application)
- Health Form
- A resume (no longer than two pages)

Required Courses—12-15 Semester Hours

NGR 5XXX Teaching Strategies for Health Professionals (3 hours)
NGR 5XXX Instructional Technology Resources for Health Professional Education (3 hours)
EDF 5XXX Learning Theories Applied to Education (3 hours)

Additional requirement based on learning goals
Students must take at least one of the following courses but may take both courses.

NGR 5XXX Clinical Teaching Strategies for Health Professional Education (3 hours)
NGR 5XXX Health Care Informatics (3 hours)

Public Administration

Graduate Program Coordinator: Xiao Hu Wang, Ph.D., HPA 343, (407) 823-2604. E-mail: xwang@mail.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 analytical techniques needed for successful careers in government, nonprofit, and closely related business fields.

Application Deadlines

Fall admission	July 1
Spring admission	December 1
Summer admission	April 1

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 advisers, 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 score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL). 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 42 hours. Each student completes a core of nine courses (27 hours), an advanced curriculum of four courses (12 hours) selected in consultation with the adviser, and a capstone experience equivalent to one course (3 hours).

Minimum Core Requirements—27 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 6207 Public Financial Management (3 hours)
PAD 6227 Public Budgeting (3 hours)
PAD 6417 Human Resource Management (3 hours)
PAD 6335 Strategic Planning and Management (3 hours)

Advanced Curriculum—12 Semester Hours
An advanced curriculum of at least four 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 adviser. (Those students without practical administrative experience in the public sector are strongly advised to complete an internship (3 hours) as part of the advanced curriculum. A research report option (3 hours) is available for students wishing to complete a more substantial research project than might be accommodated in the other courses).

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.

Exit Requirements
Students must achieve a grade of "B" or better in every course listed under minimum core requirements.

Minimum Hours Required for M.P.A.—42 Semester Hours

Graduate Certificate in Public Administration

In recognition of the special needs of the Central Florida community, the University of Central Florida has introduced a Graduate Certificate in Public Administration.

The certificate program provides graduate-level continuing education for both in-service and pre-career students. The program will (1) emphasize managerial skills essential to a local government program oriented toward an evolving metropolitan environment and (2) strengthen the student's professional standing and help open doors to management and support positions.

The certificate program is affiliated with the Master of Public Administration (MPA) program and will be administered by the Department of Public Administration. The program follows the UCF policies and procedures for graduate certificate programs.

Who may be interested?

The certificate program may be of particular interest to students who:

- Do not have post-baccalaureate degrees and are not ready for the regular graduate program in public administration
- Are public employees and have post-baccalaureate degrees in other disciplines and are interested in learning advanced knowledge and skills in public administration; and
- Are enrolled in other programs at UCF and are interested in expanding the scope of their graduate education and enhancing their professional credentials.

Admission Requirements

Any student with an undergraduate baccalaureate degree or higher from an accredited university may apply. The GRE or any other graduate-level test is not required for enrollment in the certificate program.

How is the program structured?

The program consists of 18 semester hours at the graduate level, including 5 required core courses and 1 restricted elective course. Course descriptions are available in the graduate student handbook.

Required Courses—15 Semester Hours
Students are required to take the following 5 courses.
PAD 6035 Public Administration in the Public Process
PAD 6037 Public Organization Management
PAD 6053 Public Administrators in the Governance Process
PAD 6227 Public Budgeting
PAD 6417 Human Resource Management

Restricted Elective Course—3 Semester Hours
This course must be taken from the Public Administration Department with the approval from the graduate certificate program coordinator.

PAD 5425 Dispute Resolution in the Public Sector
PAD 5427 Labor Relations in the Public Sector
PAD 5806 Local Government Operations
PAD 5807 Administrative Practice in the Public Sector
PAD 5850 Grant and Contract Management
PAD 6307 Policy Implementation
PAD 6327 Public Program Evaluation Techniques
PAD 6335 Strategic Planning and Management

Certificate Requirements

- Students must receive a grade of B or better in all six (6) courses required for the certificate.
- No graduate credit hours taken at other institutions can be applied to a certificate program at UCF.
- No internship or independent study courses may be used in a certificate program.
- Student admitted to a graduate degree program or to non-degree-seeking status are eligible to take certificate programs. Non-degree-seeking students who are enrolled in a certificate program are not eligible for tuition waivers, assistantships, fellowships, or federal financial aid.
- All courses that are offered as part of a certificate program must be graduate-level courses. All courses that count toward a certificate must receive a grade of B or better. Courses may be retaken to achieve a better grade, with the consent of the program.

- A certificate program must be completed within three years of the start of the first course in the certificate program.

Graduate Certificate in Nonprofit Management

Graduate Program Coordinator: Mary Ann Felheim, Ph.D., (407) 823-2604. E-mail: mfeldhei@mail.ucf.edu

This certificate program offers specialized, graduate-level knowledge in nonprofit management, resource development, strategic planning, and program evaluation to those currently working in the nonprofit sector or in organizations that partner with the nonprofit sector.

Required Courses—18 Semester Hours
PAD 5XXX Nonprofit Organizations (3 hours)
PAD 5XXX Nonprofit Financial Management (3 hours)
PAD 6335 Strategic Planning and Management (3 hours)
SOW 5XXX Nonprofit Resource Development (3 hours)

Choose one course:
PAD 6327 Public Program Evaluation Techniques (3 hours)
SOW 5432 Evaluating Social Work (3 hours)

Graduate Certificate in Planning

Graduate Program Coordinator: K. Tom Liou, Ph.D., (407) 823-2604. E-mail: kliou@mail.ucf.edu

This certificate program provides graduate courses to students who are interested in enhancing their knowledge, skills, and career development in the field of community, urban, and regional planning. Planning has been identified as one of the major policy issues in our community as Central Florida is considered one of the major growth areas in the state of Florida.

Required Courses—12 Semester Hours
PAD 5336 Introduction to Planning (3 hours)
PAD 5337 Urban Design (3 hours)
PAD 5338 Land Use and Planning Law (3 hours)
PAD 6XXX Special Topics in Planning (3 hours)

Restricted Electives—3 Semester Hours (choose 1 course)
CGN 6655 Regional Planning, Design, and Development (3 hours)
ECP 6605 Economics of Urban and Regional Problems (3 hours)
PAD 5356 Managing Community and Economic Development (3 hours)
PAD 5XXX Transportation Policy and Planning (3 hours)
PAD 6353 Environmental Program Management Research (3 hours)
PAD 6655 Regional Planning, Design, and System (3 hours)

School of Social Work

Graduate Program Coordinator: Kenneth Kazmerski, D.S.W., HPA 204, (407) 823-2114. E-mail: kenkaz@aol.com

Master of Social Work

The master's degree program in Social Work (M.S.W.) prepares students for advanced social work practice. The program educates students for community-based clinical social work practice with individuals, families, and groups. The curriculum draws from a generalist perspective and emphasizes critical thinking skills, empirically based and accountable practice, and ethical services for clients experiencing a wide range of problems. Students learn therapeutic and preventive interventions aimed at enhancing human functioning and quality of life. Graduates of the program have the ability to work with diverse clients in a variety of agency settings.

The M.S.W. program is accredited by the Council on Social Work Education.

Application Deadline

Fall admission only	March 1

Admission

Students begin course work in social work in the fall semester only. Potential students make application to the UCF Office of Graduate Studies (AD 144) 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 undergraduate studies or at least 1000 on the verbal and quantitative sections of the required GRE. Applicants must take all three 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 of the applicant's choice other than a family member.) 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 with human content, English or communication, diversity, statistics, psychology, and sociology.
- A medical history report on the UCF health form.
- A typed Personal Statement. Directions for completing this statement can be obtained from the School of Social Work. In the statement the applicant describes reasons and experiences leading to the choice of 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 Office of Graduate Studies and score of 220 (computer-based test; or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL)

To be accepted into and retained in the program, students 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.

It is important that applicants return all the materials in the application packet in one mailing to Graduate Studies to facilitate admission decisions.

Admission to graduate programs is based on minimum State of Florida Board of Regents criteria but may include higher GPA or GRE standards or other factors such as work or internship experience, community service, research interests of prospective student, letters of recommendation, or personal interviews.

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 submit an application for Advanced Standing admission to the Master of Social Work program. Admission with advanced standing is limited to those who demonstrate the academic and professional potential to meet the demands of the program and who will have adequate preparation for M.S.W. practice with only one year of graduate study.

Previous course work is reviewed to assure content equivalency. In advanced standing admission, a maximum of 30 undergraduate credits may be accepted as transfer credits to the M.S.W. program. These credits can be accepted to meet 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

For students who do not have B.S.W. degree, part-time education in the foundation curriculum is available only at the Downtown Orlando campus and possibly at other area campuses. For students who have received a B.S.W. degree from a CSWE-accredited college or university within six years prior to enrollment, there is also a part-time program at the main campus in the advanced clinical curriculum.

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 field assignment are determined by 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. Part of the required field hours consists of a field seminar.

Degree Requirements

Prerequisites—18 Semester Hours
Introductory college-level courses or equivalents are required before admission into the program.

Biology with human content	English or Communication
Psychology	Statistics
Sociology	Diversity

Foundation Curriculum: 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 5132 Diverse Client Populations (3 hours)
SOW 5235 Social Welfare Policies and Services (3 hours)
SOW 5404 Social Work Research (3 hours)
SOW 5432 Evaluating Social Work (3 hours)
SOW 5532 Field Education I: Generalist Practice (224 clock hours) (3 hours)
SOW 5533 Generalist Field Education II (224 clock hours) (3 hours)

Advanced Curriculum: 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 (3 hours)
SOW 6246 Policy Analysis and Social Change (2 hours)
SOW 6914 Integrative Research Project in Clinical Practice (2 hours)
SOW 6535 Clinical Field Education I (304 clock hours) (4 hours)
SOW 6536 Clinical Field Education II (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 adviser and M.S.W. graduate program coordinator.

Graduate Certificate Programs

Graduate certificate programs are available in gerontology and nonprofit management. Other certificate programs (addictions, children's services) are under development.

Graduate Certificate in Gerontology

See College of Health & Public Affairs, Interdisciplinary Studies.

Graduate Certificate in Nonprofit Management

See College of Health & Public Affairs, Public Administration.

School of Optics

The School of Optics offers interdisciplinary graduate programs in optical science and engineering leading to Master's and Doctoral degrees in Optics. It is one of only three graduate optics academic departments in the nation. The Center for Research and Education in Optics and Lasers (CREOL) is integrated in the school as its research arm. The School has grown to an internationally recognized institute with twenty four full time faculty members and more than one hundred graduate students with research activities covering all aspects of optics, photonics, and lasers. It is housed in a state-of-the-art 82,000-sq. ft. building dedicated to optics research and education.

The School of Optics faculty are the primary resource for the optical physics option in the M.S. and Ph.D. program in Physics and the electro-optics option in the M.S. and Ph.D. programs in Electrical Engineering. These two option programs are offered in partnership with academic departments. The faculty participate in undergraduate and graduate teaching in the Physics, Electrical Engineering and Computer Science, Mechanical, Materials, and Aerospace Engineering (MMAE), and Chemistry Departments.

School Administration

Eric W, Van Stryland, Professor and Interim Director. CREOL 206, (407) 823-6834. E-mail: director@creol.ucf.edu
M. G. "Jim" Moharam, Professor and Associate Director for Academic Programs, CREOL 208, (407) 823-6833. E-mail: moharam@creol.ucf.edu
Web address: http://www.creol.ucf.edu

Faculty

Michael Bass, Professor of Optics, Physics & EECS
Bruce Chai, Professor of Optics, Physics & EECS & MMAE
Glenn Boreman, Professor of Optics & EECS
Peter Delfyett, Professor of Optics, EECS & Physics
Luis Elias, Professor of Optics & Physics
M. G. "Jim" Moharam, Professor of Optics & EECS
Martin Richardson, Professor of Optics, Physics & EECS
George Stegeman, Cobb Family Chair and Professor of Optics, Physics & EECS
William Silfvast, Professor of Optics, Physics & EECS
M. J. Soileau, Professor of Optics, EECS & Physics & VP for Research
C. Martin Stickley, Professor of Optics & EECS
Eric Van Stryland, Professor Optics, Physics & EECS
Boris Zel'dovich, Professor of Optics & Physics
David Hagan, Associate Professor of Optics, Physics & EECS
James Harvey, Associate Professor of Optics & EECS
Guifang Li, Associate Professor of Optics, Physics & EECS
Patrick LiKamWa, Associate Professor of Optics & EECS
Aravinda Kar, Associate Professor of Optics & MMAE
Kathleen Richardson, Associate Professor of Optics, Chemistry & MMAE
Nabeel Riza, Associate Professor of Optics & EECS
Aristide Dogariu, Assistant Professor of Optics
Eric G. Johnson, Assistant Professor of Optics
Jannick Rolland, Assistant Professor of Optics, EECS & Computer Science

Research Faculty
Leonid Glebov, Associate Research Scientist
Hans Jenssen, Senior Research Scientist

Joint Appointees
Larry Andrews, Professor of Mathematics, EECS & Optic
Kevin Belfield, Associate Professor of Chemistry & Optics
Robert Peale, Associate Professor of Physics, EECS, & Optics
Ronald Phillips, Professor of EECS, Mathematics & Optics
Mubarak Shah, Professor of Computer Science & Optics
Alfonse Shulte, Associate Professor of Physics & Optics

Programs

The School of Optics offers master's (M.S.) and doctoral (Ph.D.) degree programs in optics for qualified applicants holding undergraduate degrees in optics, engineering, physics, or closely related fields. It also offers graduate certificate programs in applied optics, lasers, and optical communications.

The program has a large offering of optics courses ranging from optical science to optical engineering with more than twenty-five graduate courses. Thesis and dissertation research span the spectrum from basic science to prototype development. Current research areas include: linear and nonlinear guided-wave optics and devices, high speed photonic telecommunications, solid state laser development, nonlinear optics, laser-induced damage, quantum-well optoelectronics, photonic information processing, infrared systems, optical diagnostics, optical system design, image analysis, virtual reality, medical imaging, diffractive optics, optical crystal growth and characterization, high intensity lasers, x-ray optics, EUV sources, optical glasses, laser materials processing, free-electron lasers, and light matter interaction. These research programs are supported by research grants and contracts from numerous federal and state agencies and industry.

Application Deadlines

Fall admission	February 1*
Fall admission	July 15
Spring admission	December 1
Summer admission	April 15

* Applications for fellowships or assistantships received after February 1 may not be considered.

Fellowships and Research Assistantships

School of Optics / CREOL Fellowships, Litton Fellowships, Schwartz Electro-Optics Fellowship, and graduate research assistantships, as well as other university awards, are available to qualified students. The stipend ranges from $15,000 to $20,000 per calendar year. Full tuition (both resident and nonresident portions), estimated at $12,000 per year, is provided for students receiving graduate fellowships and research assistantships. Applications received after February 15 may not be considered. For more information about financial support available for graduate students, contact the School of Optics (moharam@mail.ucf.edu or http://www.creol.ucf.edu/) and the Office of Graduate Studies (gradfaid@mail.ucf.edu or http://www.graduate.ucf.edu/).

Master of Science in Optics

Program Coordinator: M. G. "Jim" Moharam, CREOL 208, (407) 823-6833. E-mail: moharam@creol.ucf.edu

The M.S. program is intended for students with a baccalaureate degree in optics, electrical engineering, physics, or closely related fields.

Admission Requirements

The minimum admission requirement for the M.S. program is a minimum grade point average of 3.0 (A=4.0) in the last 60 attempted semester hours of the B.S. degree. A minimum quantitative and verbal combined GRE score of 1000 is required. It is highly recommended that the applicants also take and complete the analytical section of the GRE exam. A score of 220 (computer-based test or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) is required if the previous degree is from a country where English is not the official language. Students with degrees in related fields may be required to take undergraduate articulation courses determined by the program coordinator on a case-by-case basis.

Degree Requirements

The Master of Science in Optics requires a minimum of 36 credit hours. There are no specifically required courses for the M.S. degree, and students are allowed considerable freedom in planning their study programs. However, it is strongly recommended that students include at least five courses from the Ph.D. core courses (designated below) into the program of study. A minimum of two optics graduate laboratory courses (optics courses with an "L" suffix) must be part of the program. One required optics laboratory may be waived if the student can demonstrate an equivalent hands-on laboratory experience. Up to nine credit hours of appropriate graduate courses from accredited universities may be transferred with approval from the school. Only courses with grades of "B" or better can be transferred. A maximum of three semester credit hours of 4000-level courses may be applied to the M.S. or the Ph.D. program. There are two options in the M.S. program, a thesis and a non-thesis option.

Optics Courses

The following optics courses are approved to meet the optics course requirements of the program.

Recommended Core Courses

EEL 5453 Geometrical Optics (3 hours)
EEL 6443 Electro-Optics (3 hours)
EEL 6560 Laser Engineering (3 hours)
EEL 6561 Fourier Optics (3 hours)
EEL 6565 Radiation and Detection (3 hours)
OSE 5XXX Optical Wave Propagation (3 hours)
OSE 5XXX Interference and Diffraction (3 hours)
PHY 5431 Optical Properties of Materials (3 hours)

Electives

CHE 5XXX Optical Material Processing and Characterization Techniques (3 hours)
EEL 5441 Introduction to Wave Optics (3 hours)
EEL 5448 Fundamentals of Optoelectronic Devices (3 hours)
EEL 5450C Thin Film Optics (3 hours)
EEL 5451L Electro-Optics Laboratory (3 hours)
EEL 5563 Fiber Optics Communication (3 hours)
EEL 6446 Optical Systems Design (3 hours)
EEL 6457 Advanced Topics in Electro-Optics (3 hours)
EEL 6560L Laser Engineering Laboratory (3 hours)
EEL 6564 Statistical Optics with Applications (3 hours)
EMA 5610 Laser Materials Processing (3 hours)
OSE 5XXXL Applied Optics Laboratory (3 hours)
OSE 6XXX High Speed Photonics (3 hours)
OSE 6XXX Solid State Lasers (3 hours)
OSE 6XXX Advanced Microlithography (3 hours)
OSE 6XXXL Photonics Laboratory (3 hours)
OSE 6XXX Photonics Signal Processing (3 hours)
OSE 6XXX Optical Propagation in Inhomogeneous Media (3 hours)
PHY 5446 Laser Principles (3 hours)
PHY 5455 Modern X-Ray Science (3 hours)
PHY 6434 Nonlinear Optics (3 hours)
PHY 6435 Nonlinear Guided Wave Optics (3 hours)
PHY 6447 Quantum Optics (3 hours)
PHY 6448 Specific Laser Systems (3 hours)
PHZ 5505 Plasma Physics (3 hours)
PHZ 6204 Atomic and Molecular Spectroscopy (3 hours)

Thesis Option

The thesis option program requires a minimum of six credit hours of thesis, a minimum of fifteen credit hours in approved optics courses, a minimum of six credit hours of optics laboratory courses (optics courses with an "L" suffix), and up to nine credit hours in appropriate optics, engineering and sci-


CREOL

ences relevant courses. Independent study and Directed Research credit hours are not allowed towards the degree requirements. The student must prepare an approved program of study and form a thesis committee upon completion of nine credit hours. The M.S. thesis committee consists of three members with at least two faculty members from the School of Optics. Students are required to write a thesis and pass an oral exam based primarily on the topics of the thesis and course work.

Non-thesis Option

The non-thesis option program requires a minimum of 21 course credit hours in approved optics courses, a minimum of six credit hours of optics laboratory courses (optics courses with an "L" suffix), and up to nine credit hours in appropriate engineering and sciences relevant courses. Up to three credit hours of Directed Research or Independent study may be included with prior approval of the school. Students must prepare an approved program of study upon completion of nine credit hours. Students are required to pass a final oral comprehensive examination based primarily on the subject matter of the courses taken. The purpose of the exam is for the student to demonstrate his/her basic knowledge of the fundamentals of optics and photonics.

Program	Thesis	Non-Thesis
Optics courses (minimum)	15	21
Optics laboratory (minimum)	6	6
Engineering/Sciences electives (maximum)	9	9
Research/Independent study (maximum)	0	3
Comprehensive exam	No	Yes
Thesis (minimum)	6	0
Total hours required (minimum)	36	36

Doctor of Philosophy in Optics

Program Coordinator: M. G. "Jim" Moharam, CREOL 208, (407) 823-6833. E-mail: moharam@creol.ucf.edu

The Ph.D. program is intended for students with a master's degree in optics, electrical engineering, physics, or closely related fields who wish to pursue a career in research or academia.

Admission Requirements

The minimum admission requirement for the Ph.D. program is a minimum grade point average of 3. (A=4.0) in the M.S. program. A minimum combined quantitative and verbal GRE score of 1100 is required. It is highly recommended that the applicants also take and complete the analytical section of the GRE exam. A minimum score of 220 (computer-based test or equivalent score on the paper-based test) on the Test of English as a Foreign Language (TOEFL) is required if the previous degree is from a country where English is not the official language. Students with degrees in related fields may be required to take undergraduate articulation courses determined by the program coordinator on a case-by-case basis.

Degree Requirements

The minimum requirement for the Ph.D. degree is 57 credit hours of approved graduate course work in optics and optics-related fields and 15 credit hours of dissertation. The 57 credit hours of course work must include a minimum of 30 credit hours in approved optics courses, a minimum of six credit hours in optics laboratory courses (optics courses with an "L" suffix), and up to 21 credit hours in appropriate engineering and sciences electives. At least six credit hours must be outside the major. One required optics laboratory may be waived if the student can demonstrate an equivalent hands-on laboratory experience. A maximum of 12 credit hours of combined Independent Study and Directed Research credit hours are allowed in the program of study but they may not be applied toward the optics course requirements. Up to 36 semester credit hours of appropriate graduate courses in the M.S. program from accredited universities may be transferred with approval from the school. Only courses with grades of "B" or better can be transferred.

Students are required to pass a Candidacy Examination, form a dissertation committee, and submit an approved program of study typically by the end of the second academic year in the program before being admitted to full doctoral status.

The Ph.D. core courses are not required, but they have been designed to include a significant portion of the material upon which the Candidacy Examination is based. Consequently, students are strongly encouraged to include most of these courses in their programs of study.

Program	Credit Hours
Optics courses (minimum)	30
Optics laboratory (minimum)	6
Engineering/Sciences electives (maximum)	21
Research/Independent study (maximum)	12
Dissertation (minimum)	15
Total hours required (minimum)	75

Optics Courses

The following optics courses are approved to meet the optics course requirements of the program.

Recommended Core Courses

EEL 5453 Geometrical Optics (3 hours)
EEL 6443 Electro-Optics (3 hours)
EEL 6560 Laser Engineering (3 hours)
EEL 6561 Fourier Optics (3 hours)
EEL 6565 Radiation and Detection (3 hours)
OSE 5XXX Optical Wave Propagation (3 hours)
OSE 5XXX Interference and Diffraction (3 hours)
PHY 5431 Optical Properties of Materials (3 hours)

Electives

CHE 5XXX Optical Material Processing and Characterization Techniques (3 hours)
EEL 5441 Introduction to Wave Optics (3 hours)
EEL 5448 Fundamentals of Optoelectronic Devices (3 hours)
EEL 5450C Thin Film Optics (3 hours)
EEL 5451L Electro-Optics Laboratory (3 hours)
EEL 5563 Fiber Optics Communication (3 hours)
EEL 6446 Optical Systems Design (3 hours)

EEL 6457 Advanced Topics in Electro-Optics (3 hours)
EEL 6560L Laser Engineering Laboratory (3 hours)
EEL 6564 Statistical Optics with Applications (3 hours)
EMA 5610 Laser Materials Processing (3 hours)
OSE 5XXXL Applied Optics Laboratory (3 hours)
OSE 6XXX High Speed Photonics (3 hours)
OSE 6XXX Solid State Lasers (3 hours)
OSE 6XXX Advanced Microlithography (3 hours)
OSE 6XXXL Photonics Laboratory (3 hours)
OSE 6XXX Photonics Signal Processing (3 hours)
OSE 6XXX Optical Propagation in Inhomogeneous Media (3 hours)
PHY 5446 Laser Principles (3 hours)
PHY 5455 Modern X-Ray Science (3 hours)
PHY 6434 Nonlinear Optics (3 hours)
PHY 6435 Nonlinear Guided Wave Optics (3 hours)
PHY 6447 Quantum Optics (3 hours)
PHY 6448 Specific Laser Systems (3 hours)
PHZ 5505 Plasma Physics (3 hours)
PHZ 6204 Atomic and Molecular Spectroscopy (3 hours)

Candidacy Exam

Students are required to successfully complete the Candidacy Examination before admission to full doctoral status. The purpose of the candidacy examination is for the student to demonstrate mastery of the fundamental of optics, photonics, and lasers and their readiness for the Ph.D. program. The candidacy examination is held once a year at the beginning of the summer semester and is taken when the student accumulates approximately 48 credit hours of approved course work. Students not passing the candidacy examination in two attempts will not continue in the program. Students must pass the Candidacy Examination before registering for dissertation hours (OSE 7980).

The examination is administered by the doctoral examination committee, which consists of several faculty members representing the appropriate disciplines, appointed, by the Director or his / her designee. The committee's duties include the preparation and grading of the examination material, and administering the oral examination. The committee may solicit input from other interested faculty. The student may invite a faculty mentor to attend the oral exam as a non-voting participant. The examining committee will formulate its decision based on its judgment of the student's performance in the written and oral examinations, and other relevant information.

The candidacy exam consists of two sections: a closed book written examination and an oral examination. The written exam is a six-hour (over two days) closed book written exam in the general area of interference, diffraction, coherence, geometrical optics, radiation and detection, optical properties of materials, Fourier optics, lasers, electro-optics, interaction of light with matter, electromagnetic foundations of optics and other fundamental aspects of optics and photonics. The oral exam of up to approximately 2 hours is administered to students who pass the written section of the examination. The examination is administered by the doctoral examination committee, which consists of several faculty members representing the appropriate disciplines appointed by the Director or his / her designee.

Dissertation Proposal Examination

Within one year after passing the general candidacy examination and after the student has begun research, the student will write a dissertation proposal and defend it in an oral examination. The proposal must include the research performed to-date and the research planned to complete the dissertation. The dissertation advisory committee will examine the student on the submitted proposal and the general research area. The committee, which consists of three faculty members from the School of Optics and one faculty member from outside the School, must be approved by the Director or designee.

Dissertation Defense

The student must prepare a written dissertation describing the student's research. The dissertation oral defense examination is administered by the student's Ph.D. dissertation advisory committee.

Graduate Certificates in Optics

The program is developed to address the needs of two groups: working professionals and science and engineering graduate students. Th program is designed for working professionals who need to maintain and update their knowledge and technical skills in one or more areas of optics and photonics in a relatively short period of time. Traditional MS programs tend to be broader and take much more time. In addition, the program offers science and engineering graduate students the opportunity to round out their education and better prepare them for an ever-changing technology-based society by enhancing their employment credentials. The graduate optics certificate programs provide focused specialized fundamental and state-of-the-art knowledge of new developments in optics and photonics that will enable the next generation information, manufacturing, medical, and aerospace technologies.

Three graduate certificate programs in Optical Communications, Applied Optics, and Lasers are available. The certificate formally recognizes an individual's successful completion of approved optical science and engineering courses. Three distinct certificates are offered to address the diversity of career paths available within the optics and photonics field. Each certificate program can be completed in one year or less.

Admission

Applicants must have an undergraduate or graduate degree in the sciences and / or engineering from an accredited institution and must have successfully completed undergraduate courses in modern physics, electricity and magnetism, and wave motion. Applicants should complete a Nondegree Application (available at http: / / www.graduate.ucf.edu /) indicating the specific certificate program and provide an official transcript showing an earned bachelor's degree or master's degree.

Program Requirements

Each certificate program requires satisfactory completion of 12 semester credit hours. Nine credit hours (three courses) must be from the courses designated for the specific certificate and three hours (one course) in an elective from approved graduate optics courses.

Certificate in Optical Communications

This certificate is designed to give the student a firm theoretical and practical working knowledge in the area of fiber optics and photonic technologies and applications. The main purpose is to couch these fundamentals in a context that serves as the backbone for device, components and sub-system development for use in high-speed optical data and information links and networks. At the end of the program the student will be expected to: 1) understand the fundamental operation characteristics of high speed optoelectronic components, such as laser transmitters, photodetectors and receivers, and light modulators, 2) understand the technology and performance trade-offs between optical wavelength division multiplexing and optical time division multiplexing, and 3) have a hands-on working knowledge of the use of fiber optic test equipment, such as optical time domain reflectometers, optical spectrum analyzers, and optical bit error testing equipment.

Required Courses—12 Semester Hours
Select three courses from this list and one approved elective
EEL 5446 Optoelectronics (3 hours)
EEL 5563 Fiber Optic Communications (3 hours)
EEL 6443 Electro-Optics (3 hours)
OSE 6XXXL Photonics Laboratory (3 hours)
OSE 6XXX High Speed Photonics (3 hours)
OSE 6XXX Photonic Signal Processing (3 hours)

Certificate in Applied Optics

This certificate program concentrates on the fundamental coursework pertinent to the engineering and design aspects of modern optical devices and systems. These areas include optical layout and design, image quality, flux transfer, detection, coherence and diffraction, interferormetry, and Fourier methods. The applied optics certificate program will allow persons with an engineering or science background to familiarize themselves with optical systems, and they will be trained in designing practical optical systems, using the design tools that are widely used in industry today.

Required Courses—12 Semester Hours
Select three courses from this list and one approved elective
EEL 6446 Optical System Design (3 hours)
EEL 6561 Fourier Optics (3 hours)
EEL 6565 Radiometry and Detection (3 hours)
OSE 5XXXL Applied Optics Laboratory (3 hours)
OSE 5XXX Interference and Diffraction (3 hours)
OSE 6XXXL Photonics Laboratory (3 hours)

Certificate in Lasers

This program is designed to give the student a firm theoretical and practical working knowledge of laser fundamentals and applications. At the end of the program the student will be expected to have the ability to: 1) design laser resonators, 2) understand the fundamental principles involved in optical amplification and laser action, 3) possess the experimental skills to design and build a working solid state laser system, and 4) have the ability to determine the optimum laser required for a specific application; considering issues regarding efficiency, energy extraction, wavelength, spectral purity etc.

Required Courses—12 Semester Hours
Select three courses from this list and one approved elective
EEL 6560 Laser Engineering (3 hours)
EEL 6560L Laser Engineering Laboratory (3 hours)
OSE 6XXX Solid State Lasers (3 hours)
OSE 6XXX High Speed Photonics (3 hours)
PHY 5446 Laser Principles (3 hours)
PHY 6448 Specific Laser Systems (3 hours)

Approved Electives for the Certificate Programs

EEL 5453 Geometrical Optics (3 hours)
MEA 5610 Laser Materials Processing (3 hours)
OSE 5XXX Optical Wave Propagation (3 hours)
PHY 5431 Optical Properties of Materials (3 hours)
PHY 5455 Modern X-Ray Science (3 hours)
PHY 6434 Nonlinear Optics (3 hours)
PHY 6435 Nonlinear Guided Wave Optics (3 hours)
PHY 6447 Quantum Optics (3 hours)

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 postsecondary institutions in Florida and by two participating nonpublic 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 recommends 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."

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 institutions that offer the course, with few exceptions. (Exceptions are listed below.)

For example, a survey course in social problems is offered by 31 different postsecondary institutions. Each participating 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 a different time or place.

Transfer of any successfully completed course from one participating 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 to the 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.

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. See the "Alphabetical List of Course Prefixes" on page 219.

Example of Course Identifier

Prefix	**Level Code** (first digit)	**Century Digit** (second digit)	**Decade Digit** (third digit)	**Unit Digit** (fourth digit)	**Lab Code**
SYG Sociology, General	**1** Freshman level at this institution	**0** Entry-level General Sociology	**1** Survey Course	**0** Social Problems	No laboratory component in this 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 postsecondary institutions that are fully accredited by a regional or national accrediting agency recognized by the United States Department of Education and that participate in the common course deisgnation 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 academically equivalent to courses offered at the receiving institution, including equivalency of faculty credentials, regardless of the public or nonpublic control of the previous institution. The award of credit may be limited to courses that are entered in the course numbering system. Credits so awarded shall satisfy institutional requirements on the same basis as credits awarded to native students."

Exceptions to the General Rule for Equivalency

The following courses are exceptions to the general rule for course equivalencies and may not transfer. 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 R. Dees in Academic Services, AD 210, Phone (407) 823-2691 or the Florida Department of Education, Office of Postsecondary Education Coordination, 401 Turlington Building, Tallahassee, Florida 32399-0400. Special reports and technical information may be requested by calling telephone number (850) 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 adviser 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, Practica, 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

ECI 5215C	ECS-CEE	3(2,3)

ECI 5215C is offered by the College of Engineering and Computer Science (ECS) in the Civil and Environmental Engineering (CEE) Department, carries 3 hours of credit, but requires 5 contact hours which consist of 2 hours in class and 3 hours laboratory or field work.

College/Department Indicator

Following the course number for each course is an indicator denoting the college and department responsible for the course. The college designators are AS = Arts and Sciences, BA = Business Administration, ED = Education, ECS = Engineering and Computer Science, and HPA = Health and Public Affairs.

College	Abbreviation	Department
AS	AAS	African American Studies
AS	ART	Art
AS	BIOL	Biology
AS	CAS	Arts & Sciences
AS	CHEM	Chemistry
AS	COMM	Communication
AS	ENG	English
AS	FILM	Motion Picture Technology
AS	HIST	History
AS	IDS	Interdisciplinary
AS	JUD	Judaic Studies
AS	LANG	Foreign Languages
AS	LS	Liberal Studies
AS	MATH	Mathematics
AS	MUSIC	Music
AS	OASIS	OASIS
AS	PHIL	Philosophy
AS	PHYS	Physics
AS	POLS	Political Science
AS	PSYCH	Psychology
AS	R/TV	Radio/TV
AS	SOC/AN	Sociology & Anthropology
AS	STAT	Statistics
AS	THEA	Theatre
AS	WOM	Women's Studies
BA	ACCT	Accounting
BA	BUS	Business
BA	ECON	Economics
BA	FIN	Finance
BA	MAN	Management
BA	MAR	Marketing

College	Abbreviation	Department
ED	EPE	Exceptional & Physical Education
ED	EDF	Educational Foundations
ED	EDS	Educational Services
ED	EDU	Education
ED	IP	Instructional Programs
ECS	AFROTC	Air Force ROTC-Aerospace
ECS	AROTC	Military Science-ArmyROTC
ECS	CEE	Civil & Environmental
ECS	EECS	Electrical Engr & Computer Science
ECS	ENGR	Engineering
ECS	ENT	Engineering Technology
ECS	IEMS	Industrial & Management
ECS	MMAE	Mechanical / Materials / Aerospace
HM	HOSP	Hospitality Management
HPA	CJLS	Criminal Justice / Legal Studies
HPA	COMD	Communicative Disorders
HPA	H&PT	Health Professions & Physical Therapy
HPA	HIM	Health Information Management
HPA	HPA	Health & Public Affairs
HPA	M&M	Molecular & Microbiology
HPA	NURS	Nursing
HPA	PUB	Public Administration
HPA	SOWK	Social Work

Alphabetical List of Course Prefixes

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

Prefix	Course
HLP	Health Education
HMW	Modern Hebrew Literature (Writings)
HSA	Health Services Administration
HSC	Health Science
HUM	Humanities
HUN	Human Nutrition
IDH	Interdisciplinary Honors
IDS	Interdisciplinary Studies
INP	Industrial and Applied Psychology
INR	International Relations
ISM	Information Systems Management
ISS	Interdisciplinary Social Sciences
ITA	Italian Language
ITW	Italian Literature (Writings)
JOU	Journalism
JPN	Japanese
JST	Judaic Studies
LAE	Language Arts and English Education
LAH	Latin American History
LAT	Latin
LEI	Leisure
LIN	Linguistics
LIS	Library Science
LIT	Literature
MAA	Mathematics - Analysis
MAC	Mathematics - Calculus and Precalculus
MAD	Mathematics - Discrete
MAE	Mathematics Education
MAN	Management
MAP	Mathematics - Applied
MAR	Marketing
MAS	Mathematics: Algebraic Structures
MAT	Mathematics
MCB	Microbiology
MET	Meteorology
MGF	Mathematics: General and Finite
MHF	Mathematics: History and Foundations
MIS	Military Science
MLS	Medical Laboratory Science
MMC	Mass Media Communication
MRE	Medical Records
MTG	Mathematics: Topology and Geometry
MUC	Music: Composition
MUE	Music Education
MUG	Music Conducting
MUH	Music: History / Musicology
MUH	Music: Music Literature
MUN	Music: Music Ensembles
MUS	Music
MUT	Music: Theory
MVB	Music: Applied - Brasses
MVK	Music: Applied - Keyboard
MVO	Music: Applied - Other Instruments
MVP	Music: Applied - Percussion
MVS	Music: Applied - Strings
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 Centrd., Land
PEM	Physical Education Acts (GEN) - Perform Centrd., Land
PEN	Physical Education Acts (GEN) - Water, Snow, Ice
PEO	Physical Educ Acts (PROFNL) - Object Centrd., Land
PEP	Physical Educ Acts (PROFNL) - Perf. Centrd. 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
RED	Reading Education
REE	Real Estate
REL	Religion
RET	Respiratory Therapy
RMI	Risk Management and Insurance
RTE	Radiological Sciences
RTV	Radio-Television
RUS	Russian Language
SCE	Science Education
SED	Speech Education
SLS	Student Life Skills
SOP	Social Psychology
SOW	Social Work
SPA	Speech Pathology and Audiology
SPC	Speech Communication
SPN	Spanish Language
SPS	School Psychology
SPW	Spanish Literature (Writings)
SSE	Social Studies Education
STA	Statistics
STD	Student Development
SUR	Surveying
SYA	Sociology Analysis
SYD	Sociology of Demography and Area of Studies
SYG	Sociology, General
SYO	Sociology - Social Organizations
SYP	Sociology - Social Processes
TAX	Taxation
THE	Theatre
TPA	Theatre Production and Administration
TPP	Theatre Performance and Performance Training
TTE	Transportation and Traffic Engineering
URP	Urban and Regional Planning
VIC	Visual Communication
ZOO	Zoology

Graduate Courses

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 to determine which courses are offered each semester.

ACG 5005 BA-ACCT 3(3,0)
Financial and Managerial Accounting Concepts: PR: Acceptance into the graduate program. (Not open to Accounting majors.) The conceptual background for understanding financial statements and management accounting reports.

ACG 5206 BA-ACCT 3(3,0)
Seminar in Financial Reporting: PR: Acceptance for graduate study and all accounting foundation courses. An in-depth study of advanced financial reports.

ACG 5346 BA-ACCT 3(3,0)
Cost Accounting II: PR: Acceptance for graduate study. ACG 3361, ACG 3111, FIN 3403, ECO 3411. Overhead allocation, capital budgeting and analysis. EOQ analysis, decentralization, and quantitative decision analysis.

ACG 5506 BA-ACCT 3(3,0)
Accounting for Governmental and Nonbusiness Organizations: PR: ACG 3501, ACG 3111 and acceptance for graduate study. Study of problems and methods of applying managerial accounting concepts in a nonprofit environment.

ACG 5625 BA-ACCT 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-ACCT 3(3,0)
Advanced Auditing Topics: PR: Acceptance for graduate study and ACG 4651, STA 2023. 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-ACCT 3(3,0)
Operational Auditing: PR: Acceptance for graduate study and ACG 3111, ACG 4651. The standards, principles, practices, and procedures followed in the internal audit function.

ACG 6255 BA-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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 6685 BA-FIN 3(3,0)
Seminar in Fraud Auditing: PR: ACG 4651 and graduate standing. Theory and techniques relating to fraud auditing and fraud examination.

ACG 6696 BA-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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 BA-ACCT 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.

ACG 7915 BA-ACCT 3(3,0)
Directed Research in Accounting: PR: GEB 7910 and C.I. Advanced study in specialized areas of accounting research. Study designed to lead toward publishable research or student's dissertation. By definition, topical areas will vary.

ACG 7917 BA-ACCT 3(3,0)
Seminar in Research Methods in Accounting: PR: Admission to doctoral program or C.I. Extensive coverage and critical analysis of accounting theory literature and research methods in accounting.

AMH 5116 AS-HIST 3(3,0)
Colloquium in U.S. Colonial History: PR: Senior standing or C.I. Reading and discussion of the literature on selected topics in U.S. history.

AMH 5137 AS-HIST 3(3,0)
Colloquium in U.S. Revolutionary Period: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics in the Revolutionary Era, 1763-1789.

AMH 5149 AS-HIST 3(3,0)
Colloquium in Early U.S. History, 1789-1815: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics of the early national period.

AMH 5169 AS-HIST 3(3,0)
Colloquium Age of Jackson: PR: Senior standing or C.I. Intensive reading and class discussion on selected topics of the Jacksonian age.

AMH 5176 AS-HIST 3(3,0)
Colloquium in Civil War and Reconstruction: PR: Senior standing or C.I. Intensive reading and class discussion on selected topics of the Civil War and Reconstruction era.

AMH 5219 AS-HIST 3(3,0)
Colloquium in Late 19th Century U.S.: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics of late 19th-century United States.

AMH 5296 AS-HIST 3(3,0)
Colloquium in 20th Century U.S.: PR: Senior standing or C.I. Reading and class discussion on selected topics in 20th-century United States.

AMH 5391 AS-HIST 3(3,0)
Colloquium in U.S. Cultural History: PR: Senior standing or C.I. Students will read and discuss a common or diverse body of the significant literature in the field.

AMH 5407 AS-HIST 3(3,0)
Colloquium in American South: PR: Senior standing or C.I. Intensive reading and class discussion on selected topics of Southern history from colonial origins to the present.

AMH 5446 AS-HIST 3(3,0)
Colloquium in U.S. Frontier: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics of frontier history.

AMH 5515 AS-HIST 3(3,0)
Colloquium in U.S. Diplomatic History: PR: Senior standing or C.I. A survey of the historical literature of American foreign policy. May be repeated for credit when content is different.

AMH 5566 AS-HIST 3(3,0)
Colloquium: Women in American History: Intensive reading and class discussion on selected topics of women in American history from colonial time to the present.

AMH 5937 AS-HIST 3(3,0)
AP American History: Participants will enhance their knowledge of weighing evidence and interpretations presented in historical scholarship with respect to the social, cultural, intellectual, economic, and political-diplomatic history of the United States.

AMH 6939 AS-HIST 3(3,0)
Seminar in U.S. History: May be repeated for credit when content is different.

AML 5156 AS-ENG 3(3,0)
Modern American Poetry: Study of trends, modes, major figures (Eliot, Pound, H.D., Lawrence, Stevens, Hart, Crane, Moore, W.C. Williams, etc.) within the Modernist movement in American poetry.

ANG 5166 AS-SOC/AN 3(3,0)
Problems in Maya Studies: PR: ANG 5168 or C.I. In-depth study of current methodological, theoretical, and/or topical problems in Maya Studies.

ANG 5167 AS-SOC/AN 3(3,0)
Maya Hieroglyphs: PR: ANG 5168 or C.I. The study of Maya writing, the translation of Maya hieroglyphs, and the significance of translations to reconstructions of ancient Maya culture.

ANG 5168 AS-SOC/AN 3(3,0)
The Ancient Maya: PR: Bachelor's degree or C.I. Overview of the archaeology of the ancient Maya of Mexico, Belize, Guatemala, and upper Mexico.

ANG 5228 AS-SOC/AN 3(3,0)
Maya Iconography: PR: ANG 5168 or C.I. Study and interpretation of ancient Maya iconoagraphy as reflected in art, artifacts, and constructed features.

ANG 5324 AS-SOC/AN 3(3,0)
Contemporary Maya: PR: Bachelor's degree or C.I. Overview of the cultures and peoples comprising the contemporary Maya of Central America.

ANT 5166 AS-SOC/AN 3(3,0)
Problems in Maya Studies: PR: ANT 5168 The Ancient Maya or C.I. In-depth study of current methodological, theoretical, and/or topical problems in Maya studies. May be repeated for credit.

ANT 5168 AS-SOC/AN 3(3,0)
The Ancient Maya: PR: Bachelor's degree or C.I. Overview of the archaeology of the ancient Maya of Mexico, Belize, Guatemala, and upper Central America.

ANT 5479 AS-SOC/AN 3(3,0)
Comparative Cultural Analysis: The dynamics of cultural processes in a multi-ethnic setting.

ARE 5251 ED-IP 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 5255 ED-IP 3(2,1)
Arts in Recreation: Art activities and experiences appropriate for use in playground, leisure services, occupational orientation and other recreational areas.

ARE 5454 ED-IP 3(3,0)
Studio Experiences in Art Education: PR: Graduate admission or C.I. Materials available for instruction in public schools will be explored in depth in relation to their appropriateness and productive qualities. May be repeated for credit.

RE 5648 ED-IP 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-IP 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-IP 3(2,1)
Arts Advocacy: The study and development of plans to produce arts advocacy programs for the public school system.

ARE 6905 ED-IP 3(3,0)
Research Trends in Art Education: PR: EDF 6481. This course will further prepare art education graduate students to identify and review landmark research and conduct relevant art education research. May be repeated for credit.

ARH 5451 AS-ART 3(3,0)
Artistic World Views: PR: Post-Baccalaureate status, 9 hours of art courses, or C.I. Art from individuals and cultural perspectives of varying ethnic, religious, occupational, regional, and generational groups.

ARH 5478 AS-ART 3(3,0)
Contemporary Women Artists: PR: 6 credits of art courses or C.I. An in-depth study on contemporary women artists from a feminist perspective.

ARH 5933 AS-ART 3(3,0)
Seminar in African and African-American Arts: PR: ARH 3520. Research on questions regarding continuities between African and African-American (including Latin-American) arts. Themes include signs and scripts, charms, and textiles.

ARH 5934 AS-ART 3(3,0)
Orlando Art Exhibition: PR: Graduate standing or C.I. A partnership class which focuses on the study of an Art Exhibition in an Orlando art or history museum. May be repeated for credit.

ART 5109C AS-ART 3(2,1)
Multi-Cultural Crafts Design: The content of this course will include an appreciation for and the production of Western and Non-Western art forms.

BOT 5485C AS-BIOL 3(2,3)
Terrestrial Cryptogams: PR: BOT 4303C or C.I. A lecture-laboratory survey course on the biodiversity and classification of terrestrial-cryptogams (bryophytes, ferns, and fern allies) with special emphasis on those found in Florida.

BOT 5623C AS-BIOL 4(3,3)
Plant Geography and Ecology: PR: PCB 3034 or C.I. The study of the abiotic and biotic processes that control the distribution of terrestrial flora at local, landscape, and global scales.

BOT 5705C AS-BIOL 4(3,2)
Plant Biosystematics: PR: Graduate standing or C.I. Evolutionary processes among plant taxa and populations utilizing cytology, morphology, biochemistry, breeding systems and co-evolution.

BOT 6146C AS-BIOL 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 5408L AS-BIOL 3(0,9)
Advanced Biology Laboratory Techniques: PR: B.S. degree, C.I. This course will emphasize those biological techniques and resources necessary for students about to begin thesis research. Individual and small group instruction in current laboratory techniques, literature searches, and hands-on practice of techniques will be stressed. May not be repeated for credit.

BSC 5817 AS-BIOL 3(3,0)
Biology for AP Teachers: Participants will perform and evaluate the 12 required labs, analyze the design and grading of the Exam, and develop a representative program.

BSC 6950 AS-BIOL 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.

BTE 6171 ED-IP 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-IP 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-IP 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-IP 3(3,0)
Seminar in Business Education: PR: Graduate standing or C.I. Current problems, issues, and trends in business education.

BTE 6946 ED-IP 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.

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

CAP 5015 ECS-EECS 3(3,0)
Multimedia Compression on the Internet: PR: Seniors and graduate students with interest in internet technology. Multimedia data; internet technology; entropy; compression methods; lossy compression; vector quantization; transform coding; wavelet video compression; model based compression.

CAP 5415 ECS-EECS 3(3,0)
Computer Vision: PR: COP 3530C. Image formation, binary vision, region growing and edge detection, shape representation, dynamic scene analysis, texture, stereo and range images, and knowledge representation.

CAP 5610 ECS-EECS 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 human and computers.

CAP 5636 ECS-EECS 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 ECS-EECS 3(3,0)
Computer Graphics Systems I: PR: COP 3530C or equivalent. Architecture of graphics processors; display hardware; principles of programming and display software; problems and applications of graphic systems.

CAP 6411 ECS-EECS 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 ECS-EECS 3(3,0)
Advanced Computer Vision: PR: CAP 5410. Computational theories of perception, shape from IX' techniques, multi-resolution image analysis, 3-D model based vision, perceptual organization, spatiotemporal model, knowledge-based vision systems.

CAP 6613 ED-IP 3(0)
Utilizing Microcomputers in Education: Instruction in microcomputers emphasizing applications of software in the classroom and for school recordkeeping.

CAP 6640 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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.

CCJ 5015 HPA-CJ/LS 3(3,0)
The Nature of Crime: This course provides an overview of major dimensions of crime in the U.S.; epidemiology of crime, costs of crime, and typologies of crime and criminals.

CCJ 5040 HPA-CJ/LS 6(6,0)
International Perspectives on Law and Justice: PR: C.I. or graduate standing. Examination of the legal and criminal justice systems of other nations and territories through lecture, seminar, research and field visits.

CCJ 5105 HPA-CJ/LS 3(3,0)
Foundations of Law Enforcement: PR: C.I. Examines police role in modern society and law enforcement policy.

CCJ 5305 HPA-CJ/LS 3(3,0)
Foundations of Corrections: PR: C.I. Provides an overview of correctional process in U.S., including philosophical foundations and contemporary practices.

CCJ 5406 HPA-CJ/LS 3(3,0)
Research and Technology Implementation: Changing roles of social and physical sciences as related to the objectives and administration of public safety agencies.

CCJ 5456 HPA-CJ/LS 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 5467 HPA-CJ/LS 3(3,0)
Justice and Safety System Manpower: Processes essentials to administration to human resources in criminal justice and public safety agencies; structure and processes for acquisition, training, and maintenance of personnel.

CCJ 5704 HPA-CJ/LS 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 6106 HPA-CJ/LS 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-CJ/LS 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 6294 HPA-CJ/LS 3(3,0)
Death Penalty: PR: Graduate standing or C.I. Examines death penalty policies throughout the U.S., their administration, and deterrent issues.

CCJ 6485 HPA-CJ/LS 3(3,0)
Issues in Justice Policy: Examination of selected issues of public policy regarding the functions and roles of criminal justice agencies vis-a-vis other government departments or agencies and public purposes. May be repeated for credit.

CCJ 6505 HPA-CJ/LS 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-CJ/LS 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 6706 HPA-CJ/LS 3(3,0)
Quantitative Methods and Computer Utilization in Criminal Justice: Application of statistical software to quantitative and qualitative methods in Criminal Justice.

CCJ 6730 HPA-CJ/LS 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 6934 HPA-CJ/LS 3(3,0)
Criminal Justice, Crime, and Popular Culture: PR: Graduate standing, CCJ 5456, or C.I. Explore how Criminal Justice System, Criminals, and Crime are portrayed in entertainment and news media and the effects portrayals have on society and Criminal Justice.

CCJ 6938 HPA-CJ/LS Variable
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-CJ/LS Variable
Criminal Justice Practicum: Students will undertake a significant research project in a criminal justice agency.

CCJ 7457 HPA-CJ/LS 3(3,0)
Seminar in Criminal Justice Theory: PR: Admission to Ph.D. program or C.I. Examination of the theoretical basis of criminal justice policies. Focus on retribution, incapacitation, deterrence, rehabilitation, and restoration.

CCJ 7930 HPA-CJ/LS 3(3,0)
Seminar in Criminal Justice Policy Analysis: PR: Admission to Ph.D. program or C.I. Criminal justice policy formulation, implementation, and evaluation, with special emphasis on problems of conceptualization and methodology.

CDA 5106 ECS-EECS 3(3,0)
Advanced Computer Architecture I: PR: CDA 4150. Instruction set architectures, processor implementation, memory hierarchy, pipelining, computer arithmetic, vector processing, and I/O.

CDA 5110 ECS-EECS 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; parallization techniques; communication synchronization and granularity; parallel data structures; automatic program restructing.

CDA 5215 ECS-EECS 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 ECS-EECS 3(3,0)
Computer Communication Networks Architecture: PR: CDA 4150. Computer networks, layers, protocols and interfaces, local area networks networking.

CDA 5530 ECS-EECS 3(3,0)
Performance Models of Computers and Networks: PR: Senior standing or beginning graduate student. Performance models of computer systems and networks using probability models and discrete event simulations. Queuing theory and modeling tools.

CDA 6107 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Computer Networks Design and Distributive Processing: PR: CDA 5501 and COP 5611. Computer communications networks design considerations, network operating system, distributive processing.

CEG 5015 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 3(3,0)
Foundation Engineering: PR: CEG 5015. Analysis and design of spread footings, mat foundations, retaining walls, sheeting and bracing systems and pile foundations.

CEG 6317 ECS-CEE 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.

CEN 5016 ECS-EECS 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.

CEN 6081 ECS-EECS 3(3,0)
Engineering Software Design in Distributed and Parallel Systems: PR: EEL 4882 and EEL 4884 or EEL 5881. This course will focus on engineering software design, implementation, configuration and performance evaluation of distributed and parallel systems.

CES 5325 ECS-CEE 3(3,0)
Bridge Engineering: PR: CES 4605; CES 4702. 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 ECS-CEE 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 ECS-CEE 3(3,0)
Advanced Reinforced Concrete: PR: CES 4702 or C.I. Design of frames, two-way floor systems, shear walls; shear and torsion; compression field theory; inelastic analysis; wind and seismic design; introduction to prestressed concrete.

CES 5821 ECS-CEE 3(3,0)
Masonry and Timber Design: PR: C.I. Structural properties of masonry and timber; design loads-codes and standards; analysis for axial loads, flexure and shear.

CES 6116 ECS-CEE 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 6170 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 3(2,2)
Geographic Information Systems: Programming theory and application of geographic information systems to civil engineering projects.

CGN 5504C ECS-CEE 3(2,2)
Civil Engineering Materials: PR: EGN 3365, EGN 3331, or C.I. Structure, properties, and applications of materials used in civil engineering including concrete, steel, asphalt, wood, soils, and composite materials.

CGN 5506C ECS-CEE 3(2,2)
Asphalt Concrete Mix Design: PR: CEG 4101C. Properties of asphalt, aggregate and asphalt mixtures, Marshall mix design, Hveem mix design, pavement rehabilitation.

CGN 6655 ECS-CEE 3(3,0)
Regional Planning, Design, and Development: PR: ENV 4651. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.

CGS 5310 ED-IP 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.

CHM 5225 AS-CHEM 3(3,0)
Advanced Organic Chemistry: PR: CHM 2211. Theoretical and physical organic concepts of organic systems from the perspective of modern structural theory, thermodynamics, and kinetics.

CHM 5235 AS-CHEM 3(3,0)
Applied Molecular Spectroscopy: PR: CHM 3120C and CHM 2211. Determination of chemical structure through interpretation of UV, IR, NMR and Mass Spectra.

CHM 5305 AS-CHEM 3(3,0)
Applied Biological Chemistry: PR: CHM 2211. 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-CHEM 3(3,0)
Polymer Chemistry: PR: CHM 2211. An introduction to the chemistry of synthetic polymers. Synthetic methods, polymerization mechanisms, characterization techniques, and polymer properties will be considered.

CHM 5451L AS-CHEM 2(0,6)
Polymer Chemistry Laboratory: PR: CHM 2211 and CHM 3410. A laboratory course designed to introduce students to the major polymerization mechanisms. Polymer synthesized in the laboratory will be characterized using modern instrumental methods.

CHM 5580 AS-CHEM 3(3,0)
Advanced Physical Chemistry: CR: 3411 and PR: MAC 2313. Selected topics of thermodynamics, kinetics, quantum mechanics, and structure.

CHM 5711 AS-CHEM 2(2,0)
The Chemistry of Materials: PR: CHM 2211, CHM 4130C, and 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-CHEM 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-CHEM 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-CHEM 1(1,0)
Graduate Chemistry Seminar: PR: C.I. A topic of current chemical interest will be presented by students at a regularly scheduled departmental seminar. May be repeated for credit.

CHS 6240 AS-CHEM 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-CHEM 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-CHEM 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-CHEM 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.

CHS 6513 AS-CHEM 3(3,0)
QA and Bioinformation: PR: C.I. and satisfaction of statistics and biology requirements. Principles of quality assurance, a description of current industry-wide standards and procedures for locating, evaluating, and processing information about DNA.

CHS 6535 AS-CHEM 2(2,0)
Forensic Analysis of Biological Materials: PR: PCB 4524, C.I., and satisfaction of statistics and biology requirements. A lecture course for forensic biologists covering the procedures for recovering and typing DNA from evidentiary materials and the interpretation of data.

CHS 6535L AS-CHEM 3(1,6)
Forensic Analysis of Biological Materials: PR: CHS 6535, PCB 4524, C.I. and satisfaction of biology requirements. A laboratory course for forensic molecular biologists covering the procedures for recovering and typing DNA from evidentiary materials.

CHS 6536 AS-CHEM 2(2,0)
Forensic Analysis of DNA Data: PR: C.I. and satisfaction of statistics and biology requirements. A lecture course for forensic scientists covering the analysis of laboratory derived DNA data and how they can be applied in an occupational context.

CHS 6613 AS-CHEM 3(3,0)
Current Topics in Environmental Chemistry: PR: CHM 2045, CHM 2046, or the equivalent of a B.S. in biological, molecular, chemical or engineering sciences, or C.I. Advanced principles of environmental chemistry, environmental law, current remediation technologies and industrial practices relating to the environment.

CIS 6611 ECS-EECS 3(3,0)
Software Engineering II:

CLP 5004 AS-PSYCH 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-PSYCH 3(3,0)
Advanced Abnormal Psychology: Consideration of classification, causation, management and treatment of emotional disorders. Review of theories and research in the field. Lecture/Laboratory.

CLP 5187 AS-PSYCH 3(3,0)
Mental Health and Aging: PR: Postbaccalaureate or graduate standing or C.I. Introduction to assessment and intervention issues, practice and research related to problems with cognitive and emotional functioning among older adults. May be repeated for credit.

CLP 6181 AS-PSYCH 3(3,0)
Psychological Theories of Substance Abuse Treatment: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. The mechanisms responsible for, and the treatment of, substance tolerance and dependence. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

CLP 6321 AS-PSYCH 3(3,0)
Psychotherapy in Community Settings: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. Survey of the community agencies that deliver mental health/counseling services. Includes on-site visits to local agencies. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

CLP 6441C AS-PSYCH 3(2,2)
Individual Psychological Assessment I: PR: Graduate admission and C.I. Theory and techniques of psychological assessment with emphasis on intake interviewing, cognitive and personality assessment, and report writing.

CLP 6445C AS-PSYCH 3(2,2)
Individual Psychological Assessment II: PR: 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.

CLP 6456C AS-PSYCH 3(2,2)
Individual Counseling—Theory and Practice: PR: Graduate admission and C.I. Counseling theory with experimental lab component including practice in specific techniques in counseling.

CLP 6457C AS-PSYCH 3(2,2)
Group Psychotherapy: PR: Graduate admission and C.I. Group counseling: theory and practice. Experiential group laboratory.

CLP 6458 AS-PSYCH 3(2,2)
Behavior Therapy: PR: CLP 6456C, 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-PSYCH 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 6459C AS-PSYCH 3(2,2)
Human Sexuality, Marriage, and Sex Therapies: PR: Graduate admission and C.I. Human sexuality, theory and practice of specific techniques of marriage and sex therapy.

CLP 6460C AS-PSYCH 3(2,2)
Introduction to Child, Adolescent, and Family Therapies: PR: Graduate admission and C.I. Theories and practices of child, adolescent and family therapies. Includes practice in specific techniques.

CLP 6491C AS-PSYCH 3(2,2)
Treatment Development: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. Major preventative treatment approaches, including the appropriate uses of manualized/modular therapy. Students participate in a faculty member's treatment development program. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

CLP 6932 AS-PSYCH 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.

CLP 6943C AS-PSYCH 2(2,8)
Clinical Practicum: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. Clinical activities performed in an approved university or community setting under faculty/staff supervision. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll. May be repeated for credit.

CLP 6944 AS-PSYCH 3(3,0)
Clinical Supervision Seminar/ Practicum: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. The concepts and skills needed to be a clinical supervisor. Includes applications, ethics, and professional responsibilities in a multi-cultural context. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

CLP 6949 AS-PSYCH 2(0,40)
Predoctoral Internship: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. Placement in an approved setting on a full-time basis for one calendar year. Required of all clinical Ph.D. students. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

COM 6106 AS-COMM 3(3,0)
International Communication: Case studies on global communication, coping with cultures, communicating across cultures, global media, global news flow and persuasive communication. May be repeated for credit.

COM 6121 AS-COMM 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-COMM 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-COMM 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-COMM 3(3,0)
Communication and Conflict: Research seminar in the study of communication and conflict.

COP 5021 ECS-EECS 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 5570 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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, multidatabase systems.

COP 6614 ECS-EECS 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 ECS-EECS 3(3,0)
Operating Systems Theory: PR: COP 5611. Scheduling and queuing theory, simulation, and performance evaluation of computer systems.

COP 6621 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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, decision problems. LR(K) grammars.

COT 5405 ECS-EECS 3(3,0)
Design and Analysis of Algorithms: PR: COT 4210 and COT 4110. Classification of algorithms, e.g., recursive, divide-and-conquer, greedy, etc. Data structures and algorithm design and performance. Time and space complexity analysis.

COT 5507 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Computational Geometry: CR: COT 5405. Geometric searching, point location, convex hulls, proximity problems, Vononoi diagrams, spanning trees, triangulation, intersection arrangement applications.

COT 6300 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 5334 AS-POLS 3(3,0)
Contemporary Politics of the Mayan Region: PR: Senior, post-baccalaureate or graduate status. Analysis of issues affecting all peoples living in the contemporary Mayan region of southern Mexico, Belize, Guatemala, and El Salvador.

CPO 6091 AS-POLS 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 5020 AS-ENG 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 5056 AS-ENG 3(3,0)
Form and Theory of Nonfiction: PR: Admission to the M.A. program in English or Honors in the Major status. Studies in literary nonfiction from three perspectives: the critic, the practicing writer, and the theorist. Reading includes memoir, personal essay, criticism, and theory.

CRW 5932 AS-ENG 3(2,1)
Teaching Creative Writing: PR: C.I. Creative writing practicum. May be repeated for credit.

CRW 6025 AS-ENG 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.

CWR 5205 ECS-CEE 3(3,0)
Hydraulic Engineering: PR: CWR 4101C and CWR 4203C. Concepts of fluid mechanics and hydrodynamics applied to natural and man-made flow of intent to civil and environmental engineering.

CWR 5545 ECS-CEE 3(3,0)
Water Resources Engineering: PR: CWR 4101C, CWR 4203C. Systems identification and solution to complex water allocation problems, and other hydraulic engineering designs and operations using economic analysis and operations research techniques.

CWR 6102 ECS-CEE 3(3,0)
Advanced Hydrology: PR: CWR 4101 or C.I. Single site and regional frequency analysis; modeling hydrologic systems; lumped and distributed event models for urban and natural drainage basins; continuous simulation; real-time forecasting.

CWR 6125 ECS-CEE 3(3,0)
Groundwater Hydrology: PR: CWR 4203C or equivalent. Theories of groundwater movement, geological factors, analysis and design techniques, etc. Emphasis on practical considerations.

CWR 6126 ECS-CEE 3(3,0)
Groundwater Modeling: PR: CWR 6125. Review of contemporary computer-based groundwater flow models and their application to environmental engineering problems.

CWR 6235 ECS-CEE 3(3,0)
Open Channel Hydraulics: PR: CWR 4203C or C.I. Free surface flow studies by empirical and theoretical methods for the design, operation, and management of open channels.

CWR 6236 ECS-CEE 3(3,0)
River Engineering and Sediment Transport: PR: CWR 4203C and CWR 4101C. River morphology and regime with stabilization and modification of river courses. Sediment transport including control methods and modeling.

CWR 6535 ECS-CEE 3(3,0)
Modeling Water Resources Systems: PR: CWR 4101C and CWR 4203C. Contemporary mathematical models for water quality and quantity considerations including computer-based hydraulic and hydrologic models.

CWR 6539 ECS-CEE 3(3,0)
Finite Differences/Elements in Surface Water Modeling: PR: C.I. Theory, applications and error analysis for two commonly employed discretization methods as applied to surface water modeling.

CYP 6948 AS-PSYCH 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-PSYCH 3(3,0)
Developmental Psychology: PR: Graduate admission or C.I. Psychological aspects of development including intellectual, social, and personality factors.

EAB 5765 AS-PSYCH 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.

EAS 5123 ECS-MMAE 3(3,0)
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.

EAS 5157 ECS-MMAE 3(3,0)
V/Stol Aerodynamics and Performance: PR: EAS 4105; CR: EML 5060. Momentum theory, blade element theory, hover and forward flight, stability, aeroelasticity.

EAS 5302 ECS-MMAE 3(3,0)
Direct Energy Conversion: PR: EML 3101 and EML 4142. Direct methods of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics and magnetohydrodynamics. Analysis and systems design.

EAS 5315 ECS-MMAE 3(3,0)
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.

EAS 5407 ECS-MMAE 3(3,0)
Mechatronic Systems: PR: EML 3804C or EAS 3404C. Discrete control techniques for aerospace mechatronic systems. Controller design, test and evaluation applications.

EAS 6138 ECS-MMAE 3(3,0)
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.

EAS 6185 ECS-MMAE 3(3,0)
Turbulent Flow: PR: EML 5060 and EML 5713. Phenomena and methods of characterizing turbulence; spatial and temporal velocity correlation; energy spectra; transition prediction; turbulent boundary layer equations; hot wire and LDV measurement techniques.

EAS 6405 ECS-MMAE 3(3,0)
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.

EAS 6507 ECS-MMAE 3(3,0)
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.

ECM 5135 ECS-EECS 3(3,0)
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.

ECM 5741C ECS-EECS 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.

ECM 6235 ECS-EECS 3(3,0)
Engineering Math Analysis II: PR: EEL 5135. Advanced engineering math topics including Fourier series, partial differential equations, and complex variables.

ECO 5005 BA-ECON 3(3,0)
Economic Concepts: PR: Acceptance into the graduate program. Introduction to micro and macro economic analysis.

ECO 5415 BA-ECON 3(3,0)
Statistics for Business and Economics: PR: Acceptance into the graduate program and MAC 2233. Statistical theory and problems relating to business and economics, including time series and correlation theory, index number theory and statistical inference.

ECO 6115 BA-ECON 3(3,0)
Economic Analysis of the Firm: PR: Graduate standing and ECO 5005 or equivalent. Commodity price and output determination; factor price determination and functional income distribution; analysis of different types of markets.

ECO 6206 BA-ECON 3(3,0)
Aggregate Economic Conditions and Analysis: PR: Graduate standing and ECO 5005 or equivalent. An analysis of aggregate economic conditions including the determination of output, employment, and income levels.

ECO 6226 BA-ECON 3(3,0)
Seminar in Money, Banking, and Monetary Policy: PR: Graduate standing and ECO 5005 or equivalent. Study of the structural foundation and policy-making activities of the monetary authorities.

ECO 6305 BA-ECON 3(3,0)
History of Economic Thought: PR: Graduate standing and ECO 5005 or equivalent. A study of the leading ideas of the major contributors to the development of economic thought.

ECO 6416 BA-ECON 3(3,0)
Statistical Methods for Business Decisions: PR: Graduate standing and ECO 5415 or equivalent. Multivariate methods and related tools applied to analyze business and economic data as an aid in decision making.

ECO 6424 BA-ECON 3(3,0)
Econometrics: PR: ECO 6416 and graduate standing. The mathematical formulation of economic theories and the use of statistical procedures to measure the theoretical relationships and to verify or reject the theories.

ECO 6433 BA-ECON 3(3,0)
Business Cycles and Forecasting: PR: ECO 5005 and ECO 6416 or equivalents, graduate standing. Use of economic tools for measuring changes in aggregate economic activity, changes in production and prices, and the use of statistical techniques.

ECO 6505 BA-ECON 3(3,0)
Public Finance and Fiscal Policy: PR: Graduate standing and ECO 6115 or equivalent. Analysis of the role of government and the effects of spending, taxing, and borrowing on the economy.

ECO 6705 BA-ECON 3(3,0)
Seminar in International Economics: PR: Graduate standing and ECO 6115 or equivalent. An inquiry into the theory of international trade and finance, commercial policy, and economic integration.

ECO 7116 BA-ECON 3(3,0)
Microeconomic Theory: PR: Graduate standing and ECO 6115 or equivalent. Advanced treatment of demand, production cost, market theory under varying competitive conditions.

ECO 7205 BA-ECON 3(3,0)
Macroeconomic Theory: PR: Graduate standing and masters-level macroeconomics. Includes sectoral components of the economy; fluctuation and stabilization policies and special macro topics

ECO 7423 BA-ECON 3(3,0)
Applied Models I: PR: Graduate standing, and ECO 6416 or equivalent. Advanced coverage of standard regression methods and models plus nonparametric statistics.

ECO 7425 BA-ECON 3(3,0)
Applied Models II: PR: Graduate standing and ECO 7423. Advanced treatment of sophisticated regression methods and models plus complex nonregression models.

ECO 7428 BA-ECON 3(3,0)
Time Series: PR: Graduate standing and ECO 6424. Advanced treatment of time series analytical techniques including vector autoregression, cointegration and nonstationarity.

ECP 6205 BA-ECON 3(3,0)
Labor Economics: 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.

ECP 6405 BA-ECON 3(3,0)
Industrial Organization and Performance: PR: Graduate standing and ECO 6115. A study of the performance of various types of market structure and practice relative to price and efficiency.

ECP 6605 BA-ECON 3(3,0)
Economics of Urban and Regional Problems: PR: Graduate standing and ECO 6115. Economic analysis of the problems arising from and associated with the growth and development of cities and regions.

ECP 6705 BA-ECON 3(3,0)
Managerial Economics: PR: Graduate standing and ECO 6115 or equivalent. The use of economic tools and methods of reasoning applied to a wide range of business and economic problems.

ECS 6006 BA-ECON 3(3,0)
Seminar in Comparative Economic Systems: PR: Graduate standing and ECO 5005 or equivalent. An examination of factors that influence economic systems, patterns of resource allocation, and income distribution in differing economic environments.

ECS 6015 BA-ECON 3(3,0)
Economic Development: PR: Graduate standing and ECO 5005 or equivalent. Analysis of theories and problems of growth and development with special attention to resource scarcity, population growth, and interaction of foreign trade and internal development.

EDA 6061 ED-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 4(4,0)
Educational Personnel, Contracts, and Negotiations: PR: Doctoral status, completion of a course in school law, and C.I. Readings, discussions and research pertaining to administration of educational personnel contracts and public sector educational law.

EDA 7235 ED-IP 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-IP 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-IP 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-IP 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-IP 1-6
Dissertation Research: PR: C.I.

EDA 7930 ED-IP 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-IP 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-IP 1-20
Dissertation: PR: Admission to candidacy.

EDE 6205 ED-IP 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-ED F 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-ED F 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-ED F 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-ED F 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 6259 ED-ED F 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-ED F 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-ED F 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-ED F 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-ED F 3(3,0)
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.

EDF 6486 ED-ED F 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.

EDF 6517 ED-ED F 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.

EDF 6608 ED-ED F 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.

EDF 6886 ED-ED F 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.

EDF 7232 ED-ED F 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.

EDF 7403 ED-ED F 3(3,0)
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.

EDF 7463 ED-ED F 3(3,0)
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.

EDF 7475 ED-ED F 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.

EDG 5325 ED-ED F 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.

EDG 5337 ED-ED F 3(3,0)
Teaching Individuals, Small and Large Groups: PR: C.I. Study of teaching skills for effectively instructing individuals in various educational groups, with consideration of developmental and behavioral characteristics of students.

EDG 5745 ED-ED F 3(3,0)
Teaching the Non-English Student: PR: C.I. Bilingual and non-linguistic instruction in curriculum areas in English as a second language.

EDG 5941 ED-ED F 2-8(0,11)
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.

EDG 6046 ED-ED F 3(3,0)
Contemporary Issues in Education: An analysis of current trends in education and their impact on educational programs.

EDG 6223 ED-ED F 3(3,0)
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.

EDG 6236 ED-ED F 3(3,0)
Principles of Instruction and Learning: PR: EDG 6481 or C.I. The analysis and application of selected concepts and theories of learning in relation to curriculum design, classroom strategies, and instructional techniques.

EDG 6253 ED-ED F 3(3,0)
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.

EDG 6285 ED-ED F 3(3,0)
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.

EDG 6327 ED-ED F 3(3,0)
Techniques of Game Use in Education: Analysis, development, and use of educational games as an approach to classroom teaching.

EDG 6940 ED-ED F 1-8(0,1-8)
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.)

EDG 6946 ED-ED F 1-2
Practicum, Clinical Practice: PR: C.I.

EDG 7221 ED-ED F 3(3,0)
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 7356 ED-ED F 3(3,0)
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 7692 ED-ED F 3(3,0)
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 7919 ED-ED F 1-6
Dissertation Research: PR: C.I.

EDG 7939 ED-ED F 1-6
Special Topics/Seminars: PR: Doctoral level.

EDG 7980 ED-ED F 1-20
Dissertation: PR: Admission to Candidacy.

EDH 6053 ED-IP 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-IP 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-IP 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-IP 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-IP 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-IP 3(3,0)
Teaching and Learning in the Community College: PR: EDF 7232. Focuses on teaching effectiveness in the community college.

EDH 6505 ED-IP 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-ED F 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.

EDP 6056 ED-E PE 3(3,0)
Advanced Educational Psychology: PR: Graduate admission and C.I. Principles of educational psychology for teaching, intervention, and educational services in schools.

EDS 5356 ED-IP 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-IP 3(3,0)
Supervision of Instruction: Effective supervisory principles and practices which can be used for instructional improvement.

EDS 6053 ED-IP 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-IP 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-IP 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-IP 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-IP 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-IP 3(3,0)
Programs and Trends in Early Childhood Education: PR: Regular Certificate or C.I. Philosophy, content, facilities, instructional materials, and activities appropriate for children ages 3 to 8 years; current research; issues and trends. Concurrent laboratory experiences.

EEC 5206 ED-IP 3(3,0)
Organization of Instruction in Early Childhood Education: PR: Regular Certificate or C.I. Organization in instruction relating to language arts, social sciences, mathematics, health and physical education, problems relating to reading readiness and cognition (K-3). Concurrent laboratory experiences.

EEC 5208 ED-IP 3(3,0)
Creative Activities in Early Childhood: PR: Regular 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-IP 3(3,0)
Play Development, Intervention, and Assessment: Explores play development, facilitation, intervention, and assessment.

EEC 6406 ED-IP 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-E PE 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-E PE 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.

EEL 5173 ECS-EECS 3(3,0)
Linear Systems Theory: PR: EEL 3657. Models and properties of linear systems, transformation, controllability and observability, control and observer designs, MFD, and realization theory.

EEL 5245C ECS-EECS 3(2,1)
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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 4(3,3)
Fabrication of Solid-State Devices: PR: EEL 3306. Fabrication of microelectronic devices, processing technology, ion implantation and diffusion, device design, and layout. Laboratory includes device processing technology.

EEL 5357 ECS-EECS 3(3,0)
CMOS Analog and Digital IC Design: PR: EEL 3306 and EEL 4309. The objective of this course is to present the principles and techniques of the design of analog and digital circuits that are to be implemented in a CMOS technology.

EEL 5370 ECS-EECS 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 5432 ECS-EECS 3(3,0)
Satellite Remote Sensing: PR: EEL 3470 or PHY 4324. Fundamentals of satellite remote sensing, orbits and geometry, radiative transfer theory, microwave and infrared sensing techniques, ocean, ice and atmosphere geophysical measurements.

EEL 5434 ECS-EECS 3(3,0)
Microwave Circuits and Devices: PR: EEL 4436 or EEL 5555C. Planar transmission lines; passive microwave circuits; active circuit design using Gunn, IMPATT, FETS, RTDS, etc.: microwave integrated circuits.

EEL 5441 ECS-EECS 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, diffraction, interference, polarization, coherence, and guided waves.

EEL 5448 ECS-EECS 3(3,0)
Fundamentals of Optoelectronic Devices: PR: Graduate standing or C.I. Operation, methods of fabrication, applications, and limitations of various optoelectronic devices including quantum well semiconductor devices.

EEL 5450C ECS-EECS 3(2,1)
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 5451L ECS-EECS 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 5453 ECS-EECS 3(3,0)
Geometrical Optics: PR: C.I. or graduate standing. Fundamentals of Geometrical Optics, Geometrical Theory of Image Formation, Optical System Layout.

EEL 5462C ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Random Processes I: PR: EEL 3552C and STA 3032. Elements of probability theory, random variables, and stochastic processes.

EEL 5547 ECS-EECS 3(3,0)
Introduction to Radar Systems: PR: EEL 3552C. Introduction to Pulse and CW Radar Systems. Chirp Radar Systems. Tracking Radar. Noise in Radar Systems.

EEL 5555C ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Digital Control Systems: PR: EEL 3657. Real-time digital control system analysis and design, Z-transforms, sampling and reconstruction, time and frequency response, stability analysis, digital controller design.

EEL 5704 ECS-EECS 3(3,0)
Computer Aided Logical Design: PR: EEL 4767C. Design, analysis and synthesis of sequential logic circuits and systems. Data path and controller design using a hardware description language.

EEL 5708 ECS-EECS 3(3,0)
High Performance Computer Architecture: PR: EEL 4767. Engineering of high performance computer systems. Memory, processor and control sub-systems design tradeoffs. Virtual and cache memory. Pipelining, vector computing.

EEL 5741C ECS-EECS 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 ECS-EECS 3(3,0)
Performance Analysis of Computer and Communication Systems: PR: EEL 4767C, STA 3032. Stochastic modeling and discrete-event simulation; Markov chains; networks of queues; SemiMarkov models; application to multiprocessor systems, switching and multi-user communications.

EEL 5771C ECS-EECS 3(2,3)
Engineering Applications of Computer Graphics: PR: EGN 3420 or C.I. Computer graphics in engineering applications. Laboratory assignments.

EEL 5820 ECS-EECS 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 ECS-EECS 3(3,0)
Pattern Recognition: PR: MAP 2302, EGN 3420. Graph-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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 6208 ECS-EECS 3(3,0)
Advanced Machines: PR: EEL 4205. Theory of electric machines using reference frame transformations: Basic principles of dc and ac machines, including induction and synchronous, are included. Simulation techniques for steady state and dynamic performance analysis will be used to analyze operation of electric machines with solid state drives.

EEL 6246 ECS-EECS 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 ECS-EECS 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 and control and power system stability.

EEL 6269 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Advanced Semiconductor Device II: PR: EEL 3306. First course in advanced semiconductor device physics and modeling. Main stream devices including junctions diale, bipolar transistor, and metal-oxide field-effect transistor.

EEL 6371 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Advanced Topics in Electromagnetics and Microwaves: PR: C.I. Advanced and current topics in EM fields, antennas, and microwaves.

EEL 6502 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Statistical Optics with Applications: PR: EEL 5441and EEL 5542, or C.I. Characterization of random optical waves with applications in communications, turbulence scattering, and imaging.

EEL 6565 ECS-EECS 3(3,0)
Radiation and Detection: PR: C.I. Radiometry, Planck radiators, spectrometers, photon-counting statistics, detector noise analysis, detector mechanisms.

EEL 6590 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 6619 ECS-EECS 3(3,0)
Nonlinear Robust Control and Applications: PR: EEL 5173 and EEL 6621. Stability, performance and robustness of nonlinear systems with uncertainties, Lyapunov-based designs, recursive designs and nonlinear optimal designs.

EEL 6621 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 3(3,0)
Engineering Data Reduction: PR: C.I. Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.

EEL 6875 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 ECS-EECS 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 5415C ECS-CEE 3(2,3)
Potable Water Treatment: PR: EES 4202C and 4111C. Engineering application of potable water chemistry involving coagulation, softening, filtration, corrosion, disinfection quality and drinking water.

EES 5605 ECS-CEE 3(3,0)
Outdoor Noise Control: PR: C.I. Community noise evaluation and control, legislative standards, instrumentation and measurement, abatement methods, and noise modeling.

EEX 5051 ED-E PE 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-E PE 3(3,0)
Planning Curriculum for Pre-kindergarten Children with Disabilities: Focus on curriculum planning; developmentally appropriate practices and implementation of individualized instruction for pre-kindergarten children with disabilities.

EEX 5750 ED-E PE 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.

EEX 6017 ED-E PE 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.

EEX 6061 ED-E PE 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

EEX 6065 ED-E PE 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.

EEX 6107 ED-E PE 3(3,0)
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.

EEX 6224 ED-E PE 3(3,0)
Observation and Assessment of Young Children: Study of formal and informal observation and assessment.

EEX 6266 ED-E PE 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.

EEX 6342 ED-E PE 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.

EEX 6524 ED-E PE 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.

EEX 6612 ED-E PE 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.

EEX 6863 ED-E PE 2-7(12-40)
Supervised Teaching Practicum with Exceptional Children: PR: Bachelor's degree, approved program, and C.I. Supervised observation and teaching of an exceptional student.

EGC 6437 ED-E PE 3(3,0)
Advanced Counseling Techniques: PR: MHS 6400, MHS 6401, or C.I. A presentation of advanced techniques, approaches and strategies to counseling and psychotherapy. Includes an experiential component.

EGI 6051 ED-IP 3(3,0)
Understanding the Gifted/Talented Student: A study of characteristics of the gifted/talented students; theories and research; identification procedures; special problems; educational forces.

EGI 6245 ED-IP 4(4,0)
Program Planning and Methodology for Gifted/Talented Students: A study of organization, curriculum, strategies, and activities for the gifted/talented student; diagnostic teaching; learning-teaching styles; instructional materials; individualized instruction.

EGI 6246 ED-IP 3(3,0)
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.

EGN 5035 ECS-ECS 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 ECS-IEMS 3(2,3)
Internal Combustion Engine Analysis and Optimization: PR: EGN 3343 or EGN 3358 or C.I. Internal combustion engine operating principles. Topics covered include engine design and operating parameters, combustion, thermodynamics, induction flow, and basic mathematical models.

EGN 5840 ECS-ECS 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 5855C ECS-IEMS 3(2,2)
Metrology: PR: EIN 4391C or C.I. Advanced topics in inspection and measurement with applications in engineering and manufacturing.

EGN 5858C ECS-IEMS 3(2,2)
Introduction to Rapid Prototyping: PR: Basic knowledge and/or experience in CAD/CAM technology or C.I. Topics fundamental to rapid prototyping and automated fabrication technologies. Actual design and fabrication of a part using in-house laboratory facilities.

EGN 6721C ECS-IEMS 3(2,3)
Experimental Methods for High Performance Engine Manufacturing: PR: EGN 5270C; ESI 6247; STA 5205 OR STA 6207; or C.I. This course examines the unique problems encountered when one-off manufacturing of high performance engines due to the high level of component interaction.

EIN 5108 ECS-IEMS 3(3,0)
The Environment of Technical Organizations: PR: Graduate status or C.I; EGN 4624 recommended. Presentation and investigation into the principles required to transform technologists into managers focusing on engineers, scientists, and other professionals providing services in technically-oriented organizations.

EIN 5117 ECS-IEMS 3(3,0)
Management Information Systems I: PR: C.I. The design and implementation of computer-based Management Information Systems. Consideration is given to the organizational, managerial, and economic aspects of MIS.

EIN 5140 ECS-IEMS 3(3,0)
Project Engineering: PR: Graduate standing or 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 5248C ECS-IEMS 3(2,2)
Ergonomics: PR: C.I. Applications of anthropometry, functional anatomy, mechanics, and physiology of musculoskeletal system concepts in the engineering design of industrial tools, equipments, and workstations.

EIN 5251 ECS-IEMS 3(3,0)
Human-Computer Interaction: Usability Evaluation: Usability paradigms/principles; cognitive walkthroughs; heuristic, review-based, model-based, empirical and storyboard evaluation; techniques; query techniques; laboratory techniques; and field study approaches.

EIN 5255 ECS-IEMS 3(3,0)
Interactive Simulation: PR: Post-Baccalaureate status or C.I. Introduction to significant topics relative to the development and use of simulators for knowledge transfer in the technical environment.

EIN 5317 ECS-IEMS 3(3,0)
Training Systems Engineering: PR: Senior, post-baccalaureate or graduate standing or C.I. How human performance deficiencies should be addressed from a systems engineering point of view. Manpower, personnel, and training considerations will be examined.

EIN 5356 ECS-IEMS 3(3,0)
Cost Engineering: Cost estimation and control of engineering systems throughout the product life cycle.

EIN 5368C ECS-IEMS 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, economics, justification.

EIN 5381 ECS-IEMS 3(3,0)
Engineering Logistics: Study of the logistics life cycle involving planning, analysis and design, testing, production, distribution, and support.

EIN 5388 ECS-IEMS 3(3,0)
Forecasting: PR: STA 5156. Industrial applications of forecasting methods with emphasis on microcomputer-based packages.

EIN 5392C ECS-IEMS 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 ECS-IEMS 3(2,2)
Tool Engineering and Manufacturing Analysis: PR: EIN 4411. Tool materials and design, tolerance technology, theory of metal cutting, and machineability.

EIN 5602C ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 1(1,0)
Seminar in Industrial Engineering: Doctoral Research: PR: C.I. Essential topics for doctoral research including research areas, skills, funding, proposals, ethics, mentors, seminars, societies, conferences, presentations, interviewing, grants, and publishing.

EIN 6215 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 3(3,0)
Human-Virtual Environment Interaction: Sense of presence, cybersickness, health and safety, integration of multimodal inputs and outputs, user differences, design metaphors, design constraints, social impact of the technology

EIN 6258 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 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 6322 ECS-IEMS 3(3,0)
Engineering Management: PR: EIN 5117, EIN 5356, and EIN 5140. 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 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 3(3,0)
Operations Engineering: PR: STA 5156, ESI 5316, or C.I. Methods and models for design, management, and control of operational processes in engineering and technical organizations. Includes considerations of quality, productivity, performance, benchmarking, constraints, and strategy.

EIN 6357 ECS-IEMS 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 ECS-IEMS 3(3,0)
Advanced and Nontraditional Manufacturing Processes: PR: EIN 4391C or C.I. Latest methods and developments in manufacturing process engineering.

EIN 6399 ECS-IEMS 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 6417 ECS-IEMS 3(3,0)
Precision Engineering: PR: EGN 5855C or C.I. Designing for high precision, machine accuracy, error reduction, thermal effects, coordinate measuring machines, and machine calibration with laser interferometry.

EIN 6418C ECS-IEMS 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 6425 ECS-IEMS 3(3,0)
Scheduling and Sequencing: Basic problems, models and techniques of scheduling. Emphasis on general job-shop scheduling problems. Analytical, graphical and heuristic methods are examined.

EIN 6524 ECS-IEMS 3(3,0)
Simulation Modeling Paradigms: PR: STA 5156 and one of ESI 5531, ESI 6546 or EIN 6645. Modeling techniques and designs for simulation, conditions for use, and implementation algorithms. Introduction to modeling theory and formalisms for computer simulation.

EIN 6529 ECS-IEMS 3(3,0)
Simulation Design and Analysis: PR: All required courses in Simulation Modeling and Analysis or Interactive Simulation and Training Systems curricula. Integrates all aspects of the curriculum in a project-focused capstone course. Involves design, development, implementation, validation, and evaluation of a simulation project.

EIN 6603 ECS-IEMS 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 ECS-IEMS 3(3,0)
Modeling and Simulation of Real-Time Processes: PR: EIN 5255. Mathematical modeling and computer simulation of engineering and scientific systems. Examination of hardware, software, and solution methods for real-time systems

EIN 6647 ECS-IEMS 3(2,2)
Intelligent Simulation: PR: EIN 6645 and EIN 6649C. The range of architectures and technologies relative to the simulation of intelligent processes

EIN 6649C ECS-IEMS 3(2,2)
Intelligent Tutoring Training System Design: PR: EIN 5317. A systems approach to building intelligent tutoring within training systems. Emphasis on removing the human instructor from the content training

EIN 6930 ECS-IEMS 3(3,0)
Manufacturing Engineering Seminar: PR: C.I. Presentation of latest manufacturing engineering technological advancements and related topics.

EIN 6933 ECS-IEMS 3(3,0)
Systems Acquisition: What the engineer needs to know about the systems acquisition process when dealing with government contracting agencies

EIN 6934 ECS-IEMS 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 ECS-IEMS 3(3,0)
Advanced Ergonomics Topics: PR: C.I. Seminar treatment of selected advanced topics in ergonomics

EIN 6936 ECS-IEMS 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

ELD 6248 ED-E PE 3(3,0)
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

ELD 6944 ED-E PE 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

EMA 5060 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 spectroscopics utilizing electron, ion and photon probes.

EMA 5140 ECS-MMAE 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 5317 ECS-MMAE 3(3,0)
Materials Kinetics: PR: Materials Thermodynamics. Topics include Arrhenious law, free energy, Johnson-Mehl equations, homogenous vs. heterogeneous reactions, mixing, electrodeposition, thermal analysis in kinetics. Graded S/U.

EMA 5326 ECS-MMAE 3(3,0)
Corrosion Science and Engineering: PR: EGN 3363. Electrochemical principles and applications to detecting and monitoring corrosion processes. Various forms of corrosion, their causes and control. Techniques of corrosion protection.

EMA 5504 ECS-MMAE 3(2,2)
Modern Characterization of Materials: PR: EMA 5104 or C.I. Techniques and operation of instrumentation (light, scanning, transmission, and auger microscopy) for the characterization of structure, defects, composition, and surfaces.

EMA 5505 ECS-MMAE 3(2,2)
Scanning Electron Microscopy: PR: EMA 5014 or C.I. A review of electron optics, beam/specimen interactions, image formation, x-ray analysis, specimen preparation, microelectronic applications and crystillography in the SEM

EMA 5517 ECS-MMAE 3(2,2)
Advanced Materials Characterization by Ion Beam Analysis: PR: EMA 5504 or C.I. Principle of interactions between ion beam and solid materials; sputtering and scattering theories; fundamentals and applications of secondary ion mass and Rutherford Backscattering spectrometric. May be repeated for credit.

EMA 5584 ECS-MMAE 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 reconstruction implants.

EMA 5610 ECS-MMAE 3(3,0)
Laser Materials Processing: PR: EGN 3343 or 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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.

EME 5051 ED-ED F 3(3,0)
Technologies of Instruction and Information Management: Theories and practices in utilizing instructional media and information technologies. Emphasis on new and emerging technologies and their effects on the school and media program.

EME 5052 ED-ED F 3(3,0)
Electronic Resources for Education: PR: EME 5051 or EME 6938 or C.I. Study and application of electronic resources available for education including techniques for locating, evaluating, and integrating them into the classroom.

EME 5054 ED-ED F 3(3,0)
Instructional Systems Technology: A Survey of Applications: Applications of instructional technology in settings other than public schools. Survey of facilities, programs, and services in business, industry, religion, government, higher education, and medical settings.

EME 5056 ED-ED F 3(3,0)
Communication for Instructional Systems-Process: Principles of written and oral communications for instructional technologists; development of assertiveness and interpersonal skills; conducting training programs for employees; creating hard copy materials.

EME 5057 ED-ED F 3(3,0)
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-ED F 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-ED F 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-ED F 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-ED F 1(1,0)
Teaching and Learning with Technology: Overview of technologies for teaching and for learning. Practical strategies for using technology in the classroom. (May be repeated 3 times for credit.)

EME 6053 ED-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 3(3,0)
Role of the Media Specialist in Curriculum and Instruction: PR: 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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-ED F 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.

EML 5025C ECS-MMAE 3(2,2)
Engineering Design Practice: PR: C.I. The course is designed to familiarize students with basic CAD/CAM solid modeling techniques in a project oriented environment. Students will construct part models, drawings, and assemblies. Use of in-house software.

EML 5060 ECS-MMAE 3(3,0)
Mathematical Methods in Mechanical, Materials and Aerospace Engineering: PR: MAP 2302. Vector field theory, generalized coordinates, complex variables, contour integration and LaPlace and Fourier transforms and inversions, variable coefficient ODEs and solution of PDEs for governing equations of heat transfer, ideal fluid flow, and mechanics.

EML 5066 ECS-MMAE 3(3,0)
Computational Methods in Mechanical, Materials and Aerospace Engineering: PR: EML 3034. Error Norms, interpolation and extrapolation, quadratures and adaptive quadratures, solutions of linear and nonlinear systems of equations, functional approximation, solution of ODE's and MWR.

EML 5105 ECS-MMAE 3(3,0)
Gas Kinetics and Statistical Thermodynamics: PR: EAS 4134 or EML 4703. Molecular and statistical viewpoint of gases and thermodynamics; Boltzmann collision integral, partition functions, non-equilibrium flows. Applications in thermo-fluid systems.

EML 5131 ECS-MMAE 3(3,0)
Combustion Phenomena: PR: EML 4703, EML 3101. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation and stability of premixed and diffusion flames.

EML 5152 ECS-MMAE 3(3,0)
Intermediate Heat Transfer: PR: EML 4142, EML 5713, 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 5211 ECS-MMAE 3(3,0)
Continuum Mechanics: PR: EML 3500 or EML 4703 or EAS 4200 or C.I. Introduction to tensors; deformation and strain; stress; balance laws, applications in Newtonian fluid dynamics and isotropic linear elasticity.

EML 5224 ECS-MMAE 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 ECS-MMAE 3(3,0)
Modal Analysis: PR: EML 3303, 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 ECS-MMAE 3(3,0)
Intermediate Mechanics of Materials: PR: EML 3500, EML 5060. Elements of elasticity. Failure theories. Bending and torsion. Thin plates. Energy principles. Thick-walled cylinders. Applications to design.

EML 5245 ECS-MMAE 3(3,0)
Tribology: PR: EGN 3365, EGN 3331 and EML 3701. 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 ECS-MMAE 3(3,0)
Intermediate Dynamics: PR: EML 3321. Dynamics of particles, rigid bodies, and distributed mass systems. Hamilton's principle. Lagrange's equations. Numerical methods. Mechanisms.

EML 5311 ECS-MMAE 3(3,0)
System Control: PR: EML 3312C; CR: EML 5060. Modern control theory for linear and non-linear systems; controllability and observability. Linear state feedback and state estimators, compensator design.

EML 5402 ECS-MMAE 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 ECS-MMAE 3(2,3)
Computer-Aided Design for Manufacture: PR: EGN 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 6085 ECS-MMAE 3(3,0)
Research Methods in MMAE: PR: EML 5060 and EML 5211. Research project is a MMAE option under supervision of an advisor. A project report is due at the end of the semester. May be repeated for credit.

EML 6104 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 6223 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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 ECS-MMAE 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.

EMR 6362 ED-E PE 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.

ENC 5214 AS-ENG 3(3,0)
Production and Publication Methods: Theory and practice of production and publication methods for technical writers.

ENC 5219 AS-ENG 3(3,0)
Graphics in Technical Writing: A study of the creation and editing of graphics in technical documents.

ENC 5237 AS-ENG 3(3,0)
Writing for the Business Professional: PR: Graduate status or C.I. A study of the major document designs for professionals in business, focusing on audience, purpose, style, arrangements, and content

ENC 5256 AS-ENG 3(3,0)
Gendered Rhetoric: PR: Graduate status or C.I. Questions women's and men's linguistic choices, the influence of medium and discipline of discourse, and consequences of status, power, and oppression

ENC 5267 AS-ENG 3(3,0)
Styles in Technical Writing: PR: Graduate standing or C.I. This course focuses on all the strategies necessary to write effective technical prose.

ENC 5306 AS-ENG 3(3,0)
Persuasive Writing: Theory and practice of writing persuasively.

ENC 5337 AS-ENG 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-ENG 3(3,0)
Proposal Writing: Theory and practice of writing proposals.

ENC 5425 AS-ENG 3(3,0)
Hypertext Theory and Design: PR: Postbaccalaureate standing or C.I. Theoretical and practical study of the uses and premises of hypertext.

ENC 5427 AS-ENG 3(3,0)
Hypertext: PR: Sr or Graduate standing. A study of the theory and practice of computer-driven hypertext.

ENC 5705 AS-ENG 3(2,1)
Theory and Practice in Composition: PR: Senior standing or C.I. Intensive study of theories of composition, with practical experience in the writing laboratory and in composition classes.

ENC 6217 AS-ENG 3(3,0)
Technical Writing: Study of language, style, mechanics, graphics, and management necessary for technical editing.

ENC 6244 AS-ENG 3(3,0)
Teaching Technical Writing: The techniques and theories of teaching technical writing.

ENC 6261 AS-ENG 3(3,0)
Technical Writing, Theory and Practice: A study of major trends in technical communication theory and the practices this theory generates.

ENC 6292 AS-ENG 3(3,0)
Project Management for Technical Writers: Managing a writing project from inception to production; planning, budgeting, personnel, writing, and editing.

ENC 6296 AS-ENG 3(3,0)
Computer Documentation: The theory and practice of producing software documentation from planning through production

ENG 5009 AS-ENG 3(3,0)
Methods of Bibliography and Research: Bibliographical, library and systematic approaches to research at the graduate level in language and literature.

ENG 5018 AS-ENG 3(3,0)
Literary Criticism: PR: Graduate standing or C.I. Historical survey of major critics from classical antiquity to the modern era.

ENL 5237 AS-ENG 3(3,0)
Eighteenth Century Studies: Reading, analysis, and discussion of literature in English:1660-1880.

ENL 5250 AS-ENG 3(3,0)
The Victorian Age: Poetry: PR: Graduate standing or C.I. Poets of the Victorian period, including Tennyson, the Brownings, Arnold, Hopkins, Hardy, the Rossettis, Emily Bronte, and others.

ENL 5256 AS-ENG 3(3,0)
Victorian Literature: PR: Graduate standing or C.I. A study of the major prose works and selected poetry of British Victorian writers.

ENL 5269 AS-ENG 3(3,0)
Nineteenth-Century Essays: PR: Graduate standing or C.I. English nonfiction prose of the 19th century.

ENL 5335 AS-ENG 3(3,0)
Studies in Shakespeare: PR: Senior standing or C.I. A selection of representative plays, with emphasis on Shakespeare's development as an artist: aesthetics of dramatic literature.

ENL 5347 AS-ENG 3(3,0)
The Age of Milton: PR: Senior standing or C.I. Emphasis on the non-dramatic works of John Milton. Selections from the non-dramatic works of other 17th-century figures.

ENL 6217 AS-ENG 3(3,0)
Gender and the Medieval Text: PR: Graduate status or C.I. Introduction to Medieval studies and gender studies together. Readings in middle and modern English

ENV 5071 ECS-CEE 3(3,0)
Environmental Analysis of Transportation Systems: PR: CWR 3201; EGN 3704. Prediction and abatement of pollution from transportation sources. Analysis techniques and environmental laws.

ENV 5116C ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 3(3,0)
Drinking Water Treatment: PR: ENV 4561. Drinking water treatment using existing and newly developed processes. Fe, Mn, As, NO3, DBP3, SOCs and other contaminants using oxidation, membranes, ion exchange, precipitation, sorption, and other processes.

ENV 5505 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 6058 ECS-CEE 3(3,0)
Particle Processes in Aquatic Systems: PR: EES 4202 or equivalent. Concepts of colloidal and interfacial processes in aquatic systems with their applications to environmental engineering.

ENV 6106 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 ECS-CEE 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 6515L ECS-CEE 3(1,6)
Biological Unit Operations and Processes Laboratory: PR: ENV 6016. Unit operations laboratory for biological processes in wastewater treatment, drinking water and remediation including obtaining biokinetic parameters in treatability studies biostability.

ENV 6519 ECS-CEE 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 ECS-CEE 3(3,0)
Industrial Waste Treatment: PR: ENV 4561. Theories, methods, unit operations of management, reduction, treatment, disposal of industrial wastes.

ENV 6616 ECS-CEE 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.

EPH 5335 ED-IP 3(3,0)
Physical and Sociological Implications of Handicapping Conditions: Overview of physical and sociological factors which may contribute to delayed learning or physical impairments in the exceptional populations. Physical interventions and first-aid practices are examined.

ESE 5214 ED-IP 3(3,0)
Secondary School Curriculum Improvement I: PR: Regular Certificate or C.I. Secondary School self studies for curriculum projects, accreditation reports, or staff development.

ESE 6235 ED-IP 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-IP 3(3,0)
Curriculum Evaluation: PR: ESE 6235 or an equivalent curriculum course.

ESI 5227 ECS-IEMS 3(3,0)
Total Quality Improvement: PR: STA 3032 or equivalent. Quality improvement (QI) tools and techniques, advanced QI techniques, quality improvement systems, total quality management concepts and implementation, planning and management tools, and case studies.

ESI 5236 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 3(3,0)
Operations Research: PR: STA 3032. Methods of operations research, including formulation for models and derivation of solutions; linear programming, network models queueing theory, simulation, and nonlinear optimization techniques.

ESI 5318 ECS-IEMS 3(3,0)
Military Applications of Operations Research: PR: ESI 4312 or ESI 5316. Course 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 ECS-IEMS 3(3,0)
Risk Assessment and Management: PR: STA 5156 or STA 3032. Problems and complexities involved in risk assessment and management. Selected methodologies are illustrated through realistic applications in engineering and the sciences.

ESI 5419C ECS-IEMS 3(2,2)
Engineering Applications of Linear and Nonlinear Optimization: PR: ESI 4312 or ESI 5316. Course 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 ECS-IEMS 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 ECS-IEMS 3(3,0)
Discrete Systems Simulation: PR: STA 3032, CGS 3422. Methods for performing discrete systems simulation, including network modeling, will be treated.

ESI 6217 ECS-IEMS 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 ECS-IEMS 3(3,0)
Quality Management: PR: STA 3032 or equivalent or C.I. Philosophy and concepts of quality management, organization for quality, quality cost, quality audits and corrective actions, tools and techniques for improvement.

ESI 6225 ECS-IEMS 3(3,0)
Quality Design and Control: PR: STA 3032 or equivalent. Concepts and methods for quality design and control, including statistical process control (SPC), control charts, process capability, product and process design and improvement, Taguchi methods, case studies. May be repeated for credit.

ESI 6247 ECS-IEMS 3(3,0)
Experimental Design and Taguchi Methods: PR: STA 3032 or ESI 4234. Introduction to Taguchi Concepts and Methodologies, use of design of experiments for quality design and improvement.

ESI 6336 ECS-IEMS 3(3,0)
Queueing Systems: PR: STA 5156. Analysis of queueing systems and waiting line problems using analytical and Monte Carlo methods. Laboratory assignments.

ESI 6358 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 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 6529 ECS-IEMS 3(3,0)
Advanced Systems Simulation: PR: ESI 5531. Combined networks discrete and continuous simulation, applications, statistical analysis and comparison of simulation languages.

ESI 6532 ECS-IEMS 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 6546 ECS-IEMS 3(3,0)
Process Simulation: PR: MAP 2302. Basic principles of steady state and dynamic process simulation. Software and hardware trends. Math approaches using ordinary differential equations and differential-algebraic equations.

ESI 6551C ECS-IEMS 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 ECS-IEMS 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 ECS-IEMS 6(2,10)
Operations Research Practicum: PR: C.I. Involves full-time participation and experience in an organization conducting operations research analyses.

EUH 5247 AS-HIST 3(3,0)
Colloquium in Europe from 1919-1939:

EUH 5285 AS-HIST 3(3,0)
Colloquium in Europe Since World War II:

EUH 5371 AS-HIST 3(3,0)
Colloquium in Spanish History:

EUH 5546 AS-HIST 3(3,0)
Colloquium: British History: PR: Graduate status. Selected topics in British history. May be repeated for credit when content is different. There is no standard syllabus because content is different with each offering.

EUH 5579 AS-HIST 3(3,0)
Colloquium in Soviet Russia: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics in Russian history, 1911-present.

EUH 5595 AS-HIST 3(3,0)
Colloquium in Czarist Russia: PR: Senior standing or graduate status. Selected topics on the literature of Russia under the Czars prior to 1917.

EUH 5608 AS-HIST 3(3,0)
Colloquium European Intellectual History: PR: Senior standing or C.I. Reading and class discussion of the literature on selected topics of European intellectual history.

EUH 6939 AS-HIST 3(3,0)
Seminar in European History: May be repeated for credit when content is different

EVR 5930 AS-BIOL 1(1,0)
Seminar in Conservation Issues: PR: C.I. Contemporary topics stressing a broad base of conservation issues will be the focus of this seminar series. May be repeated for credit, as course content will differ.

EVT 5260 ED-IP 2-4(2-4,0)
Cooperative Programs in Vocational Education: PR: Regular 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-IP 2-3(2-3,0)
Applied Clinical Teaching Techniques in Vocational Education: PR: Regular Certificate or C.I. Study and practice of clinical teaching methods, development of student performance assessment instruments, planning clinical learning experiences, and record keeping.

EVT 5561 ED-IP 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-IP 2-4(2-4,0)
Management of Vocational Programs: PR: Rank III 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-IP 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-IP 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-IP 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-IP 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 5067 AS-PSYCH 3(3,0)
Human Factors and Aging: PR: Post-baccalaureate, graduate status, or C.I. An overview of issues related to enhancing quality of life of elderly through the implementation of basic human factors principles in environmental and task design.

EXP 5208 AS-PSYCH 3(3,0)
Sensation and Perception: PR: C.I. A study involving human information processing with regard to physical and psychological variables in sensory and perceptual phenomena.

EXP 5256 AS-PSYCH 3(3,0)
Human Factors I: Survey of human factors literature. Introduction to topics including human capabilities and human interfaces with human-machine systems.

EXP 5257 AS-PSYCH 3(3,0)
Human Factors II: PR: EXP 5256 (HFI). The second in the series of basic human factors courses involving an in-depth examination of issues.

EXP 5258 AS-PSYCH 3(3,0)
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.

EXP 5445 AS-PSYCH 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 which influence learning and behavior.

EXP 6126 AS-PSYCH 3(3,0)
Psychoacoustics: PR: Graduate standing. The psychology, physics, and physiology of hearing and the auditory system.

EXP 6255 AS-PSYCH 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 the understanding of stress and performance effectiveness.

EXP 6506 AS-PSYCH 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 6541 AS-PSYCH 3(3,0)
Advanced Human-Computer Interaction: PR: EIN 6258 or C.I. Principles and guidelines of advanced human-computer interaction as they apply to a variety of complex Human-Machine Systems.

EXP 6938 AS-PSYCH 3(3,0)
Teaching Seminar: PR: C.I. Orientation to and supervision in teaching assigned courses.

EXP 6946 AS-PSYCH 8(0,12)
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.

FIN 5405 BA-FIN 3(3,0)
Financial Concepts: PR: Acceptance into the graduate program, ACG 5005 and ECO 5005 and ECO 5415 or equivalents. Effects of financial decisions upon the firm, interrelationships of these effects and alternatives available to financial managers in making these financial decisions.

FIN 6314 BA-FIN 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-FIN 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-FIN 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-FIN 3(3,0)
Business Valuation: PR: Graduate standing and FIN 6406. Theory and practice of estimating the value of small, closely held businesses.

FIN 6515 BA-FIN 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 6536 BA-FIN 3(3,0)
Seminar in Investments: PR: Graduate standing, FIN 6406, and FIN 6515. 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 6605 BA-FIN 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-FIN 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 7811 BA-FIN 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-FIN 3(3,0)
Investment Theory: PR: Admission to business doctoral program, FIN 7807, 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-FIN 3(3,0)
Directed Research in Finance: PR: FIN 7811, 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-FIN 3(3,0)
Seminar in Finance: PR: FIN 7811, FIN 7816, and C.I. Study of private sector financial theory, policy, empires, and decision making.

FLE 5870 AS-LANG 3(3,0)
Methods of Teaching Spanish: PR: Graduate standing or C.I. Topics to be examined include language proficiency and achievement, theoretical perspectives in methodology, and test design/evaluation as applicable for teaching Spanish language and culture.

FLE 5875 AS-LANG 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.

FSS 6365 HM-HOSP 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-MAR 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-FIN 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-ECON 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-ECON 3(3,0)
Business Ph.D. Foundations: PR: Admission to the Ph.D. Program. A multidisciplinary introduction to doctoral-level study of business administration.

GEY 5648 AS-PSYCH 3(3,0)
Gerontology: An Interdisciplinary Approach: PR: Post-baccalaureate or graduate status or C.I. The study of aging will be presented from man interdisciplinary and multidisciplinary approach spanning the social sciences and health.

HFT 6245 HM-HOSP 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 HM-HOSP 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 HM-HOSP 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.

HFT 7258 HM-HOSP 3(3,0)
Strategies and Tactics: Lodging: PR: Admission to Ph.D. program in Business Administration. Extensive review of the theoretical and empirical literature related to current strategies and operations of lodging enterprises throughout the world.

HFT 7546 HM-HOSP 3(3,0)
Strategies and Tactics: Guest Service Management: PR: Admission to Ph.D. program in Business Administration. Comprehensive review of the theory, methods, and research findings related to the management of guest service organizations, with special emphasis on hospitality and tourism enterprises.

HFT 7715 HM-HOSP 3(3,0)
Strategies and Tactics: Travel and Tourism: PR: Admission to Ph.D. program in Business Administration. An in-depth investigation of the various components of travel and tourism focusing on the role of policy in their operation and development.

HFT 7876 HM-HOSP 3(3,0)
Strategies and Tactics: Foodservice: PR: Admission to Ph.D. program in Business Administration. Extensive review of the theoretical and empirical literature related to current strategies and operations of lodging enterprises throughout the world.

HIS 5158 AS-HIST 3(3,0)
Classic and Contemporary Historical Thought: PR: Graduate Standing. Course will explore work of important historians influenced by social theory to gain an understanding of their main concepts.

HIS 6159 AS-HIST 3(3,0)
Historiography: Selected topics in the study of history. May be repeated for credit with consent of instructor

HIS 6942 AS-HIST 3(3,0)
Internship: PR: C.I. The graduate internship in Archival Arrangement is a one semester course in which students seeking their master's degree in history learn principles of managing and preserving manuscript collections.

HIS 6946 AS-HIST 3(3,0)
Teaching Practicum: Student observation, participation, direction, and leadership in a college survey course

HSA 5198 HPA-H&PT 3(3,0)
Information Systems and Computer Applications in Medicine: PR: CGS 2100 or equivalent. Overview of health information systems, with an emphasis on computer applications. Discussion of software and hardware requirements.

HSA 6116 HPA-H&PT 3(3,0)
Introduction to Health Systems: PR: Graduate status. Comparison of U.S. Health Services System with health delivery systems of other nations.

HSA 6126 HPA-H&PT 3(3,0)
Principles of Managed Care: PR: PHC 6160. Components of managed care, contract requirements, provider practice patterns, and financing elements.

HSA 6185 HPA-H&PT 3(3,0)
Health Care Organization and Management I: PR: HSC 6636. Study of health care organizations, including modern management, organizational structure, systems control, human performances, planning, and leadership.

HSA 6188 HPA-H&PT 3(3,0)
Health Care Organization and Management II: PR: HSA 6185, HSA 5148, HSC 6911. Emphasis on planning, development, marketing approaches, and problem solving using computer methods.

HSA 6385 HPA-H&PT 3(3,0)
Quality Management in Healthcare: PR: HSA 5198 and HSC 6636. Mechanisms of enhancing quality of service and care.

HSA 6505 HPA-H&PT 3(3,0)
Risk Management in Health Care: PR: Graduate status. Course explores risk management and its specific applications to the health services field. Focus: insurance; quality assurance; dispute resolution; clinical records management.

HSA 6508 HPA-H&PT 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 6510 HPA-H&PT 3(3,0)
Special Issues in Practice Management: PR: HSA 6508, HSA 6188, HSA 6132, or PHC 6160. Methods of dealing with market driven & government initiated changes in medical practices.

HSA 6754 HPA-H&PT 3(3,0)
Statistical Quality Tools in Healthcare Management: PR: HSA 6505, HSA 4502 or C.I. Computer based course focusing on statistical quality tools, such as cause and effect diagrams, pareto and control charts, and root cause analysis, that used in the management of healthcare organizations. Accreditation software and outcome systems presented.

HSA 6815 HPA-H&PT 2-6(0,20)
Practicum in Health Care Management: PR: Graduate status or C.I. Supervised practicum in health care institution management.

HSA 6925 HPA-H&PT 3(3,0)
Capstone in HSA: PR: HSA 5198, HSA 6185, HSA 6188, HSA 6126, HSC 6636, HSA 6911, PHC 6160, PHC 6420. Prepares students for comprehensive examination experience

HSC 5595 HPA-H&PT 3(3,0)
AIDS: A Human Concern: Focus on epidemiology, transmission, prevention, legal and health care issues, economic impact, psychosocial aspects, sexuality, substance abuse, ethics, hotlines, referral services and the decision making process.

HSC 6132 HPA-H&PT 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 6175 HPA-H&PT 3(3,0)
Advanced Trends in Health Care Finance Theory: PR: C.I. or PHC 6160. Public health funding philosophies; evolving market strategies of insurers and managed care organizations; macroeconomic implication of alternative financing policies.

HSC 6247 HPA-H&PT 3(3,0)
Community Health Education: Development and evaluation of community health education programs within voluntary health organizations. HMOs, hospitals, and academic institutions

HSC 6306 HPA-H&PT 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.

HSC 6402 HPA-H&PT 3(3,0)
Environmental Health: PR: Graduate status or C.I. Recognition and evaluation of control problems arising from environmental contamination, which includes safe water supply, waste disposal, and food resources.

HSC 6412 HPA-H&PT 3(3,0)
Epidemiology: PR: Graduate status or C.I. A study of the distribution and determinants of diseases and injuries in human populations.

HSC 6513 HPA-H&PT 3(3,0)
Principles and Practice of Medicine: PR: Graduate status or C.I. A comprehensive survey of medicine.

HSC 6568 HPA-H&PT 3(3,0)
Issues in Geriatric Health Care: Identification of the health care needs of the elderly and the services required to meet them. Analysis of the current issues, problems, and trends in geriatric health

HSC 6575 HPA-H&PT 3(3,0)
Principles of Preventive Medicine: Total concept of health care including methods of screening, diagnosis, treatment, rehabilitation, and promotion of health in diverse populations

HSC 6605 HPA-H&PT 3(3,0)
Health and Society: PR: Graduate status or C.I. Understanding health and illness as defined by patients, providers, and other persons in the social system.

HSC 6636 HPA-H&PT 3(3,0)
Issues and Trends in the Health Professions: Exploration of current status, issues, problems, and future trends in the practice and education of health professions

HSC 6815 HPA-H&PT 2-6(0,20)
Practicum in Health Science Education: PR: Graduate status or C.I. Supervised practicum in academic, clinical, or community instructional program.

HSC 6911 HPA-H&PT 3(3,0)
Scientific Inquiry in the Health Profession: PR: Graduate status or C.I. Research design and statistical evaluation in health professions.

HSC 7930 HPA-H&PT 3(3,0)
Special Issues in Health Services Administration: PR: Admission to Ph.D. program or C.I. Selected problems in health services administration. Course may be repeated with different content. May be repeated for credit.

HSC 8118 HPA-H&PT 3(3,0)
Advanced Health Care Organization Theory: PR: Admission to Ph.D. program or C.I. NEw theoreis of health care management, emphasizing organizational structure, health care leadership, and information nmanagement in health care decision-making.

HUN 5937 HPA-H&PT 3(3,0)
Nutrition and Exercise Physiology: This course correlates human nutrition with exercise physiology. Nutritional concepts are related to human performance and fitness

IDS 5145 ECS-ECS 3(3,2)
Interdisciplinary Course in Simulation: PR: Calculus, matrix algebra, probability & statistics, high level programming language. An interdisciplinary course on simulation with hands-on experience in discrete event modeling, continuous modeling & shared virtual world. May be repeated for credit.

IDS 6308 AS-LS 3(3,0)
Ways of Knowing: PR: Admission to the Master's program in Liberal Studies. Theoretical models of knowledge as exemplified by various disciplines and interdisciplinary activity. Focus on epistemological issues raised in part and present works.

IDS 6351 AS-LS 3(3,0)
Critical Thinking and Writing: PR: IDS 6308 and IDS 6669. Focus on refining critical understanding of interdisciplinary research and organization and presentation of interdisciplinary ideas, building on first two core courses

IDS 6669 AS-LS 3(3,0)
Interdisciplinary Approaches to Research: PR: IDS 6308. Interdisciplinary survey of methodologies used in academic disciplines. Basic concepts, research paradigms, and contemporary issues explored.

IDS 6933 ED-IP 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-IP 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-IP 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-IP 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.

INP 5825 AS-PSYCH 3(3,0)
Human-Computer Interface (HCI) Design: A team approach: PR: Graduate standing or C.I. Interdisciplinary approach to human-computer interface design, including behavior, engineering, computer science, and instructional aspects. Tools and techniques for team development and the evaluation of software for usability

INP 6058 AS-PSYCH 3(3,0)
Job and Task Analysis: PR: C.I. A review of current theory and practice in the collection, quanitification, analysis, manipulation and summarization of position, job and task data.

INP 6088 AS-PSYCH 3(3,0)
Applied Problems in Industrial/ Organizational Psychology: PR: Admission to I/O Psychology Master's Program or C.I. A review of applied behavioral problems recurrent in the professional practice of industrial/organizational psychology Graded S/U.

INP 6094 AS-PSYCH 3(3,0)
Current Topics in Industrial/Organizational Psychology: PR: Admission into the I/O Psychology Master's Program or C.I. A review of the theoretical and empirical literature relevant to selected topics in Industrial/Organizational Psychology.

INP 6215 AS-PSYCH 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.

INP 6317 AS-PSYCH 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.

INP 6605 AS-PSYCH 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.

INP 6946 AS-PSYCH 3(1,6)
Industrial Psychology Practicum I: PR: Graduate admission and C.I. Supervised placement in an applied setting.

INP 6947 AS-PSYCH 3(3,0)
Industrial Psychology Practicum II: PR: Graduate admission and C.I. Supervised research in industry. May be repeated for credit.

INR 6007 AS-POLS 3(3,0)
Seminar in International Politics: Introduces the student to the advances in international relations theory and research through a broad sampling of approaches and methods

INR 6086 AS-POLS 3(3,0)
International Public Policy: PR: Graduate standing. Examines endogenous and exogenous variables involved in selected issues in the arena of international public policy

ISM 5021 BA-MIS 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-MIS 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-MIS 3(3,0)
Information Resources Management: PR: ISM 5021, MAN 5050, MAN 5501, and graduate standing. This course provides an investigate of issues relevant to effectively managing IT activities and the challenges facing IT managers and some potential solutions to deal with them.

ISM 6395 BA-MIS 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.

ISM 7029 BA-MIS 3(3,0)
Doctoral Seminar in MIS: PR: ISM 7207. Examination of impact of IT, IT-based innovation, and IT management in organizations.

LAE 5195 ED-IP 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 inservice components to public schools.

LAE 5295 ED-IP 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-IP 3(3,0)
Methods of Elementary School Language Arts: PR: EDG 4323. Principles, procedures, organization and current practices in reading, writing, listening, and talking.

LAE 5337 ED-IP 3(3,0)
Literacy Strategies for Middle and Secondary Teaching: PR: Graduate standing or C.I. Designed to assist teachers and graduate students in understanding the adolescent learner. This course will examine theory, strategies, research, resources and implementation options for effective middle and secondary literacy programs.

LAE 5367 AS-ENG 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-ENG 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-IP 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-IP 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-IP 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-IP 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 6366 ED-IP 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 6417 ED-IP 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 6616 ED-IP 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-IP 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 6792 ED-IP 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.

LAH 5713 AS-HIST 3(3,0)
Colloquium in U.S.-Latin American Relations: PR: Senior Standing and C.I. The course will analyze U.S.-Latin American relations from an historical perspective. It will be presented through readings and discussion of selected materials.

LAH 6938 AS-HIST 3(3,0)
Seminar in Latin American History: May be repeated for credit when content is different.

LEI 6443 ED-IP 3(2,1)
Recreation: A comprehensive study of public, private, and school recreation programs.

LIN 5137 AS-ENG 3(3,0)
Linguistics: PR: Senior or graduate standing or C.I. Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and para-linguistics.

LIN 5675 AS-ENG 3(3,0)
English Grammar and Usage: PR: Graduate standing and/or C.I. An overview of modern grammar, including structural, transformational, and rhetorical grammar, along with an examination of controversial usage issues.

LIN 5705 HPA-COMD 3(3,0)
Psycholinguistics: PR: Graduate status or C.I. Foundations of language in affective consciousness and the human nervous system. Pragmatic analysis of word meaning and its precise scientific measurement. Implications for communicative disorders.

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

LIT 5028 AS-ENG 3(3,0)
Form and Theory of Short Story: PR: Graduate status or C.I. Evolving forms and theories of short fiction and the implications of form and theory.

LIT 5039 AS-ENG 3(3,0)
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.

LIT 5097 AS-ENG 3(3,0)
Studies in Contemporary Fiction: PR: Senior standing or C.I. Fiction in the last 20 years in the United States and Britain. May be repeated for credit when content is different

LIT 5250 AS-ENG 3(3,0)
The Victorian Age: Poetry: PR: Graduate standing or C.I. Poets of the Victorian period, including Tennyson, the Brownings, Arnold, Hopkins, Hardy, the Rossettis, Emily Bronte, and others.

LIT 5269 AS-ENG 3(3,0)
Nineteenth-Century Essays: PR: Graduate standing or C.I. English non-fiction prose of the 19th century.

LIT 5309 AS-ENG 3(3,0)
Popular Culture and Media: PR: Graduate standing or C.I. Study of contemporary media and the literature of popular culture.

LIT 5366 AS-ENG 3(3,0)
The Romantic Revolt (19th Century Literature): PR: Senior standing or C.I. The romantic revolt in poetry and prose; English, American and Continental literature from 1798 to 1832.

LIT 5387 AS-ENG 3(3,0)
Captives, Housewives, and Coquettes: PR: Graduate status or C.I. Course considers early American women's literature from 17th to 19th centuries

LIT 5389 AS-ENG 3(3,0)
Studies in Gender and Fiction Writing: PR: Graduate status or C.I. Graduate study of gender's implications for teaching and practice of fiction writing

LIT 5556 AS-ENG 3(3,0)
Advanced Feminist Theories: PR: Graduate status or C.I. Graduate level Feminist Theories from "French Feminism" to "Critical Race Theories."

LIT 6009 AS-ENG 3(3,0)
Literary Genres: PR: Graduate standing. Provenance, structure, and critical problems in a specific genre such as tragedy, the epic, the novel, or the Iyric. May be repeated for credit when content is different.

LIT 6105 AS-ENG 3(3,0)
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 6246 AS-ENG 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.

LIT 6365 AS-ENG 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.

MAA 5210 AS-MATH 4(4,0)
Topics in Advanced Calculus: PR: MAA 4226 or equivalent. Topics in multivariable calculus, including limits, continuity, integration, differentiation, Taylor's theorem, inverse and implicit function theorems

MAA 5405 AS-MATH 3(3,0)
Complex Variables: PR: MAC 2313 or C.I. Analytic functions. Integration in the complex plane. Laurent series and residue calculus. Inversion of Laplace transformations. Conformal mappings. Applications in engineering and the physical sciences.

MAA 5416 AS-MATH 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, Stoke and Gauss' theorems.

MAA 6306 AS-MATH 3(3,0)
Real Analysis: PR: MAA 5210. Sets, function spaces, Lebesque measure, Lebesque-Stieltjes measure, measurable functions, convergence notions, general measure and integration, Radon-Nikodym theorem.

MAA 6404 AS-MATH 3(3,0)
Complex Analysis: PR: MAA 5405, MAP 4307, MAA 4226, or C.I. Review of complex variable theory; advanced topics chosen from conformal mapping and its applications, boundary behavior, numerical techniques; singular integrals.

MAA 6508 AS-MATH 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-MATH 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-MATH 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-MATH 3(3,0)
Finite Fields and Coding Theory: PR: MAP 5311or C.I. General theory of fields, existence, construction and implementation of finite fields, polynomials over GF(pn), solving equations: emphasizing fields of characteristic 2.

MAE 5318 ED-IP 3(3,0)
Current Methods in Elementary School Mathematics: PR: EDG 4323. Strategies of instruction of computation and concepts of number, geometry, and measurement; instructional materials. (Meets Elementary Education certification requirements.)

MAE 5356 ED-IP 3(3,0)
Teaching General Mathematics in the Secondary School: PR: MAE 3330 or C.I. This course addresses specific techniques for developing general mathematics skills and concepts beginning in grade 6. Problem solving, motivation, and innovative methods are explored.

MAE 5395 ED-IP 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 5935 AS-MATH 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

MAE 6145 ED-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 3(3,2)
Seminar on Research in Mathematics Education: PR: Doctoral standing.

MAN 5050 BA-MAN 2(2,0)
Management Concepts: PR: Acceptance in MBA program. Theory and practice of managing organizations to include planning, organizational theory, human behavior, and control.

MAN 5501 BA-MAN 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 6116 BA-MAN 3(3,0)
Managing a Diverse Workforce: PR: MAN 6285. Course designed to provide students with an understanding of managing a diverse workforce.

MAN 6158 BA-MAN 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-MAN 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 6285 BA-MAN 3(3,0)
Change Management: PR: Graduate standing or C.I. Course designed to familiarize students with change management processes and interventions.

MAN 6286 BA-MAN 3(3,0)
Advanced Change Management: PR: MAN 6285. An in-depth examination of change management processes with emphasis on strategic change and innovation.

MAN 6296 BA-MAN 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-MAN 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-MAN 3(3,0)
Human Resources Management: PR: Graduate standing or C.I. Course is designed as an overview of human resources practices, techniques and strategies.

MAN 6311 BA-MAN 3(3,0)
Advanced Topics in Human Resources Management: PR: MAN 6305 or C.I. An in-depth analysis of current human resource issues related to the attraction, management, and retention of human capital.

MAN 6323 BA-MAN 3(3,0)
Human Resources Information Systems: PR: MAN 6305 or C.I. Planning, designing, selecting, implementing, and maintaining human resource information systems.

MAN 6325 BA-MAN 3(3,0)
Applied Research Tools: PR: MAN 6305 and MAN 6285. Development of applied qualitative and quantitative research skills for collecting, analyzing and reporting data to organizations, within the context of managing human resources and change.

MAN 6385 BA-MAN 3(3,0)
Strategic Human Resources Management: PR: MAN m6305 or C.I. Examination of the strategic orientation of human resources management and the development of the human resources architecture aligned with the organization's strategy and task environment.

MAN 6395 BA-MAN 3(3,0)
Management Development and Coaching: PR: Graduate standing or C.I. Course is designed to prepare students to understand the nature and role of management development with an emphasis on executive coaching.

MAN 6448 BA-MAN 3(3,0)
Conflict Resolution and Negotiation: PR: Graduate standing or C.I. Theory and processes of negotiation in a variety of settings, with relevance to the broad spectrum of negotiation faced by managers.

MAN 6449 BA-MAN 3(3,0)
Alternative Dispute Resolution: PR: Graduate standing or C.I. Theory and practice of conciliation, mediation, fact finding, and arbitration as alternatives to business litigation.

MAN 6515 BA-MAN 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-MAN 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-MAN 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 (Al) knowledge-based expert systems technology to problem solution needs of business and other disciplines.

MAN 6565 BA-MAN 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-MAN 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 direction of a business firm from the integrated viewpoint of a CEO.

MAN 6915 BA-MAN 3(3,0)
Applied Field Project: PR: MAN 6325 or C.I. Supervised filed research project addressing a specific organizational

problem or approved practicum within an organization.

MAN 7207 BA-MAN 3(3,0)
Organization Theory: PR: Doctoral status. Study of impact of environment, technology, size and innovation on organization sturucture, functions and development.

MAN 7275 BA-MAN 3(3,0)
Organizational Behavior: In-depth review of the classic and modern organizational behavior research literature, which deals with management of individual and group behavior in organizations.

MAN 7776 BA-MAN 3(3,0)
Business-level Strategic Management: PR: Admission to doctoral program and C.I. In-depth review of the classic and modern business-level strategy research literature, which deals with topics such as competitive strategy, industry analysis and the strategy process.

MAN 7777 BA-MAN 3(3,0)
Corporate-level Strategic Management: PR: Admission to doctoral program and C.I. In-depth review of the classic and modern corporate-level strategy research literature, which deals with topics such as diversification, cooperative alliances and acquisitions strategies.

MAN 7900 BA-MAN 3(3,0)
Directed Readings in Management: PR: Admission to Doctoral program and C.I. Directed readings in the area of Management concentration, as determined by the student's doctoral study advisory committee. May be repeated for credit.

MAP 5117 AS-MATH 3(3,0)
Mathematical Modeling: PR: STA 4321, MAP 4363 or C.I. Introduction to modeling in industrial and scientific applications; techniques for studying statistical and deterministic models.

MAP 5336 AS-MATH 3(3,0)
Ordinary Differential Equations and Applications: PR: MAP 2302 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-MATH 3(3,0)
Applied Numerical Mathematics: PR: MAP 2302 or C.I. Classical topics or numerical analysis and their applications, Romberg integration, Richardson extrapolation, Gaussian quadrature schemes.

MAP 5396 AS-MATH 3(3,0)
Splines and Data Fitting: PR: MAS 3106, MAS 3105, MAP 2302, or C.I. Univariate splines and their application to data fitting. Applications to regression analysis, differential and integral equations. Algorithms to use different types of splines in computation.

MAP 5404 AS-MATH 3(3,0)
Mathematical Foundations for Industrial Engineering and Operations: PR: MAP 2302, 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-MATH 3(3,0)
Applied Mathematics I: PR: MAP 2302 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-MATH 3(3,0)
Special Functions: PR: MAP 2302 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-MATH 3(3,0)
Advanced Mathematics for Engineers: PR: MAP 2302 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-MATH 3(3,0)
Linear and Nonlinear Waves I: PR: MAP 2302, MAP 4363, or C.I. Equations of motion in inviscous and viscous fluids, energy equation and energy flux, linear theory of gravity and capillary-gravity waves, variational principles for water waves.

MAP 5931 AS-MATH 1(1,0)
Research Seminar: Four instructors will introduce the students to a research area by presenting necessary background and presenting current investigations. Different branches of mathematics will be presented for a sense of diversity.

MAP 6110 AS-MATH 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-MATH 3(3,0)
Mathematical Statistics: PR: MAP 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-MATH 3(3,0)
Asymptotic Methods in Mathematical Statistics: PR: MAP 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-MATH 3(3,0)
Introduction to Nonlinear Dynamics: PR: MAP 5336, 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-MATH 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 Stewar's method, search methods for unconstrained optimization.

MAP 6356 AS-MATH 3(3,0)
Partial Differential Equations: PR: MAP 4364 or MAP 5435 or equivalent. First and second order linear equations; classification; analytical methods including Green's functions and integral representations; introduction to nonlinear equations; applications.

MAP 6386 AS-MATH 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-MATH 3(3,0)
Applied Mathematics II: PR: MAP 3302 and MAA 5405 or equivalent. Asymptotic series, asymptotic expansion of integrals, regular and singular perturbation expansions, boundary layer, multiple scales, WKB theory.

MAP 6419 AS-MATH 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-MATH 3(3,0)
Generalized Functions: PR: MAP 6506 or 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-MATH 3(3,0)
Integral Equations: PR: MAA 5405 or C.I. Successive approximations, Volterra equations, Fredholm theory, Hilbert-Schmidt theory, Newmann series, singular integral equations, the Riemann-Hilbert problem.

MAP 6424 AS-MATH 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-MATH 3(3,0)
Advanced Complex Analysis and Applications: PR: MAA 6404 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-MATH 3(3,0)
Approximation Techniques: PR: MAA 4227, 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-MATH 3(3,0)
Orthogonal Polynomials and Digital Signal Processing: PR: MAA 6306, MAA 6404, or C.I. Orthogonal polynomials, Szego's orthogonal polynomials, Toeplitz matrix, Caratheodory functions and Schur functions, Levinson algorithim, associated Szego polynomials.

MAP 6465 AS-MATH 3(3,0)
Wavelets and Their Applications: PR: MAP 4364, MAA 6508, or C.I. Continuous wavelet transforms, discrete wavelet transforms, frams, Zak transform, multiresolution analysis, orthonormal bases of compactly supported wavelets, spline wavelets.

MAP 6506 AS-MATH 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-MATH 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-MATH 3(3,0)
Fractal Image Compression: PR: MTG 4302, MAA 5416, or MAA 6306, or C.I. Hausdorff metric H, Hutchenson maps, contraction maps on H, the collage theorem, measures and IFS with probabilities, fractal image compression, Huffman codes, addresses on fractals.

MAP 6938 AS-MATH 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-MATH 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-MATH 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.

MAR 5055 BA-MAR 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-MAR 3(3,0)
Small Business Consulting: PR: Graduate status, all foundation classes, FIN 6406, MAR 6816. Provides students opportunity to apply knowledge learned in classroom to real business situations. Open to undergraduate majors in the College of Business Administration with approval of the department chair.

MAR 6077 BA-MAR 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-MAR 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-MAR 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-MAR 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-MAR 3(3,0)
Marketing Policy: PR: Graduate standing and MAR 5055 or equivalent. Marketing policy formulation and decision making with respect to planning, pricing, promotion, and distribution.

MAR 6845 BA-MAR 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.

MAR 7575 BA-MAR 3(3,0)
Seminar in Consumer Behavior: PR: ECO 7423. Provide doctoral students with a broad exposure to the literature of consumer behavior theories and methods.

MAR 7638 BA-MAR 3(3,0)
Seminar in Marketing Theory, Scaling, and Measurement: PR: ECO 7423. Provide doctoral students with a foundation in marketing theory, scaling, and measurement.

MAR 7666 BA-MAR 3(3,0)
Seminar in Marketing Models: PR: ECO 7423 and ECO 7425. Course provides an overview of mathematical models utilized in Marketing contexts.

MAR 7807 BA-MAR 3(3,0)
Seminar in Marketing Strategy: PR: ECO 7423. Provide doctoral students with a broad exposure to the literature surrounding marketing strategy and management issues.

MAS 5145 AS-MATH 3(3,0)
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.

MAS 5311 AS-MATH 3(3,0)
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.

MAS 6463 AS-MATH 3(3,0)
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-Linden-strauss theorem, copulas, Frechet bounds, dependence of random variables, Markov operators.

MCB 5205 HPA-M&M 3(3,0)
Infectious Processes: PR: MCB 3020C or C.I. Discussion of current theories of the infectious process and the response of host cells and tissue to infection.

MCB 5225 HPA-M&M 3(3,0)
Molecular Biology of Disease: PR: Graduate standing or C.I. An in-depth study of the molecular biological mechanisms of diseases in experimental animal models and human populations

MCB 5505 HPA-M&M 3(3,0)
Virology: PR: MCB 3020C and BCH 4053. Nature of viruses and other intra-cellular parasites including structure, nomenclature propagation, isolation, propagation, and identification.

MCB 5527 HPA-M&M 3(3,0)
Genetic Engineering and Biotechnology: PR: PCB 3523 and PCB 4524 or C.I. Principles of Genetic Engineering/ Biotechnology in Bacteria, Yeast, Viral, Mammalian, Non-mammalian systems, Plants, including human gene therapy, novel pharmaceuticals, recombinant proteins will be discussed in depth.

MCB 5654 HPA-M&M 3(3,0)
Applied Microbiology: PR: MCB 3020C or C.I. Microbial biochemistry of industrial processes including: economics, screening, scale up, quality control and applied genetics.

MCB 5932 HPA-M&M Variable
Current Topics in Molecular Biology: PR: Graduate standing or C.I. Selected current research topics from the primary literature reflecting recent advances in molecular biology. May be repeated for credit.

MCB 6226 HPA-M&M 3(3,0)
Molecular Diagnostics: PR: PCB 3523, PCB 4524 and MCB 5225 or C.I. A course in basic laboratory skills used in molecular genetic or clinical diagnostic laboratories for detecting genetic diseases.

MCB 6407C HPA-M&M 5(3,4)
Laboratory Methods in Molecular Biology: PR: PCB 4524 and MCB 4404, or C.I. Experimental techniques and design in laboratory biological research.

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

MHS 5005 ED-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 3(3,0)
Ethical and Legal Issues: Studies of ethical standards and legal issues in counseling and other human service professions.

MHS 6800 ED-E PE 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-E PE 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-E PE 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.

MLS 5710 HPA-M&M 3(3,0)
Current Concepts in Laboratory Management: Overview of current administration and supervision concepts in a clinical laboratory to include laboratory planning, personnel administration, and financial management.

MLS 6940 HPA-M&M 3(3,0)
Supervision and Administration in the Laboratory: PR: Graduate standing or C.I. Management strategies and skills in the laboratory setting. Explores motivation theory, communication issues, ethics, personnel administration and regulatory agencies.

MLS 6941 HPA-M&M 3(3,0)
Principles of Laboratory Education and Training: PR: Graduate standing or C.I. Application of learning theories and curriculum planning to the laboratory didactic and practical teaching environment. To include goal and task analysis, performance objectives and evaluation mechanisms.

MLS 6942 HPA-M&M 3(3,0)
Advanced Specialization in Immunonematology: Theory: PR: graduate standing or C.I. Theoretical aspects of blood collection, testing, storage and transfusion of blood, red cell antigen genetic and immunological theory, transfusion therapy and serological characteristics of antibodies.

MLS 6943 HPA-M&M 3(3,0)
Advanced Specialization in Immunohematology: Practice: PR: Acceptance in the Specialist in Blood Banking program. Supervised practice in donor recruitment, phlebotomy, donor testing. Component preparation, HLA typings, transfusion service and management in the community blood center.

MMC 6202 AS-COMM 3(3,0)
Legal and Ethical Issues for Communication: A study of social, ethical and legal issues for Communications practitioners and the impact on media consumers.

MMC 6402 AS-COMM 3(3,0)
Mass Communication Theory: A study of mass communication theory and research traditions.

MMC 6403 AS-COMM 3(3,0)
Crisis Public Relations: PR: C.I. Examines the management of crisis situations from a public relations perspective, as well as how to manage issues to prevent them from becoming crises.

MMC 6407 AS-COMM 3(3,0)
Visual Communication Theory: A study of the visual world as it relates to theories of visual interpretation.

MMC 6445 AS-COMM 3(3,0)
Mass Media Research I: Quantitative approaches to mass communication research.

MMC 6446 AS-COMM 3(3,0)
Mass Media Research II: Qualitative approaches to mass communication research.

MMC 6567 AS-COMM 3(3,0)
Seminar in New Media: A study of the development and convergence of new technologies and their mediation.

MMC 6600 AS-COMM 3(3,0)
Media Effects and Audience Analysis: A study of the effects of communication on society emphasing the research in media effects.

MMC 6606 AS-COMM 3(3,0)
Advertising and Society: A study of the social and ethical impact of advertising focusing on the development and presentation of advertising messages.

MMC 6607 AS-COMM 3(3,0)
Communication and Society: The importance of the mass media, their structure, role, and problems.

MMC 6612 AS-COMM 3(3,0)
Communication and Government: A study of the relationship between the media and government.

MUE 5695 ED-IP 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-IP 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-IP 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-IP 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.)

MUS 5526 AS-MUSIC 3(3,0)
Music and Technology: PR: Graduate student. The emergence of technology in music including MIDI, CD ROM, and the high-tech music classroom.

MUT 5381 AS-MUSIC 3(3,0)
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 20th century.

MVB 5451 AS-MUSIC 2(1,0)
Trumpet V: PR: C.I. May be repeated for credit.

MVB 5452 AS-MUSIC 2(1,0)
French Horn V: PR: C.I. May be repeated for credit.

MVB 5453 AS-MUSIC 2(1,0)
Trombone V: PR: C.I. May be repeated for credit.

MVB 5454 AS-MUSIC 2(1,0)
Baritone V: PR: C.I. May be repeated for credit.

MVB 5455 AS-MUSIC 2(1,0)
Tuba V: PR: C.I. May be repeated for credit.

MVK 5451 AS-MUSIC 2(1,0)
Piano V: PR: C.I. May be repeated for credit.

MVK 5453 AS-MUSIC 2(1,0)
Organ V: PR: C.I. May be repeated for credit.

MVO 5250 AS-MUSIC 1(1,0)
Advanced Secondary Instruction: PR: Graduate standing and C.I. Advanced instructional techniques on a secondary instrument or in voice. May be repeated for credit.

MVP 5451 AS-MUSIC 2(1,0)
Percussion V: PR: C.I. May be repeated for credit.

MVS 5451 AS-MUSIC 2(1,0)
Violin V: PR: C.I. May be repeated for credit.

MVS 5452 AS-MUSIC 2(1,0)
Viola V: PR: C.I. May be repeated for credit.

MVS 5453 AS-MUSIC 2(1,0)
Cello V: PR: C.I. May be repeated for credit.

MVS 5454 AS-MUSIC 2(1,0)
Bass V: PR: C.I. May be repeated for credit.

MVS 5455 AS-MUSIC 2(1,0)
Harp V: PR: C.I. May be repeated for credit.

MVS 5456 AS-MUSIC 2(1,0)
Guitar V: PR: C.I. May be repeated for credit.

MVV 5451 AS-MUSIC 2(1,0)
Voice V: PR: C.I. May be repeated for credit.

MVW 5451 AS-MUSIC 2(1,0)
Flute V: PR: C.I. May be repeated for credit.

MVW 5452 AS-MUSIC 2(1,0)
Oboe V: PR: C.I. May be repeated for credit.

MVW 5453 AS-MUSIC 2(1,0)
Clarinet V: PR: C.I. May be repeated for credit.

MVW 5454 AS-MUSIC 2(1,0)
Bassoon V: PR: C.I. May be repeated for credit.

MVW 5455 AS-MUSIC 2(1,0)
Saxophone V: PR: C.I. May be repeated for credit.

NGR 5003C HPA-NURS 5(3,2)
Advanced Health Assessment, Health Promotion and Diagnostic Reasoning: PR: Baccalaureate Degree in Nursing; Undergraduate Assessment course; or C.I. Development of clinical decision making and diagnostic reasoning utilizing advanced health assessment skills and application of health promotion theories and models for individuals and populations.

NGR 5090 HPA-NURS 3(3,0)
Urgent Care for the Advanced Practice Nurse: PR: Admission to the MSN program or C.I. Advanced practice evaluation and management of clients in urgent care settings.

NGR 5141 HPA-NURS 3(3,0)
Pathophysiological Bases for Advanced Nursing Practice: PR: Baccalaureate Degree in Nursing. Critical examination of the physiological and pathophysiological mechanisms affecting individuals.

NGR 5252 HPA-NURS 3(3,0)
Psycho-Social Factors and Health Care Outcomes in the Elderly: PR: Post-baccalaureate or graduate status or C.I. Interdisciplinary perspective to examine the relationship between client characteristics, client health care provider interactions and health care outcomes in the elderly.

NGR 5635 HPA-NURS 3(3,0)
Transdisciplinary and Community-Based Strategies of Health Professionals: PR: Graduate standing or C.I. A study of healthcare issues and strategies encountered by speech-language pathologists and nurse practitioners when promoting transdisciplinary and collaborative interactions.

NGR 5714 HPA-NURS 3(3,0)
Clinical Teaching Strategies for Health Professional Education: PR: EDG 6236 or Teaching Strategies for Health Professionals, or C.I. In depth study of the development, implementation, and evaluation of clinical education programs for health profession students. May be repeated for credit.

NGR 5715 HPA-NURS 3(3,0)
Instructional Technology Resources for Health Professional Education: PR: EDG 6236, Teaching Strategies for Health Professionals, or C.I. Analysis of effective teaching learning strategies with emphasis on developing techniques for teaching through technology resources.

NGR 5720 HPA-NURS 3(3,0)
Organizational Dynamics: PR: Baccalaureate Degree in Nursing. Analysis of theories and models of health care organizational systems. Emphasis on nursing administration roles.

NGR 5721 HPA-NURS 3(3,0)
Dimensions of Nursing Administration: PR: Baccalaureate Degree in Nursing. Basic principles and organization theory for nursing administration.

NGR 5744 HPA-NURS 1(1,0)
Roles and Issues in Advanced Practice Nursing I: PR: Admission to the MSN program or C.I. Examine societal responses to health and illness, health care systems and policies and the role of advanced practice nurses.

NGR 5745 HPA-NURS 1(1,0)
Roles and Issues in Advanced Practice Nursing III: PR: NGR 5746 (Roles and Issues in Advanced Practice Nursing II). Examine professional obligations of advanced practice nurses. Opportunity to develop skills for taking certification exam.

NGR 5746 HPA-NURS 1(1,0)
Roles and Issues in Advanced Practice Nursing II: PR: NGR 5744. Examine cultural, legal, ethical and political issues of advanced practice nurses.

NGR 5800 HPA-NURS 4(4,0)
Nursing Theory/Research I: PR: Undergraduate Statistics course and Baccalaureate degree in Nursing, or C.I. Explores and analyzes the conceptual and theoretical bases of nursing, examines and critiques research designs and methods commonly used in nursing research.

NGR 5801 HPA-NURS 4(4,0)
Nursing Research II/Statistics: PR: BSN; NGR 5800; Undergraduate Statistics or C.I. Measurement strategies in nursing research, data planning and collection techniques, statistical data analysis and interpretation of results, research proposal development, outcomes research and statistical software.

NGR 6192 HPA-NURS 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 6240C HPA-NURS 6(3,3)
Advanced Practice Nursing: Primary Care of Adults: PR: NGR 5003. Development of theoretical and clinical skills for evaluation, diagnosis, and management of the health needs of adults and communities.

NGR 6242C HPA-NURS 6(3,3)
Advanced Practice Nursing: Care of Adults with Complex Problems: PR: NGR 6240C. Development of theoretical and clinical skills for evaluation, diagnosis, and management of the complex needs of adults.

NGR 6334C HPA-NURS 6(3,3)
Advanced Practice Nursing: Children, Adolescents and Families: PR: NGR 5003. Development of theoretical and clinical skills for evaluation, diagnosis, and management of the primary care needs of children and families.

NGR 6722 HPA-NURS 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-NURS 4(4,0)
Nursing Leadership and Management I: PR: Admission to MSN program or C.I. Theories and principles of nursing administration: Nursing care delivery systems, program evaluation, staffing, personnel management, issues and trends.

NGR 6724 HPA-NURS 5(5,0)
Nursing Leadership and Management II: PR: NGR 6723. Continuation of Nursing Leadership and Management I

NGR 6813 HPA-NURS 3(3,0)
Research Scholarly Work: PR: NGR 5801. Develop, conduct, and complete a scholarly work evaluating research findings for application to advanced practice.

NGR 6941 HPA-NURS Variable 1-6
Advanced Practice Practicum: PR: Completion of Nurse Practitioner didactic sequence. Supervised advanced clinical practice in the role of the nurse practitioner in an individualized preceptorship.

PAD 5041 HPA-PUB 3(3,0)
Ethics and Values in Public Administration: Examination of ethics in the public sector. Public concerns, past patterns, and individual/social aspects of ethical behavior are explored.

PAD 5144 HPA-PUB 3(3,0)
Nonprofit Organizations: PR: Admission to certificate program or C.I. Overview of nonprofit management, including history, governance structures, criteria used to establish nonprofit status, range of organizations, and application of management theory.

PAD 5145 HPA-PUB 3(3,0)
Volunteerism in Nonprofit Management: PR: Admission to certificate program or C.I. Human resource development in nonprofit organizations, including board selection, development and leadership, volunteer recruitment, training, retention and theories of motivation, leadership, ethical issues

PAD 5208 HPA-PUB 3(3,0)
Nonprofit Financial Management: PR: Admission to certificate program or C.I. Financial management in nonprofit organizations, including nonprofit funding, budgeting policies and procedures, orientation of department managers to budgeting, estimating income and expenses, and ethical implications of budgeting and finance.

PAD 5336 HPA-PUB 3(3,0)
Introduction to Urban Planning: Issues of urbanization, regional development, land use and comprehensive planning, environmental planning, and social planning.

PAD 5337 HPA-PUB 3(3,0)
Urban Design: Planning techniques such as planned unit developments, capital improvements planning, and growth management, and planning methods, including needs assessment and graphic design.

PAD 5338 HPA-PUB 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 5356 HPA-PUB 3(3,0)
Managing Community and Economic Development: PR: Graduate standing or C.I. Overview of economic development activities focusing on policy and managerial issues at the local level.

PAD 5425 HPA-PUB 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 other alternative methods.

PAD 5427 HPA-PUB 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-PUB 3(3,0)
Local Government Operations: Operational Functions of municipal and county governments and the role of the chief executive officer.

PAD 5807 HPA-PUB 3(3,0)
Administrative Practice in the Public Sector: The application of various theoretical concepts to the "real world" of public administration. Policy formulation and execution are examined through the case study mode.

PAD 5850 HPA-PUB 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, evaluation, and presentation.

PAD 6035 HPA-PUB 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

PAD 6037 HPA-PUB 3(3,0)
Public Organization Management: Structure, functioning, performance of public organizations; behavior of individuals and groups; application for public management, includes both macro and micro approaches to organizational behavior

PAD 6053 HPA-PUB 3(3,0)
Public Administrators in the Governance Process: An examination of the political, social, economic, and moral context of modern public administration, with special attention to the ethical dimensions of the administrator's role

PAD 6062 HPA-PUB 3(3,0)
Advanced Concepts and Applications in Public Administration: PR: Completion of all core requirements. An integrative course applying the skills, knowledge, and values considered in the program to selected public problems.

PAD 6207 HPA-PUB 3(3,0)
Public Financial Management: PR: Graduate standing or C.I. Survey of financial management functions in local government, such as accounting, fund structures, debt and case management, and financial reporting.

PAD 6227 HPA-PUB 3(3,0)
Public Budgeting: PR: Graduate standing or C.I. Budgets as planning programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS, and incrementalism

PAD 6307 HPA-PUB 3(3,0)
Policy Implementation: Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent

PAD 6327 HPA-PUB 3(3,0)
Public Program Evaluation Techniques: Techniques and skills utilized in the evaluation of public programs

PAD 6335 HPA-PUB 3(3,0)
Strategic Planning and Management: 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.

PAD 6353 HPA-PUB 3(3,0)
Environmental Program Management Research: Research of environmental programs, problems, issues, and policies to prepare persons working for or entering government service for environmental program staff or management responsibilities

PAD 6417 HPA-PUB 3(3,0)
Human Resource Management: Administrator as manager and motivator of public employees with particular emphasis on organizational behavior and contemporary public service legislation

PAD 6700 HPA-PUB 3(3,0)
Analytic Techniques for Public Administration I: Statistical methodology and use of computers as a tool for decision making in the public sector

PAD 6701 HPA-PUB 3(3,0)
Analytic Techniques for Public Administration II: PR: Completion of PAD 6700. Applied analytical tools for administrators in the public sector. Practical use of computers in policy and decision making.

PAD 6716 HPA-PUB 3(3,0)
MIS for Public Managers: PR: C.I. Use of systems concept and computers in contemporary public sector management information systems.

PAD 6834 HPA-PUB 3(3,0)
Comparative Global Public Administration: PR: Graduate status or C.I. Public Administration at the national level, to include political system, policy structure, institutional frameworks, institutional capacity and level of technology.

PAD 6934 HPA-PUB 3(3,0)
Special Issues in Public Administration: Substantive and theoretical issues confronting the broad spectrum of contemporary public administration. May be repeated for credit when content is different

PAD 6946 HPA-PUB 3(3,0)
Internship: PR: C.I.

PAD 7026 HPA-PUB 3(3,0)
Advanced Seminar in Public Administration: PR: PAD 6053, PAF 7802. Discuss emerging issues in public administration research using current journal articles and exemplary research in areas such as public management.

PAD 7419 HPA-PUB 3(3,0)
Advanced Public Human Resource Management: PR: PAD 6417 or C.I. Contemporary issues public sector personnel management, including public employee motivation, merit pay, performance appraisal, affirmative action, productivity enhancement, merit pay, performance appraisal, affirmative action, productivity enhancement, civil service reforms, comparative public personnel management.

PAF 7000 HPA-PUB 3(3,0)
Foundations of Public Affairs: PR: Admission to Ph.D. Program or C.I. Introduction to Public Affairs with special emphasis on the interrelationships among criminal justice, health services administration, public administration and social work.

PAF 7110 HPA-PUB 3(3,0)
Ethics and Public Affairs: PR: Admission to Ph.D. Program or C.I. Basic philosophical principles of ethical theories as they impact practitioner-level ethical demands for public managers.

PAF 7230 HPA-PUB 3(3,0)
Strategic Change and Management in Public Affairs: PR: Admission to Ph.D. Program or C.I. Traditional organizational behavior in public affairs within the context of public agency interests and the demand for organizational change.

PAF 7250 HPA-PUB 3(3,0)
Social Justice and Public Policy: PR: Admission to Ph.D. Program or C.I. Examination of how public policy and institutions shape social justice in the United States. Emphasizes different concepts of social justice and public policies.

PAF 7300 HPA-PUB 3(3,0)
Policy Analysis in Public Affairs: PR: Admission to Ph.D. Program or C.I. Public policy development and impact analysis in criminal justice, health administration, public administration, and social work.

PAF 7510 HPA-PUB 3(3,0)
Seminar in Program Evalution in Public Affairs: PR: Admission to Ph.D. Program or C.I. Critical analysis of program evaluation literature. Development of skills necessary to conduct program evaluations and impact assessments.

PAF 7802 HPA-PUB 3(3,0)
Advanced Research Methods in Public Affairs: PR: Admission to Ph.D. Program or C.I. Advanced social science methodology. Critical evaluation of research; the design and conduct of research. A solid background in research methodology is required.

PAF 7804 HPA-PUB 3(3,0)
Advanced Quantitative Research Methods in Public Affairs: PR: Admission to Ph.D. Program or C.I. An investigation of data analysis strategies, including presentation of results, building upon knowledge of hypothesis testing and multivariate statistics.

PAF 7810 HPA-PUB 3(3,0)
Seminar in Survey Research in Public Affairs: PR: Admission to Ph.D. Program or C.I. In-depth analysis of research survey methods and their application. Focus on interviews and questionaires.

PAF 7820 HPA-PUB 3(3,0)
Seminar in Qualitative Methods in Public Affairs: PR: Admission to Ph.D. Program or C.I. Qualitative research methods and their application to the study of public affairs. Methods examined include case studies, focus groups, ethnographic studies, qualitative interviews, and content analysis.

PAF 7840 HPA-PUB 3(3,0)
Seminar in Secondary Data Analysis in Public Affairs: PR: PAF 7802. In-depth examination of the availability and use of archival data. Advantages and limitations of secondary data analysis discussed.

PAF 7982 HPA-PUB 2(2,0)
Dissertation Seminar in Public Affairs: PR: Admission to Ph.D. Program or C.I. To provide guidance during the initial stages of dissertation preparation.

PCB 5045C AS-BIOL 4(3,2)
Conservation Biology: PR: PCB 3034 and PCB 3063. Scientific basis of conversation; conservation of ecosystems, populations, exploited species, and endangered species. Weekend field trips are required.

PCB 5107C AS-BIOL 3(3,0)
Advanced Cell Biology: PR: PCB 3063 and PCB 3023 or C.I. Review of selected topics in cell biology with emphasis on current research in areas of membrane structure, protein targeting, cytoskeleton, signalling and cell cycle.

PCB 5238 HPA-M&M 3(3,0)
Immunopathology: PR: PCB 3233. In-depth overview of diseases due to deficiencies or over-reactivity of the immune system.

PCB 5239 HPA-M&M 3(3,0)
Tumor Biology: PR: PCB 4524. A course designed to provide an introduction and broad overview of the current knowledge and research in the field of cancer biology.

PCB 5256C AS-BIOL 4(3,2)
Advanced Developmental Biology: PR: PCB 3063 and ZOO 4603 or equivalent. Lecture and literature review of emerging areas in plant and animal developmental biology.

PCB 5275 HPA-M&M 3(3,0)
Signal Transduction Mechanics: PR: PCB 3523 and PCB 4524. A course emphasizing various signal transduction cascades used in mammalian cells to control growth and differentiation. Discussion of original research papers will occur.

PCB 5326C AS-BIOL 5(3,2)
Ecosystems of Florida: PR: PCB 3034, PCB 3034L or equivalent. Ecosystems of Florida will be discussed to include geography, geology, climate, energetics, nutrient cycling, community structure and conservation.

PCB 5328 AS-BIOL 4(2,4)
Landscape Ecology: PR: PCB 3034, STA 2023 or C.I. Influence of spatial heterogenicity on ecological processes. Emphasizes quantitative methods (e.g., GIS, remote sensing and modeling) to characterize landscape patterns and dynamics.

PCB 5435C AS-BIOL 4(2,6)
Marine Ecology of Florida: PR: BSC 4312 or graduate status. Survey of experimental methods used in the study of marine communities in central and southern Florida, combining field manipulation and readings from primary literature.

PCB 5485 AS-BIOL 3(3,0)
Models in Ecology: PR: PCB 3034, MAC 2311 (or equivalent). A survey of how simulation models are applied to ecological quesitons of both a theoretical and managerial nature.

PCB 5556C AS-BIOL 4(3,2)
Conservation Genetics: PR: PCB 3063 or C.I. Applications of genetic models to the understanding and conservation of animal and plant populations.

PCB 5665C AS-BIOL 4(3,2)
Human Genetics: PR: PCB 3063, graduate standing or C.I. Human Genetics provides a theoretical framework for understanding the biology of the human species.

PCB 6046C AS-BIOL 5(3,4)
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.

PCB 6365 AS-BIOL 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-BIOL 5(3,6)
Advanced Genetics: PR: PCB 3063 or C.I. Recent advances in genetics, stressing molecular and developmental trends.

PCB 6675C AS-BIOL 4(3,2)
Evolutionary Biology: PR: PCB 3034 and PCB 3063 or C.I. Review of modern concepts and theories in evolutionary biology with emphasis on readings in the primary literature.

PCB 6727 AS-BIOL 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.

PCB 6933 AS-BIOL 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.

PEM 5405 ED-E PE 3(3,0)
Controlling Classroom Violence: PR: Post-baccalaureate or graduate status; certified teacher; or C.I. A hands-on course dealing with controlling disruption and violence as well as how teachers can protect themselves.

PEO 5644 ED-E PE 3(3,0)
Coaching Football: PR: C.I. Advanced principles and methods common to the coaching of football. Includes teaching and training methods, organization, motivation and strategies.

PET 5355 HPA-H&PT 3(3,0)
Exercise Physiology and Health: In-depth study of adaptations of cardiovascular and respiratory systems during varying degrees of exercise.

PET 5765 ED-E PE 3(3,0)
Advanced Coaching Theory: PR: C.I. Advanced study of theories and methods of coaching for optimum sports performance.

PET 6086 ED-E PE 3(3,0)
Exercise Intervention and Risk Hazards: Prevention of select major risk hazards through exercise intervention.

PET 6088 ED-E PE 3(3,0)
Wellness Development in Children: An analysis of wellness characteristics and concepts as they affect the wellness of children.

PET 6089 ED-E PE 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-E PE 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-E PE 3(3,2)
Environmental Exercise Physiology: A study of physiological adaptation resulting from prescribed physical activity programs.

PET 6367 ED-E PE 3(3,0)
Physical Performance and Energy Supplies: The relation of nutrients to aerobic performance.

PET 6381 ED-E PE 3(3,0)
Physiology of Neuromuscular Mechanisms: Human body morphology and function critical in producing motion, strength, power, and endurance.

PET 6388 ED-E PE 3(3,0)
Exercise Physiology and Cardiovascular Disease Prevention: The physiology of exercise as it affects the onset of cardiovascular diseases.

PET 6389 ED-E PE 3(3,0)
Exercise Physiology Instrumentation: Instrumentation management and assessment protocols related to select exercise physiological parameters: anthropometric, bioenergetic, blood lactate, joint flexibility, and muscle rheology, strength and fatigue curve measurements.

PET 6416 ED-E PE 3(3,0)
Administration of Corporate Wellness Programs: Administrative implications for the development of a corporate wellness program.

PET 6515C ED-E PE 3(3,0)
Measurement in Kinesiology and Physical Education: Techniques of measurement and evaluation of human performance and their applications to physical education.

PET 6615 AS-PSYCH 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 6645 ED-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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 ED-E PE 3(3,0)
Practicum, Clinical Practice:

PHC 6000 HPA-H&PT 3(3,0)
Epidemiology: PR: HSC 6911 or equivalent. A study of the distribution and determination of diseases and injuries in human populations.

PHC 6010 HPA-H&PT 3(3,0)
Quantitative Methods in Epidemiology: PR: Admission to MSHS graduate program and PHC 6000. Principles of managerial epidemiology, quantitative methods, application of prostatistics, use of personal computers to handle data and solve problems.

PHC 6146 HPA-H&PT 3(3,0)
Health Planning and Policy: Review of the determinants of the revolution of the health care system in the United States; analysis of public health, preventive medicine, and therapeutic medicine in terms of quality, access, and cost; methodologies and issues in comprehensive health planning; and trends in health policy development.

PHC 6160 HPA-NURS 3(3,0)
Health Care Finance: PR: HSA 5xxx (Health Care Finance) or ACG 5005 with "B" or better,. The identification of resources available to health care institutions, allocation of resources, and control of resource expenditures.

PHC 6411 HPA-H&PT 3(3,0)
Health and Society: Understanding health and illness as defined by patients, providers, and other persons in the social system.

PHC 6420 HPA-H&PT 3(3,0)
Case Studies in Health Law: Health law including patient care, liability, malpractice, workmen's compensation, and legal responsibilities of health personnel.

PHM 5035 AS-PHIL 3(3,0)
Environmental Philosophy: PR: PHI 3640, PHI 3600 or C.I. This course will provide an in-depth examination of the major contemporary positions in environmental philosophy, including deep ecology, ecofeminism, and social ecology.

PHT 5411 HPA-H&PT 3(3,0)
Foundations of Physical Therapy II: PR: PHT 3002C. This course emphasized the psychosocial aspects of disability. Focus on cultural diversity issues, communication skills, and different styles of learning and teaching.

PHT 5605 HPA-H&PT 2(2,0)
Research Methods in Physical Therapy: PR: STA 2023. Methods of research applied to clinical environment of physical therapy. Coverage of the language, logic, design and analysis of clinical research.

PHT 5816 HPA-H&PT 2(0,6)
Advanced Clinical Applications I: PR: PHT 3821. Full time supervised clinical education in a physical therapy setting. All previous education objectives apply and are cumulative.

PHT 6514 HPA-H&PT 3(3,0)
Management of Physical Therapy Services: PR: PHT 3002. Planning, organizing, delivering and evaluating physical therapy services within a health care system, including quality management, third party players, DRG's and legislative impact.

PHT 6702C HPA-H&PT 2(2,1)
Prosthetic/Orthotics: PR: PHT 3259 and PHT 3259L. Focus on the examination, evaluation, and physical therapy therapeutic intervention related to the training, exercise programs and prosthetic fit and training for the upper and lower extremity amputee. In addition, the course will focus on the needs of physical therapy clients who require splinting, bracing or casting to maximize their rehabilitative potential.

PHT 6817 HPA-H&PT 3(0,8)
Advanced Clinical Applications II: PR: PHT 5816. Full-time internship under the supervision of a physical therapist where the student practices and integrates evaluation skills and treatment knowledge from previous course work.

PHY 5015C AS-PHYS 3(2,2)
Physics for Teachers II: PR: C.I. "Hands-on" lecture-laboratory course. Dynamics, electricity, magnetism, optics, nuclear radiation.

PHY 5081C AS-PHYS 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, black-body radiation, gas laws and stellar evolution.

PHY 5100 AS-PHYS 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, etc. May be repeated for credit.

PHY 5200C AS-PHYS 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-PHYS 1(0.5,1.5)
Electricity for Teachers: PR: C.I. Circuits, multimeters, oscilloscopes, circuit elements.

PHY 5302C AS-PHYS 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-PHYS 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, resonant cavities.

PHY 5401C AS-PHYS 1(0.5,1.5)
Optics for Teachers: PR: C.I. Geometrical and physical optics, spectrometers and lasers.

PHY 5431 AS-PHYS 3(3,0)
Optical Properties of Materials: PR: PHY 4324, MAP 2302, 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-PHYS 3(3,0)
Laser Principles: PR: PHY 3101, MAP 2302, PHY 4424. Classical introduction to the basic principles of laser gain media, properties of resonators and modes, description of specific laser systems.

PHY 5455 AS-PHYS 3(3,0)
Modern X-Ray Science: 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-PHYS 1(0.5,1.5)
Wave Motion for Teachers: PR: C.I. Water waves, waves on strings, sound and vibrations.

PHY 5500C AS-PHYS 1(0.5,1.5)
Thermal Physics for Teachers: PR: C.I. Engines, heat pumps, kinetic theory, phase changes, radiation, weather.

PHY 5524 AS-PHYS 3(3,0)
Statistical Physics: PR: PHY 3503, STA 3032, or C.I. A study of physical concepts and methods appropriate for the description of systems involving many particles. Ensemble theory, partition functions. Maxwell Boltzmann, Bose-Einstein, Fermi-Dirac statistics.

PHY 5601 AS-PHYS 1(1,0)
Quantum Physics for Teachers: PR: C.I. Hydrogen atom, diatomic molecules, heat capacity transition rates.

PHY 5606 AS-PHYS 3(3,0)
Quantum Mechanics I: PR: PHY 4605 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-PHYS 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.

PHY 6246 AS-PHYS 3(3,0)
Classical Mechanics: PR: 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-PHYS 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 electrodynamics of materials.

PHY 6353 AS-PHYS 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-PHYS 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-PHYS 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-PHYS 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 solitons.

PHY 6447 AS-PHYS 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-PHYS 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-PHYS 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-PHYS 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.

PHY 7423 AS-PHYS 3(3,0)
Physics of Nanostructures: PR: PHY 6425 or C.I. Electronic properties of mesoscopic nanostructures, conductance as transmission, s-matrix and Green's functions, localization, universal conductance fluctuations, single electron tumeling, chaos, nonequilibrium transport

PHZ 5150C AS-PHYS 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-PHYS 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-PHYS 3(3,0)
Nuclear and Particle Physics: PR: PHY 4604 or equivalent. Particles and nuclei, symmetries and conservation laws, interactions, models.

PHZ 5405 AS-PHYS 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, solid state applications, and polymers.

PHZ 5505 AS-PHYS 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-PHYS 1(1,0)
Special Relativity for Teachers: PR: C.I. Length contraction, time dialation, simultaneity, conservation of mass-energy, conservation of momentum, Compton scattering.

PHZ 6156 AS-PHYS 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-PHYS 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-PHYS 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 6426 AS-PHYS 3(3,0)
Condensed Matter Physics I: PR: PHY 5606, and eiether PHY 6624 or PHY 6447. Quantum theory of crystalline solids: crystals, electronic band structure, metals, insulators, semiconductors, electron interactions in solids, lattice dynamics.

PHZ 6428 AS-PHYS 3(3,0)
Condensed Matter Physics II: PR: PHZ 6426 (Condensed Matter Physics I). Many-body theory: Green's functions, Feynman diagrams, screening in the electron gas, linear response theory, magnetism, conductivity, electron-phonon interactions, superconductivity, superfluids.

PLA 5937 HPA-CJ/LS 3(1,2)
Seminar in Contemporary Legal Problems: PR: C.I. Analysis of current trends in legislation and court decisions and their significance to American society.

POS 6045 AS-POLS 3(3,0)
Seminar in American National Politics: Examines major aspects of the American system, including mass behavior, public opinion, and political institutions.

POS 6207 AS-POLS 3(3,0)
Political Behavior: PR: Graduate status. A review of theory and findings in regard to mass political behavior, including participation, voter choice, public opinion, collective action, and communication.

POS 6324 AS-POLS 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 6639 AS-POLS 3(3,0)
Seminar in Public Law and Judicial Politics: PR: Graduate or post-baccalaureate status. This course is intended to acquaint students broadly with the scholarly literature in the subfield of Public law. IT surveys the meaning of the field and its development, using books and articles to illustrate the major research and teaching concentrations in the subfield.

POS 6746 AS-POLS 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-POLS 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-POLS 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.

PPE 5055 AS-PSYCH 3(3,0)
Personality Theories: PR: Graduate admission or C.I. Critical theoretical models of personality development with applications to counseling, psychotherapy and psychological assessment.

PSB 5005 AS-PSYCH 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-PSYCH 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 5605 AS-PSYCH 3(3,0)
History and Systems of Psychology: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. An examination of modern American psychology from its origins in the late 19th century to the present time. This course is intended for the Ph.D. in Clinical Psychology; in certain

instances graduate students in other programs may enroll.

PSY 6216 AS-PSYCH 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-PSYCH 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-PSYCH 4(3,2)
Psychological Testing I: PR: PSY 6216. Theory of test construction, including test reliability and validity.

PSY 6318 AS-PSYCH 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-PSYCH 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. May be repeated for credit.

PSY 6918 AS-PSYCH 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. May be repeated for credit.

PSY 6919 AS-PSYCH 3(3,0)
Research Report: PR: PSY 6918. Preparation of a written report of the project completed in PSY 6918. This report will be in the form of a research publication of technical report.

PSY 6933 AS-PSYCH 3(3,0)
Administration Seminar/Practicum: PR: Acceptance to Clinical Psychology Ph.D. program or C.I. The theories, issues, and techniques of administration in a mental health care delivery system. This course is intended for the Ph.D. in Clinical Psychology; in certain instances graduate students in other programs may enroll.

PSY 6938 AS-PSYCH 1(1,0)
Research Planning Seminar I: Clinical graduate student initiation of thesis proposal formulation under faculty supervision.

PSY 6939 AS-PSYCH 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-POLS 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-POLS 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

PUR 6403 AS-COMM 3(3,0)
Crisis Public Relations: PR: C.I. The course examines the management of crisis situations form a PR perspective, as well as how to manage issues to prevent them from becoming crises.

QMB 7565 BA-ECON 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.

RED 5147 ED-IP 3(3,0)
Developmental Reading: PR: EDG 4323. Principles, procedures, organization, and current practices in the elementary reading program. Materials and methods of instruction.

RED 5514 ED-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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-IP 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 ED-IP 3(3,0)
Practicum, Clinical Practice:

REE 6306 BA-FIN 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.

RET 5910 HPA-H&PT 3(3,0)
Research Methods in Cardiopulmonary Physiology: Introduction to methods used in scientific and medical research in cardiopulmonary physiology. Literature review, experimentation, and data analysis.

RET 6555 HPA-H&PT 3(3,0)
Cardiac Rehabilitation: PR: HSC 6566. Lecture course emphasizing the principles underlying the formulation and implementation of a comprehensive cardiac rehabilitation and prevention program.

SCE 5716 ED-IP 3(3,0)
Methods in Elementary School Science: PR: EDG 4323. Organization of instruction in elementary school science including methods, evaluation, materials, strategies, and current practices.

SCE 5825 ED-IP 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-IP 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-IP 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-IP 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-IP 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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.

SOP 5059 AS-PSYCH 3(3,0)
Advanced Social Psychology: PR: SOP 3004 and graduate status, or C.I. The major findings and theories in social psychology including an in-depth review of relevant research.

SOW 5105 HPA-SOWK 3(3,0)
Human Behavior and Social Environment I: Individual: PR: Admission to MSW program. Study of human development and psychosocial functioning of individuals at various life stages with particular attention to implications of human diversity.

SOW 5106 HPA-SOWK 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 and a systems perspective.

SOW 5132 HPA-SOWK 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-SOWK 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-SOWK 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-SOWK 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-SOWK 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-SOWK 3(3,0)
Clinical Supervision: Supervisory theory and practice in clinical settings.

SOW 5404 HPA-SOWK 3(3,0)
Social Work Research: Study of group research designs in social work; quantitative analyses; and related ethical issues.

SOW 5432 HPA-SOWK 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-SOWK 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-SOWK 3(0,3)
Generalist Field Education II: PR: SOW 5532. CR: SOW 5306. Continuation of SOW 5532 Generalist Field Education I in the same field agency for 224 clock hours.

SOW 5624 HPA-SOWK 3(3,0)
Social Work Practice in Mexican Culture: PR: C.I. The practice of social work in Mexican culture through cultural immersion, seminars, field visits and language instruction.

SOW 5625 HPA-SOWK 3(3,0)
Social Work with Women: Alternative approaches to the treatment of women in the urban setting.

SOW 5644 HPA-SOWK 3(3,0)
Interventions with Elderly and Their Families: PR: Admission to Gerontology graduate certification program or MSW program or C.I. Study of concepts, skills, models and theories for intervening with aged. Special attention is given to minority populations.

SOW 5655 HPA-SOWK 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-SOWK 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-SOWK 3(3,0)
Interventions with Substance Abusers: Strategies for working with persons who abuse drugs, alcohol, and other substances.

SOW 6123 HPA-SOWK 3(3,0)
Psychosocial Pathology: 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-SOWK 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-SOWK 3(3,0)
Clinical Practice with Groups: PR: Advanced standing in MSW program. Group work theories, interventions and techniques applied to persons with emotional, social and psychological problems.

SOW 6348 HPA-SOWK 3(3,0)
Clinical Practice with Individuals: PR: Advanced standing in MSW program. Behavioral, crisis, and psychosocial theories applied to persons with emotional, social, and psychological problems.

SOW 6386 HPA-SOWK 3(3,0)
Seminar in Social Welfare Planning and Implementation: PR: Admission to Ph.D. program or C.I. Social welfare planning, implementation, and evaluation at the community and organizational levels. Emphasizes planning needs of oppressed groups.

SOW 6399 HPA-SOWK 3(3,0)
Advanced Administration in Social Welfare: PR: Admission to Ph.D. program or C.I. Attributes, skills, behaviors, and problems with executive roles in public human service organizations. Emphasizes the mission of the organization as well as mobilization of resources.

SOW 6492 HPA-SOWK 3(3,0)
Theory Building in Social Work: PR: Admission to the Ph.D. program or C.I. Epistemological, ontological, and methodological implications of knowledge building in social work.

SOW 6535 HPA-SOWK 4(0,4)
Clinical Field Education I: PR: SOW 5532 and SOW 5533. Supervised specialist practice in a field agency for 304 clock hours.

SOW 6536 HPA-SOWK 4(0,4)
Clinical Field Education II: PR: SOW 6535. Continuation of SOW 6535, Clinical Field Education I, in the same field agency for 304 additional clock hours.

SOW 6612 HPA-SOWK 3(3,0)
Clinical Practice with Families: PR: Advanced standing in MSW program. Family-focused models of intervention applied to families in transition and to problems such as divorce, single parenting, and blended families.

SOW 6656 HPA-SOWK 3(3,0)
Clinical Practice with Children and Adolescents: PR: Advanced standing in MSW program. Social work practice and treatment of children and adolescents.

SOW 6689 HPA-SOWK 3(3,0)
Sex Therapy: Intervention approaches for sex-related problems.

SOW 6695 HPA-SOWK 3(3,0)
Advanced Interviewing and Documentation in Clinical Social Work Practice: PR: SOW 5305, SOW 5306, and SOW 5432. Study of advanced interviewing and clinical documentation skills in clinical social work practice.

SOW 6914 HPA-SOWK 2(2,0)
Interactive Research Project in Clinical Practice: 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 5120 HPA-COMD 4(4,3)
Physiological Acoustics: PR: SPA 4032: Graduate status or C.I. Lectures, readings, and experiments pertaining to the subjective reception of sound.

SPA 5225 HPA-COMD 3(3,0)
Fluency Disorders: PR: SPA 6403, SPA 5236, SPA 6204. Identification and evaluation of disorders of rhythm. Emphasis will be on methods of intervention in disorders of fluency.

SPA 5225L HPA-COMD 1(0,2)
Fluency Disorders Laboratory: PR: Graduate status or C.I. Practical application of clinical skills in fluency disorders.

SPA 5236 HPA-COMD 3(3,0)
Speech Problems in Adults: Motor Speech Disorders: PR: SPA 5805, SPA 6410, SPA 5404. A study of dysarthrias, apraxias, and other motor speech disorders in adults associated with neurological problems, brain injury, systematic disease and aging.

SPA 5307 HPA-COMD 3(3,0)
Differential Diagnosis of Auditory Disorders: PR: SPA 4032; Graduate status or C.I. Clinical techniques in pure tone speech, acoustic impedance, and electrophysiologic response audiometry.

SPA 5327 HPA-COMD 4(4,0)
Aural Habilitation/Rehabilitation: PR: SPA 5225, SPA 6132C, SPA 6211. Principles and procedures involved in speech and language acquisition management, utilization of residual hearing, speech reading, and the use of hearing aids.

SPA 5404 HPA-COMD 3(3,0)
Language Disorders: Preschool: PR: Graduate status or C.I., LIN 4710C, SPA 4400C. Graduate students will apply their knowledge of the normal processes of language development to the diagnosis and intervention of communicative impairments of infants and toddlers.

SPA 5553L HPA-COMD 1(0,4)
Differential Diagnosis in Speech and Language Laboratory: PR: SPA 6204, SPA 6403, SPA 6211, SPA 5805. Students will be assigned to diagnostic teams in which they will apply the techniques presented in SPA 5553. Experiences will include test administration, interviewing, writing of diagnostic reports, and oral presentations with staffings.

SPA 5570 HPA-COMD 3(3,0)
Administration and Management of Communicative Disorders Programs: PR: SPA 6553, SPA 5237, seminar. Methods and techniques for organization and administration of speech-language and hearing disorders in public school, hospital, rehabilitation center, and private practice facilities.

SPA 5805 HPA-COMD 3(3,0)
Research in Communicative Disorders: PR: STA 4163, graduate status or C.I. Introduces the student to empirical research in the area of communicative disorders. Emphasis is on hypothesis testing, methodology, analysis, and interpretation of results.

SPA 6132C HPA-COMD 3(1,4)
Measurements in Speech Science: PR: SPA 6403, SPA 5236, SPA 6204. The application of instrumentation to research in normal speech and language behaviors. Measurements include use of electronic instruments, such as the oscilloscope.

SPA 6204 HPA-COMD 3(3,0)
Advanced Articulation/Phonological Disorders: PR: Graduate status or C.I. SPA 3112C, SPA 4291C. Advanced theory, diagnosis, and treatment of articulation/phonological disorders including developmental apraxia of speech, dysarthria, and cleft palate; communicative differences vs. disorders emphasized.

SPA 6204L HPA-COMD 1(0,2)
Advanced Studies in Communicative Disorders: Articulation Laboratory: PR: SPA 3112C, SPA 311 2L, SPA 4201C. Practical application of clinical skills in articulation disorders. May be repeated for credit.

SPA 6211 HPA-COMD 3(3,0)
Voice Disorders: PR: SPA 6403 SPA 5236, SPA 6204. Basic principles and practices in the treatment of organic voice pathologies including laryngectomy, cleft palate, and other disorders of the vocal mechanisms.

SPA 6211L HPA-COMD 1(0,2)
Voice Disorders Laboratory: PR: Graduate status or C.I. Practical application of clinical skills in voice disorders.

SPA 6308 HPA-COMD 4(4,0)
Auditory Evaluation and Assessment Procedures for Special Populations: PR: Graduate status or C.I. Audiometric testing and functional communicative assessment procedures for geriatric, pediatric, and other special populations.

SPA 6345 HPA-COMD 4(4,0)
Amplification: PR: Graduate status or C.I. Hearing aids, selective evaluation procedures, electroacoustic measurements, coupling techniques, and orientation and counseling.

SPA 6353 HPA-COMD 4(4,0)
Hearing Conservation: PR: SPA 4032, SPA 5120. Industrial audiometry, community noise abatement, and public school hearing conservation.

SPA 6403 HPA-COMD 3(3,0)
Language Disorders: School Age: PR: SPA 5805, SPA 6410, SPA 5404. Presentation of the syntactic, semantic, and pragmatic nature of children's language disorders. Emphasis will be on techniques and methods of diagnosis and intervention with school-age children.

SPA 6407 HPA-COMD 2(2,0)- 3(3,0)
Seminar in Language: PR: SPA 5225, SPA 6132C, SPA 6211. Examines innovative and disorder-specific evaluation and treatment in adult and pediatric language disorders.

SPA 6410 HPA-COMD 3(3,0)
Language Problems in Adults: Aphasia and Other Symbolic Disorders: PR: SPA 4251C, graduate status, or C.I. A study of the symbolic disorders in adults associated with neurological problems, brain injury, systemic disease, and aging.

SPA 6505 HPA-COMD 3(0,6)
Clinical Practicum in Speech Pathology-Language: PR: Graduate status or C.I. Advanced clinical practice in communicative disorders. May be repeated for credit when content is different.

SPA 6506 HPA-COMD 3(0,6)
Clinical Practicum in Audiology: PR: SPA 4032. Advanced clinical practice in communicative disorders. May be repeated for credit when content is different.

SPA 6526 HPA-COMD 2(2,0)
Seminar in Speech Pathology: PR: SPA 5225, SPA 6132C, SPA 6211. Examines innovative and disorder-specific evaluation and treatment procedures. Topics will be in the area of adult and pediatric speech disorders.

SPA 6553C HPA-COMD 4(3,1)
Differential Diagnosis in Speech and Language: PR: SPA 6204, SPA 6403, SPA 6211, SPA 5805. Students are assigned to diagnostic teams and will demonstrate test administration, interviewing, report writing. Oral presentations with staffings required.

SPA 6826 HPA-COMD 2(2,0)
Seminar in Research: PR: SPA 5225, SPA 6132C, SPA 6211. Examination of major issues in research of clinical or theoretical importance.

SPA 6938 HPA-COMD 1-6
Special Topics/Seminars: May be repeated for credit.

SPC 5200 AS-COMM 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-COMM 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-COMM 3(3,0)
Small Group Communication: A study of communication and its effect on small group behavior

SPN 5502 AS-LANG 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-LANG 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-LANG 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-LANG 3(3,0)
Introduction to Spanish Linguistics: PR: Graduate standing or C.I. 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-LANG 3(3,0)
Spanish Dialectology: PR: Graduate standing or C.I. This course is 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-LANG 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 5920 AS-LANG 3(3,0)
AP Spanish Language: Participants will enhance their knowledge of the language and culture of Spanish-speaking peoples and develop further proficiency in listening, comprehension, speaking, reading, and writing.

SPN 6805 AS-LANG 3(3,0)
Spanish Morphosyntax: A study of Spanish morphology and syntax from different perspectives.

SPS 6125 ED-E PE 3(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 ED-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 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-E PE 3(3,0)
Seminar in School Psychology: PR: C.I. Diagnostic, instructional, and prescriptive intervention techniques.

SPS 6703 ED-E PE 3(3,0)
Child and Adolescent Deviant Behavior and Treatment: PR: Graduate admission and C.I. Behavior disorders in school-age children and adolescents as classified in current terminology, and a review of treatment options such as therapy and medication.

SPS 6801 ED-E PE 3(3,0)
Developmental Bases of Diverse Behaviors: PR: Graduate admission and C.I. The major social and educational policy concerns posed by developmental and cultural diversity in our society, with implications for teaching, learning and intervention.

SPS 6931 ED-E PE 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-E PE 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-E PE 6(0,6)
School Psychology Internship: PR: Graduate admission and C.I. Supervised placement in school setting.

SPW 5805 AS-LANG 3(3,0)
Spanish Graduate Studies Research: PR: Graduate student in Spanish M.A. program. The tools needed for research in Spanish linguistics, literary criticism, and culture are taught along with historical and contemporary literary criticism.

SPW 5825 AS-LANG 3(3,0)
Seminar Series: PR: Graduate Standing or C.I. A seminar course that focuses on a single author, a geographical area or a specific topic within a period or literary movement from Spain, Latin American or Hispanics in the U.S. May be repeated for credit.

SPW 6216 AS-LANG 3(3,0)
Golden Age Prose: A study of the major prose works of the Spanish Golden Age.

SPW 6217 AS-LANG 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-LANG 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-LANG 3(3,0)
Nineteenth Century Spanish Novel: A study of the major writers and literary movements of the 19th century with emphasis on the novels of Valera, Perez Galdos, Clarin and Pardo Bazan.

SPW 6306 AS-LANG 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-LANG 3(3,0)
Spanish American Drama II: An analysis of Spanish American Drama from modernism to the present.

SPW 6315 AS-LANG 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-LANG 3(3,0)
Spanish American Poetry: A study of the different movements and their contribution to Spanish American poetry.

SPW 6405 AS-LANG 3(3,0)
Medieval Spanish Literature: An intensive study of the major genres of the period. Emphasis on selected works by major writers.

SPW 6585 AS-LANG 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-LANG 3(3,0)
The Generation of 1898: An analysis of the major works of writers of the Generation of 98 such as Ganivet, Unamuno, Baroja, Azorin, and Machado.

SSE 5115 ED-IP 3(3,0)
Methods in Elementary School Social Science: PR: EDG 4323. Study of instructional programs in social sciences; objectives; materials; techniques; current research; and their application in elementary school setting.

SSE 6617 ED-IP 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-IP 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.

STA 5103 AS-STAT 3(3,0)
Advanced Computer Processing of Statistical Data: PR: STA 4163 and knowledge of a programming language. Use of SAS and other statistical software packages; data manipulation; graphical data presentation; data analysis; creating analytical reports

STA 5132 AS-STAT 3(3,0)
Pension Actuarial Science: PR: STA 4322 and STA 3131. Pension plan funding basic theory and applications. Types and calculations of pension benefits. Methods of funding pension plans. Normal costs, supplemental liability and projected benefit cost methods

STA 5139 AS-STAT 3(3,0)
Credibility Theory and Loss Distributions: PR: STA 4322 and STA 3131. Full and partial credibility. The credibility premium. Exact credibility. Parametric and nonparametric estimation of credibility. Loss models for claim severities and frequencies. Aggregate claims models.

STA 5156 ECS-IEMS 3(3,0)
Probability and Statistics for Engineers: PR: STA 3032 or equivalent. Theory and applications of discrete and continuous random variables, hypothesis tests, confidence intervals, regression analysis and correlation.

STA 5176 AS-STAT 3(3,0)
Biometry: PR: STA 2023 or C.I. Design and analysis of experiments with emphasis on biological/ecological application; one-way and multi-way ANOVA; regression; ordination; classification.

STA 5205 AS-STAT 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-STAT 3(3,0)
Statistical Analysis: PR: STA 2023; not open to students who have completed STA 4164. Data analysis; statistical models; estimation; tests or hypotheses; analysis of variance, covariance, and multiple comparisons; regression and nonparametric methods.

STA 5505 AS-STAT 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 test.

STA 5646 AS-STAT 3(3,0)
Casualty Insurance: PR: STA 4322 and STA 4641. Individual risk rating and classification of risk for property/casualty insurance. Reinsurance and expense issues. Reserves for insurance and loss adjustment expenses. Investment income.

STA 5825 AS-STAT 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 5931 AS-STAT 3(3,0)
Topics in Actuarial Science: PR: Senior status and 9 hours of actuarial science classes. Topics may include: survey of actuarial practices, financial mathematics, ruin theory, insurance law, advanced pension and disability actuarial methods.

STA 5940 AS-STAT 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. May be repeated for credit.

STA 6106 AS-STAT 3(3,0)
Statistical Computing I: Computer systems, approximating probabilities/percentiles, random number generation, linear model computations, density estimation

STA 6107 AS-STAT 3(3,0)
Statistical Computing II: PR: STA 6329 (or knowledge of matrix algebra), STA 6236 (or knowledge of linear regression), and familiarity with a higher level programming language (e.g., FORTRAN, C++, MATLAB). 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-STAT 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-STAT 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-STAT 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 6237 AS-STAT 3(3,0)
Nonlinear Regression: PR: STA 6236 (or knowledge of linear regression). Nonlinear regression: model specification, diagnostics. Estimation: nonlinear least squares, SAS, Gauss Newton algorithm. Robust regression: M-estimation adaptive robust regression. Logistic regression, Poisson regression.

STA 6246 AS-STAT 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-STAT 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-STAT 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-STAT 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-STAT 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-STAT 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-STAT 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-STAT 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-SOC/AN 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-SOC/AN 3(3,0)
Advanced Population: Examines the theories, methods, and information utilized by demographers and focuses on techniques of application of those skills.

SYA 6126 AS-SOC/AN 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-SOC/AN 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-SOC/AN 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-SOC/AN 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-SOC/AN 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.

SYD 5795 AS-SOC/AN 3(3,0)
Class, Race, and Gender in American Society: PR: Graduate standing or C.I. Using theoretical and empirical studies, this course will provide a sociological

examination of the intersections of race, class, and gender in American society.

SYD 6705 AS-SOC/AN 3(3,0)
Seminar in Race and Ethnicity: PR: Graduate standing in sociology or C.I. A sociological examination of the experiences of racial and ethnic groups in the United States.

SYD 6809 AS-SOC/AN 3(3,0)
Seminar in Gender Issues: PR: Graduate standing in Sociology or C.I. Using theoretical and empirical studies, this course will provide a sociological examination of gender issues that influence relationships between women and men.

SYO 6515 AS-SOC/AN 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-SOC/AN 3(3,0)
Sociological Criminology: PR: Graduate Standing or C.I. To examine current sociological knowledge and research on various issues in Criminology, and to further students' skills in developing/conducting research projects.

SYP 5562 AS-SOC/AN 3(3,0)
Seminar on Domestic Violence: Theory, Research and Social Policy: PR: Graduate status or C.I. A sociological examination and evaluation of theories, empirical research and social policy related to the study of domestic violence.

SYP 5738 AS-SOC/AN 3(3,0)
Seminar on the Welfare State and Aging: PR: Graduate standing or C.I. A sociological examination of old policies from a cross-cultural perspective.

SYP 6515 AS-SOC/AN 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-SOC/AN 3(3,0)
Crime, Law, Inequality: PR: Graduate standing. The consequences of social stratification on criminality and treatment/protection by the legal system. This course examines literature concerning inequality and the sociology of law.

SYP 6561 AS-SOC/AN 3(3,0)
Child Abuse in Society: PR: C.I. A sociological examination of literature and current research pertaining to child abuse and neglect.

SYP 6563 AS-SOC/AN 3(3,0)
Reactions to Domestic Violence: PR: C.I. The reactions by communities, victims, and professionals to domestic violence. Topics include examination of policies on domestic violence, and issues relating to race, class, and gender.

SYP 6565 AS-SOC/AN 3(3,0)
Elder Abuse and Neglect: PR: C.I. A sociological examination of elder abuse and neglect in the family and other social settings.

TAX 5015 BA-ACCT 3(3,0)
Federal Income Tax II: PR: ACG 3111, TAX 4001, and meet graduate school admission requirements. Concepts and methods of determining taxable income for partnerships and corporations, and selected topics.

TAX 6065 BA-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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-ACCT 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.

THE 5307 AS-THEA 3(3,0)
Contemporary Theatre Practice: PR: THE 3110, THE 3111, THE 3306, Restricted to Theatre majors or departmental consent. Contemporary trends in plays and theatre production in the late 20th century.

TSL 5143 AS-LANG 3(3,0)
ESOL Strategies: This course will survey 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-IP 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-IP 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.

TSL 5940 AS-LANG 3(3,0)
Issues in TEFL: PR: C.I. Address issues specifically related to TEFL, such as materials adaptation, teaching in multi-level classrooms, learning styles, cultural issues, and curriculum syllabus design.

TSL 6142 AS-LANG 3(3,0)
Critical Approaches to ESOL: Emphasis placed on current research in second language acquisition as it relates to the development of ESOL curriculum and materials.

TSL 6250 AS-LANG 3(3,0)
Applied Linguistics in ESOL: Applying 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-LANG 3(3,0)
Problems in Evaluation in ESOL: This course 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-LANG 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-LANG 3(3,0)
Research in Second Language: PR: EDF 6481. This course focuses on research into language learning processes which serves as a knowledge base for effective teaching of language-minority students.

TSL 6940 AS-LANG 3(3,0)
ESOL Practicum: PR: C.I. Techniques and strategies for creating effective lesson plans for ESOL classroom activities.

TTE 5204 ECS-CEE 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 ECS-CEE 3(3,0)
Highway Capacity and Traffic Flow Analysis: PR: TTE 4004. Highway capacity for all functional classes of highway. Traffic signalization including traffic studies, warrants, cycle length, timing, phasing and coordination.

TTE 5256 ECS-CEE 3(3,0)
Traffic Operations: PR: TTE 4004 or C.I. Fundamental theories and applications of traffic movements on streets and highways.

TTE 5700 ECS-CEE 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 ECS-CEE 3(3,0)
Geometric Design of Transportation Systems: PR: TTE 4004. Study of geometric and construction design elements in the engineering of transportation systems.

TTE 5835 ECS-CEE 3(3,0)
Pavement Design: PR: CEG 4101C. Pavement types, wheel loads, stresses in pavement components; design factors such as traffic configurations, environment, and economy.

TTE 6270 ECS-CEE 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 6315 ECS-CEE 3(3,0)
Traffic Safety Analysis: PR: TTE 4004 and C.I. Understanding crash research concepts, and identifying factors contributing to traffic crash occurrence.

TTE 6526 ECS-CEE 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 ECS-CEE 3(3,0)
Mass Transportation Systems: PR: C.I. Planning, design, construction, operation, and administration of mass transportation systems.

WST 5347 AS-WOM 3(3,0)
Research Seminar in Gender Studies: PR: Graduate student or post-baccalaureate status. Research seminar exploring relationships among feminist theorizing, research, and social change,the development of gender studies programs and their relationships to other academic disciplines.

ZOO 5456C AS-BIOL 4(2,6)
Ichthyology: PR: ZOO 2303C or C.I. Introduction to the biology of the fishes, their classification, evolution, and life histories.

ZOO 5463C AS-BIOL 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-BIOL 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-BIOL 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 5745C HPA-M&M 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.

ZOO 5815 AS-BIOL 4(4,0)
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.

Index

D

E

F

G

N

O

P

Q

R

S

T

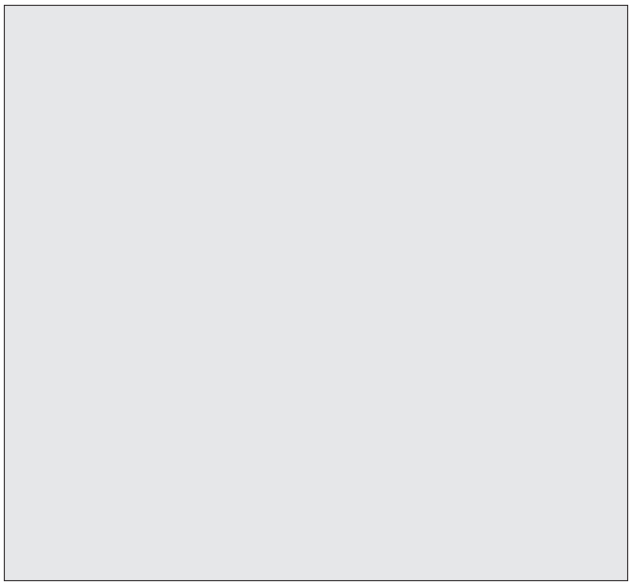
U

V

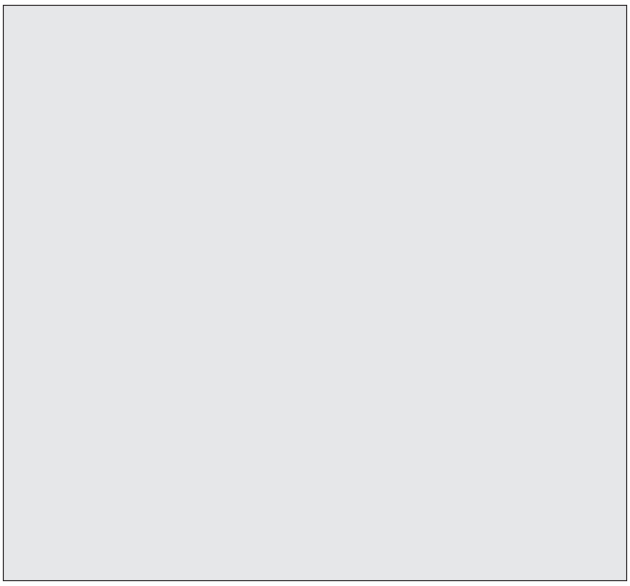
W

Directions to the University of Central Florida Campuses

UCF Brevard Campus
Clark Maxwell, Jr. Lifelong Learning Center
1519 Clearlake Road, Cocoa, FL 32922
Phone: (407) 632-1111, ext. 65567



UCF Daytona Beach Campus
1200 International Speedway Boulevard
Daytona Beach, FL 32120-2811
Phone: (904) 255-7423, ext. 4010



UCF Downtown Center
36 West Pine Street, Orlando, FL 32801
Phone: (407) 317-7700

UCF South Orlando Center
7300 Lake Ellenor Drive, Orlando, FL 32809
Phone: (407) 856-6585

University of Central Florida, Main Campus

Directions Hotline: (407) 882-0909

From Orlando International Airport (20 Miles):
Go east on BeeLine Expressway (528) to 417.
Take 417 north (Toll Road) to University Boulevard.
Exit east onto University Boulevard to UCF.

From Orlando Sanford Airport (20 Miles):
Take Lake Mary Boulevard to 417 south (Toll Road).
Go to University Boulevard.
Turn left onto University Boulevard, continuing east to UCF.

From Tampa on I-4:
Exit 28 onto BeeLine Expressway East (east 528, Toll Road).
Go past Orlando International Airport to 417 north.
Take 417 north (Toll Road) to University Boulevard.
Exit east onto University Boulevard to UCF.

From South on Florida Turnpike:
Exit 254 (Orlando South - 441).
Take first right onto BeeLine Expressway East (east 528, Toll Road).
Go east past Orlando International Airport to 417 north.
Take 417 north (Toll Road) to University Boulevard.
Exit east onto University Boulevard to UCF.

From North on Florida Turnpike:
Exit 265 (Holland East-West) onto East-West Expressway East (east 408, Toll Road).
Go east through Orlando to merge with 417.
Take 417 north to University Boulevard.
Exit east onto University Boulevard to UCF.

From Daytona Beach on I-4:
Exit 49 onto Route 434 east.
Go through Longwood, Winter Springs, and Oviedo on 434 to UCF.

From Titusville (East Coast):
Take Highway 50 west past 408 overpass to 434.
Turn right to UCF (2 miles).

From Melbourne:
Take I-95 to 520 to Highway 50 west to right on 434; or, take I-95 to 528 west (Toll Road) to 417 north to University Boulevard, and then exit east to UCF.